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Contributors

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A

PRACTICAL TREATISE

ON THE

DISEASES AND INFIRMITIES

OF

ADVANCED LIFE.

BY

DANIEL MACLACHLAN, M.D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON,
LATE PHYSICIAN AND PRINCIPAL MEDICAL OFFICER TO CHELSEA HOSPITAL,
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PREFACE.

THE following treatise suggested itself some years ago, and was commenced in expectation of completing it in a short time. The interruptions to which medical men are continually exposed are frequently fatal, in more respects than one, to undertakings of the kind, as the hours devoted to such tasks can only be occasionally snatched from other more pressing and important engagements; and, in the present instance, public duties connected with the invaliding of the troops, greatly increased of late, materially interfered with the design. I had also not proceeded far when I found that I had deceived myself with the amount of labour the work would entail. Gradually, and almost unconsciously, it expanded, and, as it grew on my hands, difficulties arose which I had hardly contemplated. It is true, I expected to derive less assistance from books than from nature; but, until I had fairly entered the domain, I had but a faint conception of the numerous impediments in the way, and of the insufficiency of existing knowledge on the subject.

While the diseases of infancy, childhood, and maturity have been investigated with meritorious industry, and engaged the attention of the most enlightened promoters of the healing art from Hippocrates downwards, the diseases of advanced and declining life have been comparatively neglected, and, until recently, they have nowhere received the attention they deserve.

We contemplate with peculiar pleasure all relating to development and growth; but the retrograde process of atrophy and decay almost ceases to interest us, though in the lapse of time it follows with unerring certainty. Birth supposes death, the end of all created things; and though death by sheer old age is the rarest of all deaths, so sure is our end, that when it happens about three score and ten, the days of our years, the living are apt to bow to the issue without troubling themselves much in reflecting on the phenomena that preceded it, still less in further pursuing the inquiry, and endeavouring to ascertain its immediate causes by the only method now left—the examination of the body.

Thus it is that the anatomy, physiology, and pathology of the aged have, in a great measure, escaped observation. Their diseases and infirmities have been too much regarded as inseparable concomitants of advancing years, the inevitable consequences of the progressive, natural decay of the organism, and decline of the vital functions generally, and therefore but little if at all within reach of the physician. "What can't be cured must be endured," is a common, disheartening remark, too frequently addressed to them in their many trials and difficulties. If we look around us, however, we behold on every side men and women of seventy, eighty, nay, ninety and upwards, still hale and hearty, in the enjoyment of excellent health, without any indications of approaching dissolution. These, it may be urged, are exceptional, for, at such advanced epochs, life is generally but labour and sorrow; nevertheless, there they are, and their number is increasing from year to year, not only relatively but absolutely. An all-wise and beneficent Creator mercifully withholds from us the precise term of our sojourn here, while at the same time He bestows gifts that enable us to ward off disease, or to mitigate, if not to cure it when attacked. And there is scarcely a practitioner actively engaged in the practice of his profession, who has not met with the most encouraging success among the aged

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of both sexes, under apparently the most desperate circumstances, in the very evening of life, nor one who has not again and again had reason to rejoice that the possession of these means have enabled him fully to realize the words of the learned Dr Gregory, that "although it is not credible that ever a remedy will be found which can recall past youth, yet it seems likely enough that some remedies may delay old age, and alleviate its disorders."

Strange to say, another cause of the comparatively little interest taken in the pathology of the aged, which should indeed have an exactly opposite effect, is the not unfrequently complicated nature of disease at this period, its chronic character, or the insidiousness of its attack. Stealing on gradually and insensibly, many of the most fatal diseases of advanced life are entirely latent, or only discoverable by the most careful inquiry and actual search for them. They frequently present themselves to us, for the first time, in their most advanced stages, when beyond the power of art to remove them. This is more especially true of the diseases of the aged poor of cities and unhealthy localities; of aged men and women whose normal sensibilities have been paralyzed by privations and hardships, and who are more than ordinarily regardless of bodily suffering. But the affluent, accustomed to all the comforts and luxuries which wealth can procure, and usually keenly alive to the least ailment or approach of disease, also repeatedly succumb, like their needy brethren, from formidable latent maladies, or obscure forms of disease, without the exact cause of death being ascertained, where an opportunity has not been afforded of verifying the diagnosis by *post-mortem* examination.

The human frame, endowed with exquisite irritability and sympathy in early and middle life, changes in the lapse of years. Old age, with its numerous disorders, brings with it a merciful dispensation—modifications of the nervous function that entirely vary the phenomena of disease, by which the most acute and

painful, and at other periods of life the most obvious are frequently masked, and sometimes only revealed in their full extent by an inquiry of this nature. The study, diagnosis, and treatment of the diseases of advanced life are therefore full of difficulties, and often tax the discernment, the skill, and ingenuity of the most painstaking physician. Much original research and observation are still required to bring the information we possess of this portion of practical medicine on a level with the existing state of knowledge regarding the diseases of the young.

The treatise now presented almost wholly relates to these questions—the pathology and treatment of the diseases and infirmities of advanced life. Designed as a practical work and clinical guide, the practitioner will find in it but little of the physiology of old age, and still less of the theory of its diseases. I have endeavoured to describe the maladies of advanced life as I have met them in hospital, parochial, or private practice, and as they have been represented by credible authors and intelligent sufferers, depicting them, in the latter instance, by the light of medical science, and truthfully, in all cases, recording the broad features characterising their different peculiarities and modifications. If I have not recognised as distinct affections such diseases as "Urinous Asthma," "Gonorrhæic Asthma," and the like, it is because I believe such distinctions fanciful or of no practical utility. While I am disposed to admire the great industry of French writers, the equal research and recondite reasoning of German authors, I incline more to the practical views and sound sense of British and American observers, who, in avoiding trivial distinctions and refinements in description and diagnosis, never lose sight of the great objects of all medical inquiries—the judicious appreciation of suffering and disease with a view to their amelioration, cure, or prevention.

Originally it was intended to enter fully into anatomical details, but on subsequent reflection these have been omitted, unless where the history of the disease under consideration would be imperfect,

and the treatment based on that knowledge liable to misconception. Wherever the morbid appearances differ materially from those usually observed in the adult, they have been brought under notice; and in all strictly senile diseases, or in such as chiefly belong to the more advanced periods of life, they have been described. In other instances, when introduced, it has been for the purpose of illustrating the influence of remedies, or with the view of suggesting appropriate curative measures. In the introductory chapter, and interspersed throughout the work, will be found brief notices of the principal organic changes and modifications of structure effected by advancing years. Without some knowledge of these alterations, appearances and states hardly to be regarded as morbid might lead to erroneous conclusions. The brain, the heart, and lungs especially present most important deviations from what is observed in adult and middle age, and accordingly it has been felt necessary to record somewhat circumstantially the physiological modifications in the form and structure of these organs.

Excepting a few essays, most of them brief and unimportant, in various publications, the records of English medical literature furnish little information on the hygiène and diseases of old age. As remarked by a critic in the seventeenth volume of the late "British and Foreign Medical Review," Sir John Floyer's "Medicina Gerocomica," published in 1724, and Welsted's "Liber de Ætate Vergente," which appeared the same year, are among the earliest attempts; but both works are meagre in the extreme, and chiefly taken up with the means of preserving health. In 1817, Sir Anthony Carlisle published a monograph on the disorders of old age, which was reproduced in 1838, in a small octavo volume he gave to the world, entitled a "Practical Treatise on the Preservation of Health and the Prevention of Diseases." Fifty-two pages only of this work are devoted to the disorders of old age. Embracing considerations on diet, regimen, anatomy, physiology, diseases, and preventive and curative treatment, the information

conveyed is extremely summary. Dr Day's work "On the Domestic Management and most Important Diseases of Advanced Life" appeared in 1849. To him is due the merit of bringing the subject in a collected form for the first time before a British public. Including the late Dr Van Oven's interesting little volume "On the Decline of Life in Health and Disease," published in 1853, we have perhaps named the chief productions of English medical writers, in a separate form, which treat of the diseases of advanced life.

The much admired essay of Sir Henry Halford, the late President of the College of Physicians, "On Climacteric Decay," first published in the fourth volume of the Medical Transactions of the College; the chapter "On the Medical Treatment of Old Age," by Sir Henry Holland, in his volume of "Medical Notes and Reflections;" and the admirable articles on Age by Dr Roget, in the "Cyclopædia of Practical Medicine;" by Dr Symonds, in the "Cyclopædia of Anatomy and Physiology;" and by Dr Copland, in his "Dictionary of Practical Medicine," are worthy of the most attentive perusal. The latter writer has in various portions of that great work done more to illustrate the subject of senile diseases than any other British author. It is much to be regretted that Dr Day, whose learning, application, and ability eminently qualify him for the task, has not bestowed on it more time and attention. His work is little more than an outline from which many important and interesting diseases incident to the aged are entirely excluded, while all are but very briefly considered.

We are almost wholly indebted to continental authors, especially French and German, for the information we possess on these diseases. The very original work of Canstatt, "Die Krankheiten des höheren Alters und ihre Heilung," in two volumes, published in 1839, is a rich mine. Adapted to the English reader it would be a most valuable addition to our libraries. Had the late Sydenham Society undertaken this labour, it would have con-

ferred a boon on the profession, and added to the justly merited reputation of that learned body. It is to be hoped the new Sydenham Society will neither be deterred by the date of the publication, the style of the writer, nor the unattractive nature of the subject, from giving it a new dress, and presenting it to its members. The work of M. Durand-Fardel, "Traité Clinique et Pratique des Maladies des Vieillards," Paris, 1854, deserves special notice in this brief summary of the literature of the subject. Of this work I have availed myself on several occasions, and I heartily commend it to all who are desirous of becoming acquainted with the diseases of old age. It may repel and weary the reader by its diffuseness, a seeming, but pardonable, because often unavoidable, irrelevancy and repetition, as well as by the elaborate manner with which the writer has handled his favourite themes,—apoplexy and softening of the brain. Nevertheless, the publication of that volume is an era in the history of the branch of practical medicine of which it treats, and I repeat, the work should be in the possession of every practitioner who desires a knowledge of the diseases of the old, or who seeks to promote the advancement of this somewhat obscure and neglected portion of human pathology.

The experience of an individual, however varied and extensive, is necessarily limited in so wide a field, embracing nearly the whole range of practical medicine. I have therefore not scrupled to make use of the observations of others, wherever I could do so with propriety and advantage; but in every instance I have, to the best of my belief and ability, acknowledged the source from whence derived, or, when that seemed unnecessary, shown that I have borrowed the language employed. To originality the work has little or no claim; it professes only to present in an accessible form, blended with my own experience and observation, the scattered information, the floating knowledge, oral and written, the common property of our liberal profession. Should it fall into the hands of an unprofessional reader, he will be dis-

appointed, as it is solely intended for the medical practitioner. Nor has it any pretension to supersede the productions of writers on hygiène, among whom, as treating especially of the hygiène of the aged, deserve to be particularly named—Salgues and Revielle-Parise. The classical and philosophical treatise of the latter author is well worth the consideration of the physician, who will find in it, in an agreeable though popular form, many valuable facts and observations in relation to the physiology, hygiène, and pathology of the aged.

Respecting the intrinsic qualities of the work now issued, the reader must be the judge. I beg, however, a moment's indulgence while I observe, that it is at all times hazardous for a writer to speak of his own performances. In doing so he runs the risk of being accused of vanity on the one hand, or of conceit and temerity on the other. Should he offer an apology in presuming to add another work to the archives of the science embraced, or for the manner of executing the task he has undertaken, he subjects himself to the charge of affected modesty, or he may be suspected of truckling to the press, and of attempting to impose on the judgment of the critic. Of a truth, however, I submit this volume with unfeigned diffidence, and not without many misgivings; and, at the eleventh hour, I believe I might best consult my own interest were I still to withhold it from the public. It has been well said, that "an author of humble pretensions, conscious of the moderate extent of his acquirements, and possessing ordinary powers of reflection and judgment, is the severest critic on his own performances." No one can be more sensible than I am of the many imperfections of the work in arrangement, style, and matter. Besides the inherent difficulty of the subject, a main difficulty I have had to contend with was to keep the volume within bounds. A great book is an acknowledged evil; and I plead guilty. Remembering the advice of the eminent poet and acute critic now quoted, I have, as much as in me lay, exercised the power of rejecting my own thoughts; but,

notwithstanding this endeavour, I feel, like the great lexicographer, that sometimes the desire of accuracy has urged me to superfluities, and sometimes the fear of prolixity has betrayed me to omissions. In my anxiety to fill up a gap in our medical literature, I have throughout felt my inability to do justice to the subject; and it is not unlikely that I would have entirely abandoned the design, did I not consider it a duty every one owes, who has possessed the advantages of having been long attached to a public institution, to give his fellow-labourers in the profession the results of his individual experience and observation, more particularly when that has been of a somewhat special nature.

Placed for the last twenty-three years in an admirable position for studying the diseases and infirmities of the old, having, as physician and senior medical officer of Chelsea Hospital, upwards of five hundred aged people constantly under my eye, nearly all of whom are invalids in the strictest sense, very few below fifty-five years of age, and most of them varying from sixty to ninety and upwards, and having from among this number always daily between 60 and 70, oftener between 70 and 80, actually under medical treatment, the mortality of the whole establishment averaging above 13 per cent. per annum, the means I have enjoyed of investigating and treating the diseases of advanced life have been far from inconsiderable. Compared with the inadequate results now offered, I am fully conscious of the immeasurable deficiency, and more than ever made sensible of neglected opportunities, which I can never cease to lament. These considerations, this conviction, and a desire for further knowledge, retarded the progress of the work. It is due to inquirers—and I owe to myself to state—that the unusual delay that has occurred between its first announcement and its publication has entirely arisen through accidental circumstances over which I had no control. Scarcely had the first sheets gone to press when I was seized with a severe and protracted illness,

soon after recovering from which I was again attacked, and since then I have passed through several minor relapses. It was only in the interval of these, when still suffering, that I was able to proceed; so that, instead of a labour of love, it was often with me a hard task, the pursuit of literature under a load of difficulties enough to crush any one less determined to accomplish his purpose. This will also account for several errata which might otherwise not have occurred, and for such as may have escaped detection.

A professional writer, who may despair of being read or fairly appreciated, may console himself with the certainty that his labours have at least not been fruitless to the person chiefly concerned; and, with all its imperfections, I am encouraged to send forth the volume, in the belief that "he that waits for an opportunity to do much at once, may breathe out his life in idle wishes, and regret in the last hour his useless intentions and barren zeal;" while I am not without hope that its appearance and short-comings may awaken the attention of the profession to study with more industry the physiology, pathology, and therapeutics of the old, and especially induce the medical officers of public institutions, who have it almost exclusively in their power, to co-operate in advancing this important branch of medical knowledge.

ROYAL HOSPITAL, CHELSEA,
21*st August* 1863.

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ON

THE DISEASES AND INFIRMITIES OF ADVANCED LIFE.

PART I.

INTRODUCTORY.

CHAPTER I.

THE ANATOMY, PHYSIOLOGY, AND PSYCHOLOGY OF ADVANCED LIFE.

SECTION I.—CONCERNING THE BODY.

MAN is born, grows up, attains maturity, decays, and dies. Thus life is naturally divided into infancy, youth, manhood, and old age. Physiologists and pathologists have divided and subdivided these epochs with much ingenuity and refinement, but with questionable benefit to medical science. Old age itself has been parted into three or four different stages—viz., declining age; green or ripe old age; advanced old age; and decrepitude or second infancy. As it is only with advanced life or old age we propose to deal, the question at once suggests itself, at what period does it begin, and what are the indications of its commencement?

No sooner, it has been said, do the bodies of men arrive at full maturity, than they instantly begin to decline. When the frame has acquired its full length, it increases in thickness. "The commencement of this augmentation," says Buffon, "is the first step towards decay; for this extension," he adds, "is not a continuation of growth, which would communicate force and activity, but merely an addition of fat, which generally appears at the age of thirty-five or forty years; and in proportion as the quantity of it augments, the body loses its former lightness and freedom of motion; its gene-

rative faculty is diminished; its members turn unwieldy; and it acquires extension at the expense of strength and activity." The increase of bulk, breadth, and width of the body, which generally takes place soon after the completion of growth in length, is, however, partly, and not inconsiderably, due to increased muscular and bony development; and "a certain degree of corpulency, corresponding to a person's age, is a sign and effect of perfect health," instead of decay of the organism. The others are less doubtful signs when they occur, as occur they do, at a later period of life than indicated by the great naturalist, but a long interval of perfection is observed, after maturity has been attained, during which a just balance is preserved between the reparative and destructive forces, the assimilating and nutritive functions continuing equal to the waste of the system, and for an indefinite time effectually resisting the tendency to decay.

Growth in stature terminates, according to some physiologists, at twenty, but not, according to the extensive and accurate researches of Quetelet, until twenty-five or thirty. This observer finds that man reaches his maximum weight about the age of forty, woman later, somewhere about the age of fifty. Between twenty-five and thirty, man, the same statist ascertains, is in possession of his greatest strength. All his organs may now, therefore, be assumed to be in their fullest development and functional activity, but he does not then begin to decline. Nor does it appear consistent with the design of an All-wise Creator that the cessation of growth in man, and the attainment of maturity—the end and object of the progressive development of the whole organism from conception onwards—should be immediately followed by decay, that, in other words, the body should fall away almost as soon as it has been created and perfected. The analogy of insect life fails here. The moralist, besides, will take another view of the matter. Man was not created solely for physical purposes, neither for beauty nor strength. His intellectual faculties have not attained their maximum development with the completion of growth, nor till long after it has ceased, and the very fulness of corporeal maturity has been reached. "That which constitutes the man," says De Cartes, as rendered by Buckle, "is not the bones, nor his flesh, nor his blood. These are the accidents, the encumbrances, the impediments of his nature."

A candid examination of the question, viewed purely in a medical aspect, is not unattended with many difficulties. Advanced life and old age are relative terms scarcely measurable by length of years. Maturity slowly and insensibly glides into decline, so that the line of demarcation is imperceptible, and the distinction between these epochs entirely arbitrary, until nutritive and functional inactivity, with structural changes, reveal the degeneration which tyrant time effects in the different organs and tissues.

At forty-five or fifty many men begin to show indubitable signs of physical decay, though apparently in excellent health, while others, and not a few, more favoured, are vigorous and active at seventy. Original conformation, hereditary weakness of the organism and constitution, climate, pernicious habits, the anxieties, privations, disappointments, and heart-burnings incident to particular professions, positions in life, and temperaments, tell on the human frame, and occasionally manifest their influence at comparatively early periods. The soldier who has completed one or two-and-twenty years' service in the ranks, and who has not reached the age of forty, deprived of natural rest, leading a monotonous life, and breathing the tainted air of a crowded barrack-room, already shows in his wan and withered countenance, and by his failing strength and activity, the tear and wear of his constitution. Artizans, similarly circumstanced, evince the same indications of physical decay, while as yet young in years; and hardly a day passes without the observer meeting old men at fifty, and decrepitude at sixty. This is not, however, the ordinary course of nature, but a premature old age, and decay hastened and flowing from one or more of the causes now hinted at. The discharged soldier regains the freshness and bloom of manhood, and the lawyer, the official or merchant, enjoying an easy and dignified retirement, loses, with his anxieties, his cares, and responsibilities, the mien so well known that bespeaks the commencing return of the body to the earth which gave it.

"Plants and animals," says Canstatt, "describe an imaginary semicircle. They commence from a vital point, are gradually evolved until they attain their climax, and then they as gradually decline to death. The segment of the circle from the climacteric point to death is old age." Canstatt terms this the Involution-period, as the antagonistic segment is the Evolution-period. This

involution-period is characterised, physiologically, by a return of the organism to the commencement of the evolution-period, although its direct course is to its mother-earth.* The former, or evolution-period—the period of growth—is marked by rapid development, gradually lessening in force as age advances; the latter, or involution-period, the period of old age or natural decline, by slow and at first almost imperceptible modification in function and changes of structure, increasing with accelerated speed as time rolls on. The period of growth and attainment of maturity, and the period of decline and natural death,—the passage from the cradle to the grave,—may thus, in an exaggerated manner, be compared to the motion of a projectile which, as it ascends, loses its velocity, till it reaches the turning-point, when, for a moment, it seems almost stationary, and then slowly descending, acquires additional momentum as it approaches the earth. Apparently availing himself of the idea suggested by Canstatt, Reveille-Parise, and after him others, have diagrammed life by an obtuse curve. Trisecting this curve, the centre portion represents the meridian age gradually passing into decline. As this lamented philosopher and agreeable writer regarded the attainment of maturity as but a prelude to a long career of bodily enjoyment, the centre of the curve is nearly a straight line.

Symptoms and Signs of Natural Decay.—Under ordinary circumstances, natural decay sets in between fifty and fifty-five, though it is often deferred to a later period. Unless accelerated by accidental disease, want, injury, or mental suffering, some time elapses before it declares itself, and it is then slow, though ever progressive. So reluctant is man to confess this growing weakness, this downward course, that, long before he admits it, or is even aware of it himself, the changes wrought on the system by advancing years, as well as the altered character of his attitude, gait, and movements, are palpable to others. About this period, or earlier, the accumulation of fat, already observed, increases with rapidity, particularly in the abdomen, if this is the tendency. In other instances, however, an opposite tendency exists, and the individual grows spare and thin, the face, and especially the temples, shrinking, —"the lean and slippered pantaloon with shrunk shanks," of

* Brit. and For. Med. Rev., vol. xvii. p. 101.

the immortal poet. The corpulent—"in fair round belly," often retain their *embon-point* to the extreme of life. Again and again octogenerians are examined, in whom, underneath the skin of the chest and abdomen, an inch or more of fat is found, while the mesentery and omentum are loaded with it. Generally, however, the deposition partially disappears, if not wholly, long before then; and people who have been corpulent frequently grow lean at sixty. Between forty-five and fifty man is still in full vigour, though perhaps inclining to corpulency. At fifty his joints grow stiff, and his muscular energies begin to fail; stooping or unusual positions, mounting on horseback, &c., are then irksome; and at fifty-five or sixty, feeling that he is soon painfully fatigued, and long in recruiting his exhausted strength, he gladly ceases to exert himself, though possibly still capable of much bodily labour, and he prefers his carriage or pony to the road.

Failing strength and activity, weakening of the nutritive, organic, and reproductive functions, and shortness of breath on moderate exertion, are among the earliest indications of physical decline, even in the most healthy. Women enter upon this period earlier than men, say between forty-two and forty-five, when the menses usually become irregular and cease; but a species of rejuvenescence is then often perceived in them, and they more slowly decline with the lapse of years than the opposite sex. This is not the generally received opinion, but close observation, and the test of longevity, confirm it. The early fading softness of the skin, the occurrence of wrinkles, the frequent assumption of masculine features and character, to the extent of a beard and harshness of voice, and a revolution in emotions, feelings, and sentiments, are evidences of great changes, physical and moral, though not of positive and rapid decay of the organism. Men are frequently gray or bald at forty or earlier. The eye-sight also sometimes begins to fail at forty-five or sooner; but neither grayness, baldness, nor impairment of vision requiring the aid of glasses, are so certain signs of approaching old age, or of physical decline, as the reduction of nervo-muscular power, the growing inactivity of the vital, organic, and reproductive functions, and the embarrassment of breathing alluded to.

This "want of breath," as it is commonly called, often early observed and complained of as a growing infirmity, proceeds, in

the first instance, from less active habits promoting the slowly increasing impairment of the respiratory in common with the other functions; but as life advances, it is connected with important alterations in the lungs themselves, the walls of the chest, and condition of the heart and blood-vessels, independently of actual disease of any portion of the respiratory organs. Nor, at the commencement, are the diminished muscular power, the inability for sustained bodily labour, the disinclination for exertion, and the love of ease, all characteristic of the turn of life, the effect of any appreciable change in the muscles themselves, which may still retain their bulk and normal microscopical appearance, though they necessarily lose their firmness in default of use, but seem mainly to depend on failing nervous energy. In the progress of time, however, they, too, are subjected to great and important interstitial alterations, hereafter to be noticed, which materially affect their action, and expose them to many accidents as life advances.

Physiologists and systematic writers have still more arbitrarily fixed the period of decay. As the result of the doctrine of crises and the influence of the supposed magical number nine, the Greeks and Arabians divided life into septenary epochs or climacterics, which, after the first seven, were regulated by a multiplication of the figures, three, seven, and nine, into each other. The forty-ninth year, produced by seven times seven, was regarded by the Greeks as the turning-point; the sixty-third, produced by the multiplication of seven by the magical number nine of the Arabians, and the eighty-first, or nine times nine, were called the grand climacterics, "as being those in which the life of man was supposed to have consummated itself, and beyond which nothing is to be accomplished but a preparation for the grave."* The sixty-third year, especially, was supposed to be so menaced with the storm of age, that the ancients usually congratulated each other on passing it. In the last century we find Evelyn thoughtfully recording in his diary his entrance "into the great climacterical of sixty-three." Popularly, though erroneously, this epoch is still dreaded by many, and Quetelet rather countenances the opinion of its being a critical period, a period of danger; for

* Good's Study of Med., by S. Cooper, vol. iii. p. 227.

"from sixty to sixty-five years of age," he observes, "viability loses much of its energy, that is to say, the probability of life then becomes very small."

It is perhaps more curious and interesting than profitable to mention, that the Chinese divide life into decennial periods, and to every decade they apply some special designation :—20 is "youth expired;" 30, "strength and marriage;" 40, "officially apt;" 50, "error-knowing;" 60, "cycle-closing;" 70, "rare bird of age;" 80, "rusty-visaged;" 90, "delayed;" 100, "age's extremity." (Sir John Bowring.) Flourens, the able secretary to the Academy of Sciences, Paris, extends the duration of manhood from forty to seventy, "at which," he says, "old age begins." Distinguishing with the ancient physiologists and M. Reveille-Parise, two kinds, or rather two provisions of strength,—the forces in *reserve* and the forces in *use*,—this author, in reply to the question, what is the fact, the character that reveals old age, answers in other words, but much in the same way as above, that it is the progressive diminution of the force in reserve, of which there is a profusion in youth, that constitutes, physiologically speaking, old age. "The hidden resources," he observes, "the reserved and superabundant powers of youth, then no longer exist."* This declension of vital power and general vigour sooner appears, however, and is seldom delayed till sixty, far less to seventy.

If, for the sake of convenience, we adopt any of these divisions of the later stages of life, we shall not do amiss by following, though on different grounds, the epochs of the ancients, and beginning with forty-nine or fifty, as commencing senility, which age is usually inaugurated, as just observed, by diminution of the whole vital energies of the organism and the supervension of some of the infirmities of declining years. Therefore, in speaking of advanced life in the following pages, I wish to be understood as meaning a period commencing at fifty or fifty-five, which I propose extending to sixty or sixty-five. By mature or confirmed old age, I mean the period extending from sixty-five to seventy-five or eighty, and by decrepitude, or second infancy, the period onwards from eighty to the grave. These latter designations correspond with the figurative expressions, the autumn of years and

* Flourens on Human Longevity, translated by Martel, pp. 29, 30.

the winter of life, just as childhood and maturity have been called spring-time and summer of life.

Physiological Modifications.—The general failure of the powers of life, disclosing the advent of old age, progresses in an accelerating ratio with the lapse of years. At first chiefly manifested by diminution of nervo-muscular energy and weakening of the generative function, the inroad of time declares itself more and more obviously by phenomena evincing a steady decline of the vital activity of the whole organism, and a gradual ascendancy of chemical and mechanical laws, hitherto entirely subservient to the vital forces. Digestion and assimilation, languishing, and, together with the respiratory process becoming more and more laboured, the blood itself, imperfectly formed, is altered in its vital and nutritive qualities, and the various tissues, rendered effete, are no longer replaced in their normal condition or completeness. According to Simon, the vital fluid now contains less of solid constituents, and especially of blood-corpuscules. By a table he has constructed from numerous analyses of Denis, the blood being considered healthy, it appears, that from the period of maturity, or rather sooner, to middle life, the proportions of the corpuscules and of the solid constituents continues large; from that time to advanced age they are subject to a decrease. Becquerel and Rodier observe, that after the age of forty or fifty there is a decided and progressive increase of cholesterine in it.* An atrophic condition of the blood is thus established, consisting, as Wedl† defines it, in the diminution of its elementary parts, and the increase of the fatty and aqueous contents. The decline of the respiratory function is shown by a progressive decrease in the vital capacity of the chest after the age of thirty,‡ and by a gradual diminution of the amount of expired carbonic acid after the 40–45th year of age.§ The immediate consequence of the imperfect formation of the blood, and its insufficient decarbonization, is its unfitness for the general purposes of nutrition; and the predominance of venous blood is one of the longest recognised and most remarkable characteristics of declining age.

* Simon's Animal Chem. by Syden. Soc., vol. i. pp. 235, 236.

† Wedl's Path. Hystol. Syd. Soc., p. 130.

‡ Hutchinson, Med. Chir. Trans. vol. xxix.

§ Simon, *loc. cit.* p. 129.

All the senses are blunted, absorption is inactive, the nervous energy declines, and the circulation becomes more languid. MM. Leuret and Métivié, however, declare that, contrary to the generally received opinion, the pulse is more frequent in the old than in the young. They found it averages 78 between sixty and seventy years of age; 75 between seventy and eighty. MM. Hourmann and Dechambre* and Dr Pinnock,† corroborate the accuracy of these observations, which also correspond with my own results, obtained from a large number of healthy subjects. I may return to this question when treating of the diseases of the circulatory system.

With the progressive failure of the vital and organic functions, imperfection of the respiratory process, defective nutrition, and metamorphoses of the tissues, obstructed capillary circulation, and decreasing nervous energy, the animal heat diminishes in proportion, so that in the extreme of life the difficulty with which it is preserved and developed is one of the many inconveniences and dangers that assail the aged, and a not unfruitful source of mortality among them in winter.

All the secretions, excrementitial and recrementitial, are more or less modified in quantity or quality, if not in both respects. The salivary, gastric, biliary, and pancreatic secretions do not appear to have been made the subject of experiment or observation in relation to age; but there seems reason to believe, that as life advances they are diminished in amount, less rich in their solid constituents, and indifferently adapted for the important purposes they serve in gastric and intestinal digestion. The drivelling of old age is not the result of increased secretion, but of the altered form of the mouth, muscular relaxation and debility, and diminished excitability and sympathy. Deficiency of the intestinal secretions is one of several causes of the frequency of constipation in the aged. A marked decrease of the insensible perspiration takes place, and with the lapse of years and the consequent changes in the structure of the skin and its appendages, it almost entirely ceases; sweating can hardly then be induced by any amount of heat or exercise, and sudorifics too generally fail in their intention. This dryness of the skin and impairment

* Archives Gen. de Médicine, 1835.

† American Journ. of Med. Science, July 1847.

of its functions, have a most important influence on the physiological condition of the economy as well as on the phenomena of disease. The spermatic fluid is also more sparing, thinner, and deficient in spermatozoa, which gradually and ultimately disappear altogether, and, with their absence, the procreative faculty becomes extinct, if the desire and capacity for sexual congress have not already ceased. As observed by Gregory, instances are reported, however, of old men who have been strenuously addicted to venery after they had completed a century; nor is it a doubtful, or even rare circumstance, for a man to become a father at fourscore. Perhaps the most obvious influence of increasing years on the secretions is the modification which takes place in the urine. This excretion is less concentrated and less rich in urea, uric acid, and the fixed salts (earthy phosphates, chloride of sodium, alkaline sulphates and phosphates) than in the prime of life.* It is also usually more turbid, from an undue admixture of mucous and epithelium, and it more rapidly decomposes and falls into a state of putrescence.

Thus the decline of the vital power of the organism, and the deterioration of the whole of the functions, advance with steady progress from year to year, and, it may be said, from month to month. "Of the diminution of formative power," says Carpenter,† "we have evidence in the entire absence of any attempt at new development, in the less perfect and more tedious manner in which the losses of substance occasioned by disease or injury are recovered from, and in the gradual degeneration of the organism. Either the quantity of new tissues is inadequate, so that the bulk of the organs is obviously reduced, or the quality is rendered imperfect by the production of structures in various phases of degeneration, in place of those which have been previously developed in their fullest completeness. And when neither disease nor accident shortens what may be considered the normal term of life, there is a gradual diminution of every kind of vital activity, until it entirely ceases; the formative power seems progressively to exhaust itself, until no assistance from artificial heat, no supply of the most nutritive food, can any longer avail in the generation of new tissue; and the nervo-muscular energy gradually declines, until at last even those actions

* Simon, *loc. cit.*

† Human Physiology, p. 131.

on which the circulation and respiration entirely depend can no longer be performed, and with the cessation of those functions the life of the entire organism becomes extinct. Such may be considered to be the mode in which death normally occurs."

Anatomical Changes.—The physiological phenomena are still less remarkable than the physical changes of advanced and declining years. These disclose themselves to the least observant, and a man of ordinary penetration has seldom any difficulty in discovering the destructive effects of time on others, though, it may be, not on his own person. So familiar are the outward and visible signs of decay, and so often have the appearance, bearing, and form of old age and decrepitude been described by poets and philosophers, that I refrain from depicting them, more especially as they have no practical relation with the purport of this work.* Not so the modifications and alterations of structure in the organs and tissues known only to the anatomist. Had a strictly chronological order been pursued, perhaps these ought to have been first pointed out; but long before they are appreciable, the declining energy of the vital powers and different functions is revealed, though more and more clearly with the progressive advancement of the structural changes; for reciprocally influencing each other, as the machine wears out, all its actions increasingly weaken; and life gradually ebbs away, till at length the manifestations of vital power are so greatly reduced, that in advanced decay of the organism, in extreme old age, man seems rather to vegetate than to live; and the body, dying by inches, yields under the efforts combined for its destruction.

* Shakspeare has faithfully drawn them, and Crates, an ancient comic poet, and a celebrated actor, has left us the following graphic picture and reflections on old age:—

"These shrivelled sinews, and this bending frame,
The workmanship of time's strong hand proclaim;
Skilled to reverse whate'er the gods create,
And make that crooked which they fashion straight.
Hard choice for man! to die, or else to be
That tottering, wretched, wrinkled thing you see:
Age, then, we all prefer; for age we pray;
And travel on to life's last lingering day.
Then sinking slowly down from worse to worse,
Find Heaven's extorted boon our greatest curse."

Urquhart on "Classical Learning."

Wasting or withering, condensation, and dryness, are the most obvious changes effected in the organism by the secret operations of time. "In proportion as we advance in years," says Buffon, who is often quoted without acknowledgment, "the bones, the cartilages, the membranes, the flesh, the skin, and every fibre of the body, become more solid, hard, and dry. Every part shrinks and contracts, and every movement is performed with slowness and difficulty." It is the atrophy of the intervertebral cartilages, which are otherwise altered, that occasions the peculiar stoop of the aged, the drooping of the head, and the shortening of the neck and spinal column generally. The collapse of the whole frame partly arises from the same cause, partly from the wasting of the muscles and cellular tissue, and disappearance of the interstitial and accumulated fat. The bones also are diminished in bulk, drier, lighter, more earthy, and more easily fractured. Their cancelli are enlarged, the septa thinner; the medullary substance is more greasy than in the adult, and often loaded with oily fat and a dark-red sanious fluid. In the skull the different sutures are less conspicuous, sometimes nearly effaced, the diploe almost disappears, and both tables coalesce. Digital depressions frequently exist on the inner table, marking atrophied portions, which present a diaphonous appearance when held up to the light. The true ribs are wholly ossified in about a third the number of persons above sixty years of age, the first and second after that, always; the different pieces of the sternum are soldered together, and occasionally even the vertebræ are thus united with osseous matter. The absorbent and secreting glands waste, and all the internal organs decrease in bulk and weight. A solitary exception to this law of nature is afforded by the heart, which retains the size it reached in manhood, if it does not actually increase in dimension with the advance of life—a conservative provision, enabling it to force the nutrient fluid through the rigid capillaries and resisting structures of old age. Nor is the chronic enlargement of the prostate and bronchial glands, so commonly encountered in declining life, but an exception. These also obey the universal law, and shrink as years advance. Their enlargement is an abnormal condition, their atrophy, or normal bulk, the rule; and the prostate, in particular, is nearly as often diminished as augmented with the progress of years;—a fact, until lately at least, at variance with a

pretty generally received opinion; for hypertrophy of this gland, a disease almost peculiar to advanced life, discloses itself by a series of important symptoms, while its atrophy proceeds silently, and is only discoverable by *post mortem* examination.

Proceeding from the same sources as occasion wasting of the different structures,—viz., the impoverishment of the blood and the decline of the vital powers and nutritive function generally,—a deeper and still more important, because more serious and dangerous, mutation occurs, which still further aggravates and accelerates the decay of the entire organism. This is a process of degeneration of a slow and undefined nature, though one that very clearly shows the ascendancy of the chemical laws over the vital forces as age advances, by which fatty and calcareous matter are deposited into, or instead of, various structures heretofore free from them; or, where these have existed naturally, they are now deposited in increased quantities and in different forms. Examples of these degenerations are seen in the arteries and in the bones, the former becoming calcareous, and the latter acquiring an unctuous feel, a yellow hue, and letting loose much liquid fat on being broken or sawn. In the arteries and bones, both these degenerations frequently coexist. Of all the arteries, the aorta is their most common site. Atheroma, in other words fatty degeneration, generally appears to precede calcareous degeneration in these cases, the fatty deposit subsequently giving way to the calcareous, and both existing together in different phases or proportions in the same locality; but both forms of degeneration sometimes occur independently of each other, showing an independent origin. The cerebral arteries are, nearly equally with the aorta, prone to these changes; and hence the frequency of softening of the brain, congestion, anœmia, and sanguineous apoplexy in the aged. Fatty degeneration of the muscles, voluntary and involuntary, is also common. The intermuscular, cellular, and adipose tissues are sometimes alone the seat of excessive fatty deposit, the muscular fibres retaining their normal character, or being only atrophied through the pressure of new or increased fatty deposit and deficient nutriment; but in other instances, along with the excessive deposit, there is a complete metamorphosis of the muscular structure. The heart is a frequent seat of both these forms of fatty degeneration, which also may exist separately or combined. Mr

Canton regards the well-known *arcus senilis* as fatty degeneration of the cornea. Wedl, however, and Busk seem to think that this change is the result of simple atrophy of that structure with consequent opacity of the transparent blastema between its layers, which is transformed "into a fine molecular substance." A third and frequent senile degeneration is the cartilaginous, plates of which are often met with in the membranes of the brain, particularly in the dura mater, in the arachnoid of the spinal marrow, and also in the pleura and peritoneum. The spleen is sometimes enclosed in a cartilaginous cyst, which occasionally exceeds the eighth of an inch in thickness. Cartilaginous or horny patches are still more common on the inner coat of the aorta, where, according to Hasse, they never ossify. Fatty degeneration, calcareous degeneration, and cartilaginous or horny degeneration of this vessel, frequently coexist. Another common form of senile degeneration is the pigmental, in which the parts affected assume various shades of brown or black. The tawny hue of the skin, and dirty-brown or drab colour of the medullary substance of the brain and spinal marrow, are instances of the former, as the slate or ash colour of the mucous membrane of the stomach and intestines are examples of the latter. The black colour of the bronchial glands and other glandular structures, the black spotting and streaking of the lungs, which strongly contrast with their pale gray colour in the adult, are still more remarkable instances of black pigmental degeneration, or, as it has been called, melanin. Tubercles in the aged, wherever situated, are also often impregnated with this black colouring matter. Lastly, a very common degeneration in the aged is the fibrous, often found blocking up the arteries at the base of the brain, attacking varicose veins, and impairing or destroying the elasticity of the air-cells of the lungs. The reader is referred to the body of the work for further observations on the anatomical modifications and character of the principal organs and tissues in advanced life,—an arrangement which has been deemed the most convenient and practical, though this would seem, in natural order, the appropriate place for an account of these changes.

SECTION II.—CONCERNING THE MIND.

State of the Moral and Intellectual Faculties.—If the aged lose their corporeal vigour and activity, and are exposed to many infirmities which afflict the body, and rob it of some of the pleasures of other years, the understanding and the higher powers of the mind, up to a certain epoch at least, and often to the very latest period allotted to the life of man, preserve, if they do not actually acquire, increased energy and precision. More slow in reaching maturity, reason and judgment have scarcely attained their highest development before the signs of bodily decay appear. Still gaining by daily experience and continual exercise, these faculties long retain their solidity, pre-eminence, perfection, power, and influence, individually and socially. Gray hairs have ever been emblematical of gravity and wisdom. Flourens observes,—"The moral aspect of old age is its best side. We cannot grow old without losing our *physique*, nor, also, without our *morale* gaining by it." Cicero has thrown a charm over old age, and shown, by the internal sources of happiness it possesses, that the closing years of life may not only be passed comfortably and agreeably, but usefully. Who has not again and again read with renewed delight his "Treatise de Senectute?" Addison and Steel in the "Spectator," and Johnson in the "Rambler," have also eulogised the intellectual advantages and pleasures of old age, and surrounded it with many attractions. And "though in old age," says Blair, "the circle of pleasures is more contracted than it has formerly been, yet within its limits many of those enjoyments remain which are most grateful to human nature. Temperate mirth is not extinguished by advanced years. The mild pleasures of domestic life still cheer the heart. The entertainments of conversation and social intercourse continue unimpaired. The desire of knowledge is not abated by the frailty of the body; and the leisure of old age affords many opportunities for gratifying that desire."* With minds thus enlarged, enlight-

* Were it necessary to offer an apology for quoting from these and like sources in a purely professional work, I have the precedent of Sir John Floyer, who recommends, as an antidote to some of their infirmities of mind, "Mr Richard Steel's Discourse Concerning Old Age;" and referring to an observation of Sir Henry Halford, in his paper on Climacteric Decay—which observation, by the way, was itself borrowed from Cicero—Dr Good says, "If not strictly medical, I have

ened by experience and elevated by religion, "retiring more and more from public observation to domestic scenes and serious thoughts," the aged have higher enjoyments in meditation and reflection, "in the retrospect of a life well spent, and the recollection of virtuous actions," than are ever afforded by the sensual gratifications of youth, or by exercises and pleasures requiring bodily strength and activity long since departed. Their pursuits are of a loftier and purer nature, and the very privileges of old age, arising from the natural decay of the frame, are sources of inward satisfaction. No longer "under temptation to repeat the follies of youth, they at present despise them." Sagacious, prescient, contemplative, cheerful, and indulgent to the innocent pleasures of another age; unambitious, calm and sedate, peacemakers—they secure the veneration and attachment of the young, the respect and deference of those less advanced in years, and still striving for worldly advantages, distinction, and honours. With pursuits and feelings in common, approaching the termination of their earthly career, and looking peacefully and hopefully forward to the great future, they dwell in harmony with their neighbours, and in unreserved communion with their advanced companions. Men thus happily constituted and placed often live to extreme old age. The virtuous, placid character of their minds and habits is conducive to further length of years. Age then presents itself in its most attractive forms, and sheds a lustre and a blessing around it. Most old people, free from bodily suffering, are really cheerful and contented. All are not alike, but "the peevish, fretful, passionate, unmanageable, and covetous," are exceptional. These defects or vices are generally the result of disease or original character, and not, as Cicero observes, the faults of old age.

In illustrating the intellectual character, habits, and tendencies of the aged portion of society, Sharon Turner, in his "Sacred History of the World," observes,—"At sixty the ties of busy and social life become loosened upon us; we are no longer climbing, competing, or struggling, or we can no longer do either with

very great pleasure in seeing it put forth from so high an authority, and finding its way into a professional volume." When a writer does not trench on practical medicine, or indulge in questions of a truly professional nature, I do not hesitate to cull from him whatever may seem advantageous for the elucidation of the subject under consideration. This note will prepare the reader for what follows in the text.

effect. The stronger and more enterprising are pressing forward themselves, and age finds itself compelled to leave to them what it has become unable any longer to pursue. Hence the constitution of our nature turns and weans the mind from the ambitions and excitements of worldly life, or makes disappointments the result of any pertinacious efforts to be the bustling actors and contenders that we may have been before. The very changes in our body prevent and disincline us from being any longer wrestlers or combatants in that arena which we are about to be withdrawn from. Our frame and functions have been expressly constructed so as to produce this effect upon us at this period of our earthly duration. These alterations disable the individual spirit from being or doing any longer what it was and did in its younger capacities. The internal changes increase as we advance to seventy years and beyond; and thereby the mind is brought into a state of vacancy, quiet, and serenity, as to all the endangering, agitating, and occupying pursuits, passions, projects, conflicts, and perturbations of the present world, which, by their opposing effects, exclude the due consideration of any other. To all these old age brings its natural anodynes,—the sedatives that act most efficaciously on the ethereal nature of its vivacious personality, and which gradually draw the spirit to that pausing tranquillity of thought and feeling, that suspension of all that would impede its better thoughts and further improvement, which peculiarly suit the grander objects that are now awaiting it, and to which Nature is pressing it with an accelerated force and irresistible certainty. . . . . Protracted years thus enable and dispose the aged to give that more direct and continued attention to the next stage of their being, to which they are unavoidably advancing, but which, amid the activities and enjoyments of younger days, they were less able or less inclined to think of. . . . . The bodily changes are likewise admonitions to it, to regard itself as a being who is not to be much longer a residing or abiding portion of the present world, but who has decidedly commenced his journey to another, or who soon will be conveyed to it. To this region, though its position and circumstances be involved in obscurity, age then invites us, and peculiar circumstances are always arising to give its thought this direction. . . . . Age outlives every day more and more of its former hopes and attachments, and of

all connected with them. Its preceding friends and acquaintance die off in every succeeding year—often in every sequent month. Those who were most like itself, who grew up with it, and with whom it had most sympathies, most views and hopes in common, disappear to return no more. It finds itself surrounded by others, who, because they are younger, have not the same ideas and feelings, nor are forming the same plans or prospects. All things become newer and stranger to it. The state of public events, also, has undergone mutations as striking, and passes into a contrast which increases with our years. Hence old age, if it reflect on itself as others think about it, cannot but feel itself less adapted to the world around it,* which, from its own novelties, deems its seniors as no less dissimilar to them, and at times incompatible with them, or with their views and purposes. There is an impression in all the classes younger than itself, that age ought to be attending more to the better country into which it will soon enter than to that in which it is still lingering. The more it is seen to do so, the more it is respected; and if it act thus, the more respectable it will become, and the less it will be in the way of its juniors; for it will be pursuing objects with which no others will interfere.† Age can thus be ever seeking and enjoying a happiness of its own, which cannot offend or injure any one. In addition to this personal benefit, we may add, that old age, in any moderate degree of health and efficiency, is the finest and most approved state of the human mind, and is in the most favourable circumstances for self-improvement; and if it be intellectually and morally employed, as in every class it may be, it will then be the happiest and most ameliorated condition which human nature can experience in its present localization." These are noble and consolatory thoughts for those entering the declining period of life, nobly expressed, and not unworthy of Cicero himself. The length of the quotation, for which it seems

* See Dr Blair on the Duties and Consolations of the Aged.

† "The cheerfulness of age is widely different from the levity of youth. Many things are allowable in that early period, which, in maturer years, would deserve censure, but which, in old age, become both ridiculous and criminal. By awkwardly affecting to imitate the manners and to mingle in the vanities of the young, as the aged depart from the dignity, so they forfeit the privileges of gray hairs." (Blair, *loc. cit.*)

hardly necessary to offer an apology, reluctantly compels me to withhold some further remarks of this virtuous philosopher and elegant writer on the intellectual position and utilities of the aged, equally striking and not less interesting to the student of the psychology of old age,—that period of this life bordering on the eternal, "which, looked at, carries our thoughts involuntarily to the region of the departed, and silently reminds both of death and immortality."

Advanced life, and consequent decay of the organism, are, then, not necessarily productive of, or accompanied by, inactivity of the mind, dotage, or decline of the intellectual faculties. These are the last to yield under the pressure of years, and, as relates the body, the inexorable law of nature. It is given to few to retain full possession of corporeal vigour at sixty, while generally at seventy the failing energy of the vital endowments, and the numerous changes and infirmities that beset the frame, tell the wise man that he is approaching the end of his journey here, and admonish him, as time still rolls on, of the rapidly narrowing span of his existence. But at sixty, seventy, and upwards, the intellectual powers, where there has been no incidental affection of the brain, or serious persistent disease elsewhere, weakening its higher functions in common with other organs, are still capable of sustained labour and successful exertion. The reader may recall to mind many living instances in the church, at the bar, on the bench, in the senate, and in his own profession, whose mental vigour age seems incapable of deadening. Some of the most lively productions of several of the greatest writers, ancient and modern, have been the work of the maturest age. "Let it be a source of consolation," says Disraeli,* "if not of triumph, in a long studious life of true genius, to know that the imagination may not decline with the vigour of the frame which holds it. There has been no old age for many men of genius." And Cicero tells us that the intellectual powers remain in the old by study and application. When himself sixty-three he wrote his treatise on old age,—"a work universally admired as one of the most interesting pieces that have descended to us from antiquity," and the composition of which, he declares, was so delightful to him, that it not only wiped off all

* Amenities of Literature, vol. i. p. 281.

the annoyances of old age, but rendered old age even easy and agreeable. Quintilian's "Institutes" were written when he was sixty. Plato died in his eighty-first year, while writing. Gorgias the Leontine continued his literary labours after completing one hundred and seven years. Isocrates wrote his book called "Panathenaican" in his ninety-fourth year. Theophrastus, when ninety-nine years old, wrote his "Characteristics." Cato learned Greek when past threescore. Sophocles wrote tragedies up to the period of extreme old age. "In our times Voltaire composed his 'Tancrède' at the age of sixty-six; and Fox was studying several languages when death robbed his country of his services." Blair wrote out anew in his own hand, and in many instances recomposed, his five volumes of sermons after he had completed his eighty-second year. His last sermon was written with great dignity and eloquence; and during the last summer devoted to the preparation of these sermons, he exhibited a vigour of understanding and capacity of exertion equal to that of his best days.* The author of the much-admired philosophical novels "De Vere" and "Tremaine" was revising some of his works, and actively engaged in literary composition, when he was carried off at the advanced age of eighty-five. There were no indications of failing intellect in this singularly agreeable companion and powerful writer; and up to the very day of his death the activity and clearness of his mental faculties were very remarkable. "The era of threescore and ten," says Necker, quoted by Disraeli, "is an agreeable age for writing; your mind has not lost its vigour, and envy leaves you in peace." "The literary character," adds the latter author, "has been fully occupied in the eightieth and ninetieth year of life. Isaac Walton still glowed while writing some of the most interesting biographies in his eighty-fifth year, and in the ninetieth enriched the poetical world with the first publication of a romantic tale by Chalkhill, 'the friend of Spenser.' Bodmer, beyond eighty, was occupied on 'Homer,' and Wieland on 'Cicero's Letters.'" Of James Watt, Lord Jeffrey says, "His friends," speaking of a visit which the great engineer paid to Scotland when upwards of eighty, "in that part of the country never saw him more full of intellectual vigour and colloquial animation, never more delightful or more instructive." The Lord Bacon of our day, remarkable for

* Life and Character of Dr Blair by Dr Finlayson. 1823.

the versatility of his genius, still thunders forth with characteristic eloquence and the energy of former years, though more than eighty summers have passed over his head, and is even actively, it need not be said usefully, employed in developing the phenomena of nature, the science of optics, and social economics. A man of intellectual vigour, uncommon address, prescient, playful, and ever ready, guides the helm of State at the advanced age of seventy-seven; and a Nestor, equally remarkable for his extraordinary memory, precision, logical clearness, and exactness of thought, and for the eloquence of his language, counsels and forewarns his countrymen with rare prudence and irresistible persuasion; yet he is in the very winter of life, having completed his eighty-ninth year. But we must stop, since it would be easy to extend the list of past and living instances of men in the last term of their earthly career, still possessing, in their fullest completeness, memory, imagination, judgment, and intellectual activity.

Senile Dementia.—All flesh is grass, but thus the immortal portion of our nature asserts its independence, and long outlives the decay that surrounds it. A period generally arrives, however, in the progress of years, when, like the frame itself, the intellectual faculties betoken the destructive effects of time. The brain, the organ of thought—or, as Dr Ferguson has ingeniously recently put it in his classical prefatory essay to Gooch's work on the Diseases of Women, printed for the New Sydenham Society—"the *medium* by which we think," connecting the mind with the external world, more or less changed in its intimate structure, imperfectly nourished by an imperfectly formed and vitiated condition of the blood, and mysteriously influenced, as the centre of sympathy, by permanent alterations in different functions of the economy, can scarcely escape manifesting, by a partial decline of its higher yet still subordinate offices, the damage sustained through so many sources of injury. The eye, the ear, the senses of taste and touch, are alike partially unfitted for the discharge of their respective offices by physical changes, sometimes wholly inappreciable in the organs themselves and in the nervous system, without the superior principle itself being affected. So to speak, the memory of these senses survives after "the physical instruments by means of which impressions are communicated through the nerves to the brain" (Brodie), and by it to the mind, are destroyed, and are often

recalled, with great accuracy and freshness, though the organs have wholly or partially ceased to discharge their functions, and may be dead to impressions from without. Nothing, to my comprehension, so clearly demonstrates the independence of the intellect. To see with the mind's eye is equally the privilege of the blind, though no longer capable of enjoying the beauties of nature, nor fitted to transfer them to the canvas. So it is with the brain. That which is transmitted to it, while the organ is in the process of natural decay, fails to make the impression it formerly did in its healthy and normal condition; and, like a broken instrument, it ceases to evolve, convey, or produce the phenomena in their wonted perfection and harmony. The different faculties of the mind, some more and others less, are weakened. What is called senile dementia consists in diminished power of the understanding, slowness of perception, and difficulty in associating correctly and consecutively the impressions made on the mind. These are either evanescent or mixed up with former impressions, leading to confusion of thought and erroneous inferences. The present is partly or wholly ignored, and the mind is continually reverting to past events and circumstances, which are strangely blended with more recent occurrences. Life becomes a dream, and dreams then assume a reality which, either in the waking or sleeping state, move to action. Thus the worn out, decayed practitioner, reduced to this state of mental weakness and incapacity, plans his morning visits, and would set out to fulfil his engagements; the tradesman is busy with the operations that formerly occupied his attention, and is ready to execute them; a farmer thinks of his crops, and a soldier of military duty. At the moment I am writing, an octogenarian drummer, in Chelsea Hospital, is almost constantly looking for his "lost" drum, and preparing for parade; an old artillery driver, afterwards a farmer's servant, is hard at work with his team; and a thrifty old lady of eighty-five years of age, the mother of a numerous family, is seldom seen without her needle plying on useless rags.

Decay of Memory.—Of all the mental powers, memory seems most intimately dependent on organization, or, in other words, connected with it; for this wonderful faculty no more belongs to matter than sight belongs to the eye or hearing to the ear. It is frequently impaired, without the other powers of the mind being

affected, by injury to the brain or by sympathy with the digestive organs. A blow on the head, a ball glancing off the skull, even without fracturing the bone, a partial softening of the brain, a slight sanguineous effusion into its substance, or a stroke of palsy, weakens this faculty, and occasionally modifies it in a singular manner, either completely or partially, in some one of its varieties. Is it surprising, therefore, that it should be one of the first of the mental powers to break down in the progress of years, as the brain slowly changes in structure? Gradually the impressions made on this organ become fainter and fainter as old age advances, till at length, in certain cases, the power of remembering the most recent conversation ceases almost as soon as it has been held, and the knowledge of passing events hardly exists. Generally, the failure of memory is first evinced in neglecting the names of persons, to the great annoyance of the individual, who, though he may still possess the power of recalling all the circumstances he may wish to represent, is still unable to name the person of whom he is speaking. He meets him daily, and yet sometimes he cannot recall his name, when suddenly, by some unknown mental process, without any effort, it flashes before him quick as lightning. The names of things not very familiar also fade away. Frequently this, for a very long period, is the sole indication of declining memory. The faculty of recollection, the power of recalling former impressions, still remains as to dates and occurrences; but generally this faculty also gradually gives way. The process, a complicated operation of the mind, becomes more and more laborious and uncertain in its results. Dates are with difficulty recalled, and events are traced faintly, imperfectly, and incorrectly. Early impressions, and the knowledge acquired in youth and manhood, long retain their freshness; while those of later years vanish, or are but obscurely remembered, and the common events of yesterday are blotted out from the mind as if they had never occurred.

To what else are we to attribute these effects than to the changes wrought on the organisation of the brain by the operation of time? Such appears to have been the opinion of one of the greatest metaphysicians of our day. "The decay of memory," says Professor Dugald Stewart, "which is the common effect of age, seems to arise in consequence of a diminution of the power of attention. It is probable that, as we advance in years, the capa-

city of attention is weakened by some *physical change* in the constitution; but it is also reasonable to think that it loses its vigour, partly from the effect which the decay of our sensibility and the extension of our passions have in diminishing the interest which we feel in the common occurrences of life. That no derangement takes place, in ordinary cases, in that part of the constitution on which the association of ideas depends, appears from the distinct and circumstantial recollection which old men retain of the transactions of their youth." All honest practitioners will agree in the following reflections: "In so far as this decay of memory, which old age brings along with it, is a necessary consequence of a physical change in the constitution, or a necessary consequence of a diminution of sensibility, it is the part of a wise man to submit cheerfully to the lot of his nature. But it is not so unreasonable to think that something may be done by our efforts to obviate the inconveniences which commonly result from it. If individuals who, in the early part of life, have weak memories, are sometimes able to remedy this defect by a greater attention to arrangement in their transactions, and to classification among their ideas, than is necessary to the bulk of mankind, might it not be possible, in the same way, to ward off, at least to a certain degree, the encroachments which time makes on this faculty? The few old men who continue in the active scenes of life to the last moment, it has been remarked, complain, in general, much less of a want of recollection than their contemporaries. This is undoubtedly owing partly to the effect which the pursuits of business must necessarily have, in keeping alive the power of attention. But it is probably owing also to new habits of arrangement, which the mind gradually and insensibly forms, from the experience of its growing infirmities."

The memory can only be preserved in old age by acting on these principles, by attention to the general health, and by ceasing to burden it with matters distasteful to the mind, or by attempts to over-exert and over-tax it. Similar rules apply to the decay of the mental faculties generally. In the decline of life the brain should not be overworked, though it ought not to be wholly absolved from labour, a moderate and certain amount of which is essential to its healthy action. Like a weakened part it should have rest, but not entire cessation from exercise. The period of

continuous study has passed away, and hard study is now dangerous if perseveringly indulged in. The mind should be employed on agreeable subjects, and be relieved occasionally by light reading, the conversation of kindred spirits, and not distracted by abstruse inquiries or harassed by contention.

These observations on the state of the mind in senescence may perhaps appear irrelevant; but it is not proposed to return to the subject, and a work professing to give some account of the physiological phenomena and diseases of this period of life would be very incomplete without allusion to this interesting and important portion of the medical study of old age.

SECTION III.—THE DURATION OF HUMAN LIFE, AND RARITY OF DEATH BY OLD AGE.

The laws that govern the natural term of human life form no part of the design in view. It deserves to be mentioned, however, in passing, that Lord Bacon seems to have been the first who, as Sir John Sinclair remarks, established the important principle that organised beings, animal and vegetable, in general live in proportion to the slowness with which they reach maturity. A living historian has finely said, "It is in the duration of growth and adolescence that the measure of future maturity and decay is to be found. The winged insect, which is called into perfect being with the first rays of the summer's sun, runs through its brilliant span of existence before his orb has set in the west, while the majestic growth of the oak beholds successive generations of men expire under its increasing boughs, and stands forth after the lapse of seven centuries a still undecayed remnant." Bacon considered it to be a rule of nature, that animals in general should live eight times the number of years which is required for the attainment of perfect growth. Hufeland adopts the rule. Buffon fixes it at six or seven times. Flourens observes, the true relation is five times, or very nearly that. Now man, in a natural state, says Hufeland, when the period of maturity is not hastened by art, requires full twenty-five years to acquire his complete growth and confirmation, and this proportion will give him an absolute age of two hundred years. Assuming with Quetelet, that human growth is not

completed till twenty-five or thirty, and following the rule laid down by Bacon, we arrive at a nearly similar result. Haller also estimates two hundred or two hundred and forty years as the natural term of the life of man. Flourens regards the union of the bones with their epiphoses as the certain sign that marks the term of growth. In man, he states, this union is effected at twenty years of age, and he lives ninety or a hundred. According to the census of 1841, corrected for the increase of population up to the 1st of July, there were in all England only 249 persons of that age—viz., 82 males, and 167 females.* The census for the year 1861 has not yet been published; but there is every reason to believe that it will show a much greater number of centenarians. Among 539 old men in Chelsea Hospital, there is now one who has completed the extraordinary age of 105, and he bids fair to live still longer. "It needs not be objected," says Hufeland, "that great age is the unnatural state, or an exception from the rule, and that a short life is perhaps the natural condition. Almost all those kinds of death which take place before the hundredth year are brought on artificially—that is to say, by disease or accidents; and it is certain that by far the greater number die an unnatural death"—in other words, prematurely. Death, as purely and simply the result of old age, is among the rarest of deaths—so rare that few persons have really witnessed it. I mean that kind of death occurring gradually and almost imperceptibly, without disease, pain, or suffering of any kind—life ebbing away through natural decay of the machine now holding it. I have certainly seen such deaths but seldom; and even then the *post-mortem* examination has generally revealed something which, with other causes, has made up the sum of exhaustion necessary to part life from its frail tenement. In extreme old age, or under the circumstances just mentioned, the sedative impression of cold, or its effects in producing congestion of the respiratory organs, the supervention of an exhausting disease, such as a slight diarrhœa, an attack of influenza, or a common cold, sometimes a low form of inflammation of one of the internal organs, or its investment, steps in to sever the cord, chafed and worn out by the lapse of years. The reports of the Registrar-General would appear to contradict this statement, since 12 per cent. of the deaths of

* Fifth An. Rep. Reg.-Gen., p. 15.

females, and 10 per cent. of the deaths of males, were ascribed to *natural decay* and *old age*, in the returns of 1838, as recorded in the second report of that functionary; while in the fifth report "about one-ninth of the people are returned as dying of old age."* Including the deaths of 12,670 old men, and 17,044 old women, the total number returned as dying by age in England in the year 1855, was no less than 29,714. "Thus," says Dr Farr,† "only *one* in every *fourteen* had attained this termination of life. Of 10,000 living, 16 died of old age." It cannot be denied that in advanced as at other periods of life, and perhaps then more frequently than earlier, death now and then occurs without any possible assignable cause, and without the most careful inspection detecting any anatomical change sufficient to account for it; but, during the last twenty years at least, hardly an instance of death by sheer old age has occurred among the inmates of Chelsea Hospital, though in that period upwards of 1300 have perished, whose average age was over seventy years; several were nonagenarians, and one had reached the age of 106. Dr Farr observes, in one of his valuable letters accompanying the reports of the Registrar-General on the causes of death, "that specific causes, other than old age, were assigned to nearly half the number of deaths occurring in persons aged seventy and upwards, and may have operated unperceived in many of the other instances, for disease itself becomes feeble and indistinct in a feeble decaying body." This is the true explanation of the extraordinary number of deaths ascribed to age in these reports—viz., the frequent obscurity of disease in old age, and its not unfrequent latency. With the advance of knowledge in the pathology of senescence, as it becomes better known through more frequent *post-mortem* examinations that old age is very rarely of itself the cause of death, the number dying by "old age" will gradually diminish in these returns; and "atrophy" and "debility" will also give place to more specific and more correct terms.

* Fifth An. Rep. Reg.-Gen., p. 371.

† Eighteenth An. Rep. Reg.-Gen., p. 186.

CHAPTER II.

THE DISEASES INCIDENT TO ADVANCED LIFE—GENERAL PRINCIPLES—REMEDIAL AND PREVENTIVE TREATMENT.

SECTION I.—THE PATHOLOGY, DIAGNOSIS, PROGNOSIS, DURATION OF SICKNESS, AND RATIO OF MORTALITY, AT DIFFERENT PERIODS OF ADVANCED LIFE.

The Father of Physic, two thousand years ago, in an aphorism which has descended to us, states, that to old people, persons above fifty, the following diseases occur—viz., dyspnœa, catarrhs accompanied with coughs, dysuria, pains of the joints, nephritis vertigo, apoplexy, cachexia, pruritus of the whole body, insomnolency, defluxions of the bowels, of the eyes and nose, cataract, glaucoma, and dulness of hearing. Modern pathologists have greatly extended the catalogue, but the accuracy of Hippocrates' aphorism must ever remain unquestioned, the diseases here enumerated being notoriously, as Mr Adams, the learned translator of our author's works for the late Sydenham Society, has observed, those of old age.

All who have seen much of the diseases of this epoch of life, will unhesitatingly admit that it is extremely difficult to present in a tabular form, with a satisfactory approach to accuracy, the diseases to which old people are liable, so as to enable the inquirer to estimate with numerical truthfulness their comparative frequency; whether causing temporary sickness only, or ending fatally. This is less the result of defective diagnosis than of the complicated nature of disease at this period, as well as of the frequent impracticability of distinguishing the primary from the secondary or an accompanying malady, and of declaring with precision which has the chief share in disabling or destroying the

patient,—the primary affection, or any other associated with it accidentally, or as cause and effect; and therefore of settling which ought to hold the prominent place in a form, necessarily limited, expressed by figures. With every desire to meet this difficulty, and with the best possible information, the conscientious reporter encounters insurmountable obstacles, and is frequently forced to record the immediate cause of sickness or death, and insert in his returns symptoms instead of the substantive diseases themselves. Where there is no hesitation in the matter, "asthma" may thus represent chronic bronchitis, emphysema of the lungs, or cardiac valvular lesions; "apoplexy," softening of the brain, congestion, or sanguineous effusion into its substance; "dropsy," albuminuria, disease of the liver or heart; "catarrh of the bladder," or "retention of urine," chronic enlargement of the prostate; and "sloughing" or "mortification," many bedridding diseases of long standing, of which this is but the termination.

Mortuary tables, with all their defects, are more satisfactory than returns of admission, though they exclude the minor affections and infirmities which cause so much disabling sickness and discomfort in advanced life. When derived from establishments allotted to the aged, such as the large asylums, the Bicêtre and Salpêtrière in Paris, the hospitals for old men at Brussels and for old men at Greenwich and Chelsea, they are necessarily fallacious, through frequent re-admissions into the infirmary of the same person, with a return or aggravation of a persisting malady. They show the existing amount of sickness in a body or community in the period embraced, but not the relative frequency of this or that affection, or even its proportional fatality in relation to itself or other diseases. The following classified table of diseases, compiled from one given in the Twentieth Report of the Registrar-General, and from an extended manuscript return furnished to me through the favour of Dr Farr and Mr Hammick of that department, shows at a glance the principal causes of death at different periods of life, male and female, from forty-five years of age onwards, together with the ratio of deaths from each source to the number living of each sex.

Classified Table of the Causes of Death in England and Wales at different periods of Advanced Life, from 45 *to* 95 *years of Age and upwards, in the year* 1857 *; and of the Number and Proportion of Males and Females, aged* 45 *years and upwards, dying from each cause during the Seven years* 1848-54.

CAUSES OF DEATH.	MALES. Ages at Death.						FEMALES. Ages at Death.						Deaths of Persons aged 45 years and upwards, 1848-54.		To every 1,000,000 living, aged 45 and upwards, the proportion dying by each disease annually in the 7 years 1848-54.	
	45-	55-	65-	75-	85-	95 and upwards.	45-	55-	65-	75-	85-	95 and upwards.	Males.	Females.	Males.	Females.
All Causes,	13,946	15,937	15,361	14,775	3,833	198	12,456	15,348	19,727	17,251	5,475	451	457,508	476,724	40,966	38,586
Specified Causes,	13,824	15,768	18,252	14,753	3,831	198	12,336	15,164	19,606	17,282	5,472	450	450,919	469,373	*	*
1. Zymotic Diseases,	1,182	1,285	1,369	961	198	8	1,008	1,196	1,526	1,126	276	24	50,129	53,044	4,554	4,361
Sporadic Diseases:—																
2. Dropsy, Cancer, and other Diseases of uncertain or variable Seat,	907	1,389	1,711	1,024	184	7	1,722	2,276	2,404	1,420	251	9	39,574	57,346	3,595	4,714
3. Tubercular Diseases,	3,174	1,831	749	99	4	...	2,698	1,452	567	80	10	1	39,779	34,558	3,614	2,841
4. Diseases of the Brain, Spinal Marrow, Nerves, and Senses,	1,701	2,181	2,751	1,845	230	7	1,447	2,181	3,022	1,886	341	12	54,881	56,362	4,986	4,633
5. Diseases of the Heart and Blood-vessels,	1,100	1,560	1,632	719	53	...	1,144	1,612	1,605	684	71	3	27,483	27,002	2,497	2,220
6. Diseases of the Lungs, and of the other Organs of Respiration,	2,325	3,444	3,866	2,167	369	11	1,702	2,968	3,825	2,832	440	22	70,859	60,772	6,438	4,996
7. Diseases of the Stomach, Liver, and other Organs of Digestion,	1,266	1,524	1,402	542	46	2	1,361	1,672	1,086	630	72	2	31,884	34,396	2,897	2,828
8. Diseases of the Kidneys, Urinary Organs, &c.	438	505	698	432	71	2	203	174	181	69	4	...	13,326	3,099	1,211	255
9. Childbirth, Diseases of the Uterus, and other Organs of Generation,	14	11	5	6	2	...	269	174	108	40	4	...	57	4,036	5	332
10. Rheumatism, Diseases of the Bones, Joints, &c.	124	138	111	54	6	...	112	159	154	57	6	...	3,444	3,366	313	277
11. Diseases of the Skin, Cellular Tissue, &c.,	43	60	79	35	7	1	19	25	43	21	6	...	1,376	721	125	59
12. Malformations,	...	...	...	...	...	...	...	...	...	...	...	...	12	11	1	1
13. Premature Birth and Debility,	52	101	60	...	...	...	94	158	86	...	...	...	1,585	2,263	144	186
14. Atrophy,	93	515	838	34	4	...	154	700	1,183	45	5	...	10,449	13,953	949	1,147
15. Age,	...	...	2,124	6,437	2,604	158	...	...	2,766	8,506	3,681	371	80,262	106,174	7,291	8,727
16. Sudden, Causes unascertained,	215	301	297	182	22	...	147	191	221	112	30	2	7,788	5,253	708	432

* In calculating the mortality, a correction has been made for the diseases not specified, by distributing them proportionally over the deaths from the various specified causes.

It would occupy too much space to give these tables more in detail, though the one from which the left half of the above has been taken cannot be consulted without deep interest and benefit. Indeed, the tables showing the causes of death at different periods of life, furnished by the Registrar-General, are the best existing sources of information on this important subject. In the order of mortality, the following are the chief causes of death of persons above forty-five years of age:—"Age" (which does not figure in these tables till sixty-five), bronchitis, diseases of the heart, paralysis, dropsy, apoplexy, asthma, pneumonia, typhus, influenza, cholera, diarrhœa, cancer, "mortification." The other causes of death by disease are spread over a large number of different maladies, some peculiar, or almost peculiar, to advanced age, others unconnected with any particular period of life. Among the former are softening of the brain, dry gangrene, angina pectoris, and chronic enlargement of the prostate with its sequelæ affecting the bladder and kidneys. Out of a total number of 845 deaths, exclusive of sudden deaths investigated by a coroner's inquest, occurring among 539 in-pensioners of Chelsea Hospital, whose ages varied from fifty to ninety, the immense majority exceeding sixty, in the thirteen years ending 1859, and in all of which the greatest pains was taken to return the true cause of death, the diagnosis being verified in every doubtful case by *post-mortem* examination—bronchitis gave 166; phthisis pulmonalis, 145; apoplexy, 58; pneumonia, 51; cancer, including schirrus, of different internal organs, 47; diarrhœa, 36; empyema, 27; hemiplegia, 25; pericarditis, 24; cholera, 23; softening of the brain, 21; diseases of the heart, hypertrophy, dilatation, and valvular lesions, 21; albuminuria, 17; diseases of the bladder, cystorrhœa, &c., 17; general paralysis, 11; dry gangrene, 10; paraplegia, 7; erysipelas, 7; sloughing of the nates, 7; purpura and scurvy, 5; old age, 3, all 82 years old. Including two cases of death by angina pectoris, and one by gout, the remainder are scattered; but these constitute the chief numbers. The reader will not fail to remark the large number of phthisical cases.

A casual inspection of the Registrar-General's Reports would seem to warrant the conclusion that the proclivity to almost every disease, with the exception of those diseases peculiar to infancy, or such as usually only appear once in a lifetime, rapidly increases

with the advance of years. This is, however, but partly correct. After puberty, age is the great regulator of mortality. Before puberty, and even up to the age of thirty or forty, these tables may be, for all practical purposes, trusted in an investigation of this kind; but beyond these periods, they are less worthy of confidence, though still valuable. The relative mortality in all acute or dangerous diseases is greater as life advances; and diseases of a chronic nature, commencing in earlier age, and slowly progressing towards their termination, deceptively swell the list at the more advanced epochs. Bronchitic, paralytic, and cardiac affections are not exceptional, though the mortality they occasion between the ages of forty-five and fifty-five is about double that between the ages of thirty-five and forty-five. Many of these affections persist through a long course of years, before they prove fatal either of themselves or by the induction of other diseases with which originally and for a long time they were unconnected.

Compensations.—The aged are virtually exempted from many diseases which attack youth and manhood, and are at earlier periods of life a source of much sickness, if not of death itself. Thus, typhoid fever is hardly ever met with in persons above fifty; and acute rheumatism and acute gout, with their common and dangerous associations, decline in frequency beyond that period. Strumous and tubercular affections, with the exception of consumption itself, which, as we have just seen, is far from uncommon, are comparatively rare. There is less susceptibility to infection or contagion, and to the purely neuralgic maladies, while the predisposition to most convulsive and all active hæmorrhagic diseases is greatly diminished. Acute idiopathic inflammation of the pleura and peritoneum is very unfrequent, particularly of the latter membrane, if it ever exist; for inflammation of these membranes in the old is almost constantly the result of albuminuria, rheumatism, malignant growths, or injuries. Most other spontaneous inflammations of an acute character are also less common than in manhood. Although cynanche tonsillaris and inflammation of the neighbouring parts are frequent enough, suppurative inflammation of the tonsils is rare. I do not remember ever having seen an instance of it in a person above sixty.

The commencement of senescence, or green old age, as it is called, "the transition period from mature manhood to old age," is not

unusually a particularly healthy period. Hippocrates has said that maturity, and even old age, are often more exempt from disease than youth, until they are invaded by chronic maladies; and Rullier observes,* "Many people then enjoy better health than at any former era of their lives;" but generally, as years increase, diseases and infirmities accumulate with the progressive decay of the vital powers and degeneration of the organism. And the exemptions referred to are but moderate compensations for the numerous disorders that now assail the frame. So great and incessant are the calamities to which old age is exposed, that, were men wise, says Gregory, death itself would come to all an object of desire, as the end of all their miseries. Galen designated the whole of this period a distemper; and the psalmist tells us that at fourscore life is but labour and sorrow.

Diseases of the Different Periods of Old Age and their general Characteristics.—As maturity insensibly glides into decline, so the diseases of the first period of old age are very similar to those that more especially appertain to that stage of life, and present analogous features. Dyspeptic, rheumatic, and gouty affections; renal diseases, including albuminuria and gravel, are then frequent. By-and-by, the predominance of the venous circulation with the rigidity of the arteries encourage congestion in the different organs, and passive hæmorrhages. From these causes and others proceed hæmatemesis, melæna, hæmaturia, varices of the bladder and rectum—all common diseases of the declining and more advanced periods of life. Cerebral and urinary maladies now also prevail, and are superadded to one or more of the disorders just mentioned. Sanguineous apoplexy, softening and atrophy of the brain and spinal marrow, with their immediate result, paralysis, are among the most frequent diseases of the aged, and are remotely or directly connected with senile degeneration of the arteries.

Gradually, diseases of an inflammatory kind participate in the decaying energy of the vital forces, and evince this influence by a corresponding inactivity, by frequently presenting a subacute or even chronic character from the commencement; by the proneness towards an asthenic type, and in more active attacks by the rapid

* Dict. de Méd., tome i. p. 619.

disorganisation of the structures implicated. The pain and redness accompanying inflammation are usually, but by no means invariably, less intense. Robust octogenarians sometimes present examples of acute sthenic inflammation in its true pathological characters, in a genuine form, with high constitutional disturbance. More generally, however, in the later epochs of life, an opposite tendency is observed; the inflammation is of a congestive character, and the febrile reaction slightly manifested; the redness in erysipelas, for example, is often of a dull-brown or livid hue; the bullæ of this disease contain a sanious liquid, and the parts, though dry externally, are pulpy or less tense than at other periods of life, while there is often little general reaction. Similar phenomena are frequently observed in herpes zoster, a not uncommon and sometimes severe affection in the aged, the vesicles containing a dark sanies, and the skin underneath becoming gangrenous. Œdema is now a common accompaniment and sequela of all the phlegmasiæ. In the cellular tissue, inflammation rapidly assumes a diffuse character. Gangrenous abscesses speedily form; and when the inflammation in other cases is limited by the effusion of lymph, still this disposition prevails. What at another period would be a common boil now turns out a carbuncle, and too often places the life of the aged subject in great peril. Elsewhere, in the serous and mucous membranes, the same results are observed, occasioned by, and indicative of, the decaying vigour of the system. The inflammation, when acute, is very often of an asthenic kind, accompanied by low fever, a dark dry tongue, much prostration and stupor, or delirium, and speedily ends in destruction or injury of the membrane affected. Effusion of lymph, which, in the instance of inflammation of the serous tissues, may be regarded as the natural process of cure, is often replaced by serous, sanious, or purulent matter; and where the attempt at restoration seems to have been vigorously begun, we find these inferior products in unusual quantities mixed with the more organised secretion. A few hours are often sufficient to fill the chest with purulent, or more generally serous or sero-purulent fluid, in otherwise slight and obscure attacks of pleurisy; œdema of the lungs frequently accompanies bronchitis, and the tendency towards serous discharge may be observed wherever the mucous membranes are inflamed by the infiltration of the subjacent cellular tissue. Resolution from in-

flammation of the serous or mucous membranes is usually slow and imperfect. Chronic bronchitis and chronic inflammation of the whole or portions of the genito-urinary tract is one of the most common attendants on old age.

Thus diseases accumulate with the progress of years. The innumerable maladies that openly or secretly besiege the frame leave sequelæ, are engrafted upon each other, and present themselves associated and complicated in such wise as to diversify the character of the symptoms and modify the prognosis and treatment. As life still further advances, and the silent degeneration of the tissues proceeds, man becomes more and more obnoxious to a host of organic diseases, all tending towards the end. And it is in old people especially that the anatomist encounters the most singular modifications of structure, and the pathologist the most perfect and varied specimens of disease, benign or malignant, in the brain, heart, lungs, and other viscera. So common are structural lesions in the decline of life, that long-abiding so-called functional disturbance of an organ is very often dependent upon some associated anatomical change in one or more of its tissues.

Diagnosis—Sources of Difficulty.—The accurate discrimination of disease in advanced life is not always a matter of easy attainment. This difficulty partly arises, as has already been observed, from the complicated nature of disease at this period—several diseases of more or less importance, and of longer or shorter duration, frequently co-existing, and blending their respective symptoms, or masking them. The gradual failure and modification of the different functions also vary the phenomena of disease. Thus, the declining irritability of the nervous system hinders the development of some local symptoms, and influences the character of the constitutional reaction, if it does not entirely prevent it. Those remarkable sympathies, between distant or contiguous organs, that interest the observer and aid the practitioner in forming a correct diagnosis, cease altogether, or are much less constant and intense, particularly in extreme old age. Vomiting is less generally present in disease of the brain, liver, or kidneys, than in the adult; it is even often entirely absent in organic disease of the stomach itself. Inflammatory attacks of diarrhœa, having their seat in the large intestines, and to which old people are prone, are seen, as Gendrin has already remarked, coinciding with an almost natural

state of the system, and without any symptom of suffering in the superior part of the digestive tube. The kidneys, also, are frequently extensively diseased with little urinary distress; and the bladder, deprived of its former irritability, is sometimes distended to bursting without the usual agony. Nosology is at fault, and typical examples of disease are exceptional. Inflammation seems to paralyze sensation, and pain is often entirely wanting in many diseases which at other periods of life are accompanied with it in a high degree. Pleuritis, and still more frequently pericarditis, even when associated with that disease, again and again proceed to a fatal termination without it; and yet, on *post-mortem* examination, we find indubitable evidence of the inflammation having been of the most intense form. The isolation of the different organs in disease is one of the most remarkable phenomena in the pathology of advanced life, and the frequency of latent maladies of the most dangerous character ought never to be lost sight of. If there is any one period more than another requiring the closest scrutiny to unravel disease, it is the period of old age, where there is often no symptom sufficiently developed to guide or direct the practitioner. It will scarcely be credited, by those who have not had ample opportunity of observing, to what extent active disease may exist and proceed with little or no suffering or alarm, and without the usual symptoms. On more than one occasion I have known old men sitting at the fireside, or moving about, apparently in their usual health, with acute pneumonic consolidation, and even suppuration of the lung. Some time ago an old man died in Chelsea Hospital three or four hours after working in his garden, in whom nearly the whole of one lung was in this condition. In another instance, occurring on the verge of sixty, empyema existed to such an extent as to displace the heart to the opposite side—and yet the man was following his vocation as groom and coachman, though the disease had existed several weeks. These and like cases are of every-day occurrence, and are particularly rife in aged, broken-down, bed-ridden subjects, in whom new disease, in every shape, declares itself in the faintest manner, and often with the least possible change in the state of the patient, though a keen observer may generally perceive additional prostration in the absence of other symptoms, when a diligent search may discover the cause. These sufferers frequently

die unexpectedly, and as it were accidentally, from rapid exhaustion, and their deaths appear in public returns as "sudden," or more commonly as caused by "old age."

Duration of Sickness and Ratio of Mortality.—The amount of sickness, the mean annual duration of disease and rate of mortality, are greatly influenced by advancing years. After puberty these increase year by year. According to the researches of the philanthropic Highland Society of Scotland, the annual duration of sickness—

At 50 is 9 or 10 days.
„ 55 12 or 13 days.
„ 60 17 days.
„ 65 30 or 31 days.
„ 70 73 or 74 days.

The committee of this society, which has collected these data, thinks that below the age of twenty the average annual duration of disease ought to be estimated at three days, or nearly; and above seventy years, also for the working class, about four months, or sixteen weeks and a half. Quetelet finds these researches closely coincide with the measures of viability he has calculated at the different ages. He further observes, that the age of shortest viability, deduced from tables he has furnished, would be immediately after birth, and the age of longest viability immediately before puberty; the viability of the child after the first month of life is greater than that of the man near one hundred years old. Towards the seventy-fifth year, it is scarcely greater than that for the infant about the sixth month after birth. These observations correspond with the results obtained by the Registrar-General, who informs us* that the rate of mortality reaches a high point in early infancy, and declines till, at the age of puberty, ten to fifteen, it is at the minimum; "*it then rises gradually up to the age of fifty-five, and after that age it increases rapidly, doubling every ten years.*" The following is an abstract from tables compiled by that functionary, giving the annual rate of mortality per cent. in England, for the ten years 1845–54:—

* Seventeenth Annual Report, p. 17.

Deaths to 100 living.		
Ages.	Average rate of 10 years, 1845-54.	
	Males.	Females.
All ages, ...	2·364	2·025
0 (under 1 year), ...	7·356	6·343
45, ...	1·895	1·617
55, ...	3·226	2·855
65, ...	6·755	6·104
75, ...	14·991	13·652
85, ...	30·294	28·076
95, and upwards, ...	45·219	45·226

This abstract shows that the average mortality of persons between sixty-five and seventy-five years of age nearly equals the mortality of the infant at the breast, the most fatal period of early life; that at seventy-five and under eighty-five it doubles it; at eighty-five to ninety-five it more than quadruples it; and at ninety-five and upwards, it is in males above six times, and in females more than seven times greater. The mortality per cent. is greater in males in each decade, from infancy onwards till ninety-five is reached, when it singularly tallies in both sexes. In extreme old age, in nonagenarians, the constitution of males and females would thus appear to assimilate still more closely than earlier; and the capacity for labour of any kind having long ceased, both sexes are placed in like circumstances and conditions as respects the external causes of disease.

Influence of Season on Sickness and Mortality.—Winter is the season of disease and death, and tells severely on both extremes of life; but at no period is the prejudicial influence of cold more perceptible than in old age. It causes the death of great numbers of persons who have reached sixty and upwards, and is peculiarly fatal to those labouring under chronic, bronchial, and cardiac affections.* In the three winter months very nearly as many old

* "The mortality rises progressively as the mean temperature falls below the *mean temperature* of London (50°·5); the deaths in the week rising to 1000 and upwards when the *temperature* of night falls below the freezing point of water, and to 1200 when the *mean temperature* of day and night descends a degree or two lower than 32°. The rise in the mortality is immediate; but the effects of the low temperature go on accumulating, and continue to be felt thirty or forty days after the

people die of "asthma" as during the whole of the remaining nine months of the year. Cold also induces apoplexy and paralysis, and thus destroys vast numbers of old people who may have been previously in the enjoyment of excellent health. It is thus that the night-time proves more fatal to the aged, when the thermometer often suddenly sinks ten or twelve degrees below what it ranged during the day. A few days of sudden frost are observed to carry off many aged invalids, who are unable to bear a reduction of temperature which hardly exercises any apparent influence on the health of persons in the full vigour of life. A severe winter and late spring are notoriously destructive to the old and infirm of both sexes.

Prognosis.—Taking a wide view of the subject, the practical lesson to be derived from a consideration of these observations is, that in all severe or dangerous diseases, the prognosis should be the more guarded the more advanced the age of the patients; that as the aggregate mortality doubles every decade after fifty-five, so, *cæteris paribus,* the prognosis of a favourable or unfavourable termination should be proportionately measured; and that it should be still more guarded in cold, frosty weather, when rapid, sudden, and unexpected deaths are extremely common in all pulmonary, cardiac, and cerebral diseases in old people.

The ratio of deaths from typhus fever in the aged is enormous, and few octogenarians recover from pneumonia, which carries off, in winter and early spring, large numbers of persons above sixty. However favourably acute disease, or acuto-chronic attacks of disease, may appear to be progressing, the practitioner will do well to exercise a due reserve in announcing the issue. A few hours often suffice to entirely change the character of disease in the old; and when convalescence seems to be all but established, death not unfrequently ensues without our being able very satisfactorily to account for it. As already observed, a sudden reduction of the temperature of the atmosphere, a rapid fall in the thermometer,

extremities of cold have passed away. The cold destroys a certain number of persons rapidly, and in others occasions diseases which prove fatal in a month or six weeks. . . . . A great number of the aged, and those afflicted with difficulty of breathing, whether it arise from emphysema, chronic bronchitis, diseased hearts, or impairment of the function of respiration, cannot resist cold sunk so low as 32°."—*Dr Farr's Letter to the Registrar-General, Third Annual Report.*

especially if accompanied with moisture, sometimes the occurrence of a white frost, appears to be quite capable of destroying life, where its phenomena are but feebly manifested. And in exhausted states of the vital powers, from the combined influence of age and disease, the least exertion, such as getting up to the close stool, nay, the mere act of turning in bed, may bring about a fatal result. Great is the number of enfeebled old people who die on the night-chair.

SECTION III.—THE PRINCIPLES OF MEDICAL TREATMENT IN ADVANCED LIFE—REMARKS ON THE CHIEF REMEDIES.

The general principles of the treatment of disease in advanced life may be gathered from the preceding remarks on the physiology and pathology of the aged. In the earlier stages of this epoch, while as yet the different vital and organic functions are discharged with inappreciable diminution of vigour, and diseases present themselves with their usual characteristics, scarcely if at all modified in their phenomena by the commencing degeneration of the organism and decline of the vital endowments, it is almost superfluous to observe that all active diseases of an inflammatory nature may be attacked with energy, and with the ordinary means resorted to in the meridian of life. There are numerous persons verging on sixty, and not a few septuagenarians, in whom assimilation, sanguification, and nutrition are still unimpaired—hale, vigorous old men and women with good appetites and good digestion, who make blood fast and well, and are still capable of considerable physical endurance. These not only bear active treatment, but, with due regard to the character of the symptoms, the stage of the disease, and peculiarities of the constitution, original or acquired, benefit by it. On the other hand, as there are many aged in constitution though not in years, individuals who at fifty exhibit signs of decay of the system and declining energy of the *vis medicatrix naturæ*, so it is incumbent to weigh carefully the merits of each separate case, to inquire minutely into the previous condition of the patient, as well as into the nature of the existing malady, before determining on the line of treatment to be pursued. In a word, though age is

suggestive of caution, it is less to be attended to than the precise circumstances in regard to constitution and habits, the nature and severity of the symptoms, and the amount of vital power; these are of more importance in directing the remedies than the actual number of years the patient may have attained. Remembering the tendency of disease to assume a chronic form, or to partake of an asthenic type in the old, there is not much probability of antiphlogistic measures being pushed beyond their proper limits, even where there still remain the evidences of a sound and vigorous constitution. The decline of the vital powers and degeneration of the tissues not only influence the indications of treatment, but modify the effect of medicines, which, as a general rule, become less certain in their immediate operation, and less efficacious in their specific qualities or ultimate effects, as old age advances. Having premised these general observations, it may be well to pass briefly in review some of the more important remedies employed in the treatment of disease, with reference to their adaptation to the aged.

Blood-letting.—If the question respecting the propriety or impropriety, the safety or danger of this measure, could be satisfactorily settled, the general therapeutic principles that should regulate our proceedings in acute diseases of an inflammatory nature in advanced life would be determined; for of all questions relating to treatment, this is by far the most important and comprehensive; it continues to divide the profession, the majority being opposed to blood-letting, more especially to general blood-letting, which a smaller section of this class proscribe in almost any form in old age. The controversy now going on respecting the utility or inutility of bleeding in inflammatory diseases at all, is likely to increase this majority; and as the remedy is now-a-days decidedly less employed than formerly,—whether from new or more enlightened views of the nature of disease, or from the existing "epidemic constitution" lowering the tone of the organism and modifying the character of inflammation in general, this is not the place to inquire,—bleeding seems to be still more rapidly falling into disuse in the treatment of these diseases in advanced life, and is justly very much less resorted to than heretofore in the apoplectic and paralytic affections to which old age is so liable. This is a natural consequence; because, in the first instance phle-

botomy has almost always been guardedly advised in the old by practical men; and, in the second, because, within the last twenty or thirty years, the nature and causes of these cerebral disorders have become better known, and the inutility, if not the impropriety, of blood-letting has been fully demonstrated in many varieties of apoplexy and palsy—not only practically, but by the pathological discoveries made on *post-mortem* examination showing how irrational and absurd the expectation of benefit from such a proceeding.

Still, there is danger in carrying the principle too far, of trusting to the expectant method, and repudiating this most important, and, when judiciously employed, most valuable remedy. Old age *per se* ought not to deter us from practising blood-letting; nor is it exactly true, as has been alleged, that the constitution of old people and their intolerance of bleeding assimilate with that of early infancy; for while in the first stages of life venesection cannot be resorted to with safety, and must give place to local blood-letting, in the other extreme, if not carried to excess, it is well borne where the great functions of life are still performed with a certain degree of vigour, and the heart retains its normal condition. "In the old," says Durand-Fardell, "the abstraction of blood is perhaps less injurious to the economy, which has then fewer demands to satisfy; but the loss is more slowly and more imperfectly repaired, and excessive emissions are almost always fatal. We have seen," he continues, "two old people die at the Bicêtre, from a single leech-bite, which had negligently been allowed to flow during the whole of the night." This writer prefers general to local bleeding in the aged, on account of the contraction of the capillary system, its more imperfect anastomoses, and the enfeebling of the sympathies, which show "that general bleedings are almost always indicated, that local bleedings can be but of little efficacy, and that in every case it is necessary to employ them as near as possible to the seat of the malady."*

As a general rule, however, venesection is inadmissible in persons beyond sixty or sixty-five years of age; but the exceptions are so numerous as almost to annul the rule, which should be regarded as one of caution only. There are numerous persons, as

* Introduction, xl., *loc. cit.*

has above been observed, who at seventy are still plethoric and vigorous, in whom bleeding from the arm may often be practised with safety and advantage, when the indications for depletion are sufficiently marked. Morgagni bled nonagenarians with benefit. Hufeland strongly recommends bleeding in the aged. "Very old age," he says, "is often the sole indication for employing it; and," he adds, "I cannot omit to recommend this point to particular attention." "Old age," he further observes, "ought not to lead us to suppose weakness alone. In persons of a sanguineous constitution and good digestion, very active sanguification persists up to a great age, and the plenitude of blood now becomes dangerous, since its equal distribution is impeded by the straightening of the vessels, and the decreased motive power in the smaller and capillary ones, and local congestion of blood, especially of the brain, is caused." Rush also advised bleeding in the inflammatory affections of old age, attended with plethora and inflammatory action of the pulse. "I am sure," he says, "I have seen many of the chronic complaints of old people mitigated by it, and I have more than once seen it used with obvious advantage in their inflammatory diseases." More recently his countryman, Paine, in his elaborate "Medical and Physical Commentaries," follows Hufeland, or coincides with him, in observing, that "Blood-letting is equally safe at all periods of life, and is *most indispensable in old age.*" The late Sir Anthony Carlisle was strongly in favour of this measure in the old, and has adduced some cogent reasons for employing it. He was of opinion that intermission of the pulse afforded no justifiable objection to the remedy; and he states that he has seen persons above the age of seventy labouring under dangerous inflammation of the lungs, who were acknowledged to be saved from the jaws of death by resolute and copious bleedings, notwithstanding a sudden accession of dropsical swellings in the legs, and in contempt of the œdema. MM. Piorry and Prus, men of large experience in the hospitals allotted to the aged in Paris, bleed old people almost as boldly as adults. Andral does not scruple to advise it. In fact, nearly all the hospital physicians in France, with notable exceptions, however, are in favour of venesection in dangerous acute inflammatory diseases of old age, when of a sthenic nature. Canstatt regards it as by no means a safe operation when performed on the aged; it has been followed

by immediate death, he observes; and he advises, as Fischer had previously done, that the patient take a mouthful of good wine before the vein is opened. Dr Day recommends a similar proceeding. It should be noticed, however, that Canstatt appears to have had rather unsettled views on the matter, since in the treatment of senile pneumonia, if the inflammation be peracute, he says bleeding should not be neglected, however old the patient may be; and he coincides with MM. Hourmann and Dechambre, who state that octogenarians then often bear it well. Pinel, as a general rule, was opposed to it; and having for a long period been physician to the Sâlpetrière, his opinion on the subject is not without much value. Our own countrymen, generally speaking far from timid practitioners, are disinclined to it as a rule, though the late Dr Abercrombie strongly urged copious venesection in almost every case of apoplexy, however advanced the age of the patient, or however pale and meagre he might be. Hufeland also strenuously advocated bleeding, under similar circumstances, and repeated it again and again, with, he says, the best results. Sir Henry Holland, speaking of bleeding in old age, says, "The general rule is of comparative limitation, and a still more cautious observation of the tests by which this limit is marked in practice."

Amid so much rashness on the one hand, and extreme caution or timidity on the other, the question naturally occurs, What should be regarded as the safest indication for bleeding in old age? and, as a corollary to this question, What are the circumstances that ought to forbid it? Bleeding may generally be employed when the danger or urgency of the symptoms calls for it,—where the individual, however far advanced in years, still possesses some of the attributes of maturity, the pulse at the wrist and in the other larger arteries being firm and equable, the action of the heart regular, and the constitution, though perchance debilitated by natural decay, unbroken by pre-existing chronic disease. General bleeding is contra-indicated when the pulse is irregular in strength and frequency, but more especially in the former state; where the impulse of the heart is feeble and intermittent, and its sounds obscure or inaudible; and in all cases where the general health has suffered from privations, insufficient nourishment, or long-continued exhausting maladies. In practice, the cases in

reality are comparatively few in which the abstraction of blood from the arm more than once or twice is necessary. Although, under favourable circumstances, we never hesitate to draw blood, years sometimes pass away in Chelsea Hospital, with a sick list averaging ninety or a hundred, in persons whose mean age is about seventy, without venesection being performed oftener than herein mentioned in any one instance; and, indeed, sometimes a year or more elapses without the measure having once been resorted to. In all cases of advanced old age, when bleeding has been determined on, its immediate effects on the pulse should be watched, and the amount of blood allowed to flow regulated accordingly. No more should ever be taken away than is absolutely required to control the disease; nor should bleeding ever be repeated in old age, without the most convincing evidences of its propriety and probable benefit. Six, eight, or ten ounces may be regarded as a fair quantity; but in a few instances double these quantities are abstracted with benefit, in persons who, though far advanced in age, still retain considerable stamina. Where, from the nature of the disease, it can be accomplished, it is a wise precaution to bleed the patient in a sitting posture in bed, and the vein should immediately be closed on any sign of faintness occurring. This ought to be an invariable rule in bleeding all old subjects. By it much unnecessary loss of blood may be avoided, and the risk of injury or alarming collapse almost always prevented, whatever may be the unsuspected peculiarities of the constitution, or condition of the central organ of the circulation.

In considering the expediency of a first or second bleeding, the practitioner should not be deceived by the hardness of the pulse at the wrist in the old, which, as Bizot has pointed out, is often stronger in them than in the young, owing to the radial artery preserving a sound condition, and thus receiving the entire force of the heart's action, which is partly spent in dilating the whole system of arterial tubes, when all possess their normal elasticity, before the changes effected by age occur in them. The action and impulse of the heart itself are safer guides than the pulse at the wrist; and we hardly ever bleed old people by the lancet without first laying our hand on the cardiac region, and, if need be, applying the ear to the chest.

Purgatives.—These are valuable remedies in many of the

diseases of advanced life, where it is also very common to find constipation a prominent symptom in recent inflammatory or febrile attacks, and in nearly all cerebral affections. They may often be advantageously substituted for bleeding; but if too active, or too frequently repeated, they are even more depressing than a moderate abstraction of blood from the arm, and of course less immediate in their results, which is a matter of primary importance, where disease often runs a rapid course, and, if left for a brief space uncontrolled, terminates in disorganisation or death. Where speedy action on the bowels is desired, so as to relieve without exhausting, the compound extract of colocynth, with a few grains of calomel in combination, is the most generally suitable purgative, and usually agrees well with the aged. This combination procures full, feculent evacuation, and renders the bowels more amenable to the action of other purgatives of a milder nature. The compound infusion of senna with the sulphate of magnesia—the ordinary "black draught"—is sometimes too exhausting in its operation. If combined with ammonia and aromatics,—*i.e.*, the Spiritus ammoniæ aromaticus and the Tinctura zingiberis,—it generally, however, answers well, and most old people who have taken it in this form prefer it to any other purgative. As a mild laxative, castor oil generally acts efficiently in the aged, and they take it easily. Of the more drastic purgatives, elaterium is sometimes of very great service, though a not unfounded prejudice is prevalent against it. During its operation the patient should be confined to bed, use the bed-pan, and, if there is a sense of sinking, a little warm negus, or warm brandy and water, should from time to time be administered. We know of no purgative, indeed of no remedy, so useful in those numerous cases of bronchitis with sudden clogging of the lungs, congestion, œdema, and suppressed or inefficient expectoration, as the Pulvis jalapæ compositus. These most distressing cases, with universal moist râles and great accumulation in the bronchi, intense dyspnœa and lividity of the face,—symptoms betokening suffocation,—are often singularly relieved by free purgation by means of this remedy. It not only procures copious serous motions, but also acts on the kidneys, and promotes absorption. It thus, so to speak, drains the lungs and restores their action. Similar precautions as above are here also advisable, in administering, and more especially in repeating the remedy, while

as much nourishment as the patient can take should at the same time be given to support the strength.

Purgatives by the mouth, or enemeta, are frequently of essential service in the apoplectic and comatose affections of the aged. We have again and again seen the most surprising benefit obtained by full alvine evacuations in these cases. Several instances have occurred to us in which the sufferers were sunk in the profoundest coma of an apoplectic character, where blood-letting would only have hastened a fatal termination, but which were almost immediately relieved on the bowels being acted on by a drop or two of croton oil, with two or three grains of calomel, made into a bolus with butter, placed on the back of the tongue, and allowed to find its way down, all power of swallowing having ceased. In temporary attacks of senile insanity, purgatives are of great benefit, and their timely exhibition occasionally wards off the symptoms. They are *the* remedy in the spurious diarrhœa of the aged, depending on the irritation of retained feculent matter in the large intestines, or in the rectum itself.

Mercury.—This mineral is less effectual in controlling inflammation and encouraging absorption in the aged than in earlier epochs; it is, nevertheless, not entirely void of these qualities, and is frequently of great service in arresting the consequences of rheumatic iritis, promoting the removal of lymph in pneumonic consolidation, checking the secondary inflammation in the brain or membranes following sanguineous effusion, and, combined with opium, in moderating attacks of inflammatory diarrhœa. The aged are very generally brought under its influence with difficulty, and many appear wholly unsusceptible to its action on the economy. Notwithstanding these facts, great caution should be exercised in administering it, as occasionally it induces rapid, unexpected, and violent salivation, accompanied with the most urgent distress and prostration; and there can be no doubt it has caused the death of many old people by its poisonous effects on the system. In other instances, when exhibited as an alterative or antiphlogistic, it accumulates in the bowels unchanged, or in another manner expends its whole force on the intestinal mucous surface, producing severe and exhausting diarrhœa. We have observed this more particularly in cerebral disorders, in apoplectic and paralytic affections; and we have reason to believe that the

supervention of the diarrhœa occasioned by it has on more than one occasion extinguished the little remains of life, or hurried the approaching termination. Exhibited as an alterative and persisted in, it also interrupts sanguification, and induces an atrophic state of the blood, with cachexia, general marasmus, and nervous tremors. Mercury may therefore be regarded as uncertain in its operation and effects, and not without more or less inconvenience, or even danger, when given for some time in repeated doses to the aged. As a purgative, calomel is a safe and most valuable remedy at this period of life; but as an alterative, mercury in any form is hazardous. When exhibited in this manner its effects should be carefully watched, for it is frequently difficult or impossible to foresee them.

Antimonials.—Tartar emetic is a dangerous remedy in the old, if administered as a counter-stimulant, so as to maintain nausea, and diminish the strength and frequency of the pulse. Tolerance of the remedy may be established, but not without risk. There are some who appear to trust to it, in combination with opium, in senile pneumonia, to the exclusion of almost every other measure. Personally we have had little or no experience of this method of treatment; and from observation, we are indisposed to have recourse to tartar emetic in the doses that would likely prove serviceable in acute inflammation in old people, however much we esteem it in treating adults. The same apprehension of its depressing effects does not extend to moderate doses of the Pulvis Jacobi Veri, from which we have repeatedly derived the greatest benefit, when combined with small and regulated doses of calomel, in many inflammatory diseases in the old. Where we are desirous of reducing the pulse without more direct means, ipecacuhan is preferable to tartar emetic in advanced life.

Emetics.—These are considered precious remedies by the generality of practitioners in France in the treatment of some affections of the aged, and are extensively employed there in bronchitic and gastric derangements. In the former maladies, when the bronchi are loaded with phlegm, which is with difficulty expectorated owing to increasing weakness, they are occasionally advantageous; and when the stomach is overloaded by undigested food they are appropriate remedies; but in this country there exists a not unfounded prejudice to their general use in the aged; and consider-

ing the distress they occasion, and their effects on the circulation in the head, their safe employment is at times more than doubtful.

Narcotics.—The chief of these, *opium*, perhaps of all drugs the most extensively used, and the most valuable in the Materia Medica, is unsafe if administered incautiously in debilitated old subjects. Large doses paralyze the already enfeebled functions, and induce protracted if not fatal coma. Fortunately, it rarely happens that more than moderate doses are demanded; for, generally speaking, the diseases of advanced life are unaccompanied with acute suffering, of a nature to be relieved by opiates in unusual quantities. In gastrodynia, the passage of biliary and renal calculi, angina pectoris, and gangrena senilis, we have, however, given as much as two grains, or two and a half of solid opium, or an equivalent quantity of laudanum, to septuagenarians and octogenarians, and repeated the dose in an hour or two, if not beneficially, without at least any bad effects; but it is well known that in those cases where pain is a prominent symptom, and is sometimes excruciating, there is a surprising tolerance of this powerful drug. Nothing but the most urgent necessity ought to induce the practitioner to exceed ordinary doses of half a grain or a single grain, wherever, through natural causes, the powers of life are perceptibly declining, and a state of exhaustion has been brought about by persisting chronic disease.

Immoderate doses of the muriate of morphia are still more dangerous than similar (or equivalent) doses of solid opium. This preparation is more depressing; and if not guardedly administered, in affections of the lungs and valvular disease of the heart, acts injuriously,—in the former instance promoting congestion and checking expectoration, and in the latter unduly diminishing the muscular power of the organ. In states of exhaustion depending on diseases of the heart or lungs, too much caution cannot be exercised in prescribing opium or any of its preparations. Even in younger subjects precaution is necessary; but under these circumstances, in old age, a fatal termination is, we are convinced, but too often accelerated by what, at other periods of life, would be regarded as a safe and proper dose. In these and like conditions, in extreme old age, with great failure of the vital powers, when opium appears necessary for the relief of pain or spasm, as

in some of the affections above referred to, laudanum should generally be selected instead of either solid opium or the muriate of morphia; and where a full dose seems imperatively demanded by the urgency of the symptoms, say from twenty to twenty-five or thirty minims, a diffusible stimulant, such as the spiritus ammoniæ aromaticus, chloric æther, or a small quantity of brandy, should be conjoined with it. Having seen mistakes committed, it may be pardonable to remind the young practitioner, that in diminishing the secretions of the liver and kidneys, opium causes the motions to assume a white, drab, or clay colour, and the urine a deep brown, porter colour. When persisted in, it not only diminishes the amount of this secretion—sometimes reducing the quantity to four or six ounces in the day—but, in concentrating it, it reduces the solubility of the liquid, and allows the deposition of lithic acid soon after it has been passed, or even while still in the bladder. Three instances of this kind, one in a gentleman sixty years of age, for a long time suffering from cancer of the pylorus, for which it was frequently necessary for days together to give the muriate of morphia; and the others occurring in octogenarians—one the victim of vesicular bronchitis terminating in pneumonia, and the other a frequent sufferer from flatulent colic, connected with a large inguinal hernia;—afforded notable examples. In all there was much irritability of the bladder, and in the two latter instances there were large quantities of pure lithic acid crystals, resembling garnets, discharged with the urine, so large on one occasion as for a time to obstruct the urethra, and cause much loss of blood. An incorrect estimate in these cases would have aggravated the sufferings of the patients, by persisting with the opiate, in the hope of relieving the very symptoms which the remedy had occasioned. In the first case, any preparation of opium always, after a few days, produced the results referred to, and greatly annoyed the patient. I often heard him say that he did not know which was worse to bear, the pain in the stomach, or the pain and irritation in the bladder occasioned by the highly concentrated acid urine.

Diuretics.—Remedies of this class are necessarily often resorted to in the diseases of advanced life, dropsy in one form or other being a common attendant or sequela of the numerous maladies that assail the aged. Where the skin is altered in its structure

with advancing years, and unperspirable, they take the place of diaphoretics, which often fail in their object. Free action of the kidneys has also a powerful effect in relieving the lungs and brain; and in heart-disease, with its many complications, diuretics are sometimes of great benefit. Without them our resources in all these cases would be extremely limited, and our efforts nugatory in many other diseases of advanced life.

Of the saline diuretics, perhaps the most generally useful is the *nitrate of potash*. Canstatt regards it, however, with disfavour in old people, and alleges that it is depressing and debilitating in its effects. He thinks that it should rarely or never be given, "as it acts directly and injuriously upon their digestive organs, inducing a kind of paralysis."* That this salt occasionally disagrees even with persons in the prime of life is well known, but the examples are rare. Our own experience of it, employed as a diuretic in senile diseases, leads only to a similar conclusion. We have scarcely in any one instance been obliged to discontinue it on account of any prejudicial influence it exerted. Occasionally it gripes or sits *cold* in the stomach; but this evil is easily corrected by the addition of a warm aromatic, or by giving the mixture in which it forms an ingredient soon after food. Five-grain doses three or four times a day are usually sufficient to produce effect where the kidneys are disposed to act. Large doses, so often advantageous in acute rheumatism in the young and robust, are inadmissible in old age; indeed, they can never be required, and the doses recommended may be taken for weeks with impunity, without fear of thinning the blood. The *acetate of potash* is also a most useful diuretic. We usually give one or both of these salts with the liquor of the acetate of ammonia and sweet spirits of nitre, allowing at the same time a moderate quantity of gin and water where a stimulant seems necessary.

The vegetable diuretics are not less beneficial in old age than those just mentioned; nay, they are perhaps more efficacious in certain cases. *Digitalis*, the first and most important of these, requires to be administered with great care; but with this understanding, it is a truly valuable medicine. Where there are no signs of fatty degeneration of the heart, or where the heart's action

* Brit. and For. Med. Review, vol. xvii. p. 107.

is not feeble and fluttering, it may usually be given with perfect safety, even where the pulse is intermittent—a symptom which sometimes disappears under its influence. The old diuretic combination of calomel or blue pill with digitalis is a highly satisfactory remedy in numerous instances in which this class of medicines is indicated. Where the constitution is greatly deteriorated by age and suffering, it will usually be found serviceable to give tonics along with the preparation of digitalis which is selected. The tincture, or the infusion, may be added to the mixture above alluded to; and it may be regarded as certain that a combination of saline with vegetable diuretics is more efficacious than either given singly. Digitalis is, however, extremely apt to impair the appetite in old subjects, and this is a fatal objection to continuing the remedy, when it is often requisite to support the strength by as much food as the stomach can receive and digest. It is hardly necessary to caution the practitioner of the depressing effects of this powerful drug, or to add that it should be abandoned as soon as it tells on the pulse, or produces faintness, giddiness, or sickness.

Colchicum is a medicine—whether exhibited as a diuretic, antiphlogistic, or antilithic and purifier of the blood—about which there exists considerable diversity of opinion as to its safety and utility in persons of advanced age. Like other powerful remedies, its operation requires watching. A careful and judicious administration of it, in moderate or medium doses, is occasionally attended by the best effects in the very decline of life. It may in this manner be given to nonagenarians without any apprehension; but as it is one of those medicines that accumulate in the system, it should occasionally be intermitted, when it is considered expedient to continue its administration for a length of time; and in all cases, immediately it is observed to affect the pulse or attack the bowels, it should at once be omitted. The best guide to its safety is the precise condition of the heart. Being a "lowering" remedy, it is obviously inapplicable wherever this organ is feeble and deficient in power, whether from extreme general debility and exhaustion, or from changes in its parietes. In doubtful cases it is advisable to combine it with a stimulant; and the compound tincture will be found an excellent preparation in the generality of cases occurring in old age likely to be benefited by colchi-

cum. We have given alterative doses of this tincture—ten to fifteen drops two or three times a day—to octogenarians perseveringly for six or eight weeks at a time with benefit, and without having felt it necessary to discontinue it during any portion of the period.

Squills and its preparations have long been much used as diuretics and expectorants, and considered especially indicated in the declining periods of life. Unquestionably they deserve the reputation they have acquired. They not only increase the flow of urine, but exercise a peculiar influence on the bronchial mucous membrane, moderating inordinate secretion in chronic bronchorrhœa, and otherwise acting beneficially. The virtue of squills also extends to other mucous surfaces, the bladder and intestines. The only objection to the continued administration of this valuable medicine is, that, like digitalis, it sometimes, and not unfrequently, disagrees with the stomach, occasioning nausea, and destroying the appetite. This is a serious impediment to its use, which should at once be met by diminishing the dose, or trying some other preparation, and combining it with aromatics. Should the change prove inoperative, the medicine must be entirely discontinued for a time.

Tonics.—Where there is so much natural loss of vital power, so great a tendency in acute inflammatory disease to assume a congestive, asthenic, or typhoid type, and where disease frequently presents itself in a chronic form, *ab initio*, associated and complicated in such wise as to be productive of much general debility and exhaustion of the nervo-muscular functions, it is obvious that medicines of this class must be extensively employed, as they are clearly indicated in many of the disorders and infirmities of old age. They may often be conjoined with other medicines possessing specific qualities with great advantage, increasing their physiological effects by stimulating the capillaries, and imparting tone and vigour to the whole organism. In this way they are usefully combined with expectorants, diuretics, and purgatives, wherever a course of these medicines is advisable in the aged. Nor is their administration inconsistent with general or local bleeding, where it is demanded for the mitigation of inflammatory action. There is, moreover, a stage in almost every disease, at every period of life, when tonics are serviceable. In old age this stage occurs

early, if it does not present itself at the very beginning of the malady we are called to combat; and to sustain the salutary efforts of nature, to support the system under the exhausting influence of disease, tonics appear the most appropriate of remedies, and immediately suggest themselves to our understanding as peculiarly suited to the conditions of the system in the declining epochs of life.

Quinine has been called the iron of the aged, and no doubt it merits high estimation; but except in low, typhoid conditions of the system, or where its indisputable antiperiodic properties are demanded, several of the aromatic vegetable tonics are more generally available and agreeable. The cases are not rare in which quinine, even in small doses, is not so well borne as the infusion of columba, cascarilla, gentian, or chyretta; and one or other of these is often more compatible with the medicines it is proposed to combine in a mixture. A moderate allowance of generous old wine is among the best of tonics in the debility accompanying or following disease in old age. Where bitter infusions only are considered sufficient or advisable, they should be combined with aromatics and carminatives, and they are further improved by the addition of their respective tinctures.

The *mineral tonics* are also often of great service in many senile diseases, and of these the different preparations of iron are the most suitable,—none more so than the *sulphate*, the *tincture* of the *sesqui-chloride*, and the *ammoniated tincture*. The *citrates* also are appropriate and convenient, and the *citrate of iron and quinine* is one of the very best tonics we possess in numerous cachectic states of the system. The *oxide* and *sulphate of zinc* are likewise frequently beneficial, and may occasionally be substituted for preparations of iron with advantage in chronic catarrhal affections, as less constipating,—a confined state of the bowels being one of the most troublesome accompaniments of old age, and one which invariably produces great mental disquietude, amounting at times to a species of insanity. It deserves to be mentioned that Canstatt recommends a careful administration of metallic remedies in the old. The truth, however, is, that all substances of an active or powerful kind given to them should have their effects watched.

But we must pass over more rapidly a few other remedies be-

longing to different classes in the Materia Medica, the observations upon this subject having already greatly exceeded what was originally contemplated.

Chloroform.—This inestimable medicine is generally well borne by the aged, where the heart remains sound; and most old people inhale it kindly and successfully in moderate quantity. An old standing bronchitis is no objection to its employment. It sometimes relieves asthma, proceeding from bronchial spasm, almost instantaneously; and it seems admirably adapted for the relief of the agony of angina pectoris, and the pain accompanying the passage of renal and biliary calculi. As angina pectoris so very frequently, however, depends on fatty disease of the heart, it should be administered in this disease with great care. As a hypnotic, it may be given to the aged in doses of ten or twelve minims with advantage. *Chloric æther* is a most valuable preparation, which also suits old people well. Given as an antispasmodic, sedative, and diffusable stimulant, it is an appropriate remedy in some of the bronchial affections to which they are prone, and also in several painful disorders.

The *iodide of potassium*, except in small doses, not exceeding from four to six grains in twenty-four hours, is a deleterious substance in debilitated old subjects, and should never be prescribed where the patient is not likely to be seen from day to day. It occasionally acts on them as a violent irritant, producing nervous tremors, lowness of spirits, headache, pain in the throat and palate, giddiness, and wakefulness; yet it seldom occasions the characteristic coryza in old people unless given in larger quantities than these, and for a longer period than in adults. We have, indeed, known it unguardedly taken by a clergyman sixty-four years of age, for nearly two months, to the extent of a scruple a day, before it caused any of these symptoms, with the exception of irritation of the fauces and palate, and hypochondriasis. Combined with the infusion of cascarilla, and given in doses not exceeding a grain two or three times a day, it is sometimes of signal service in anorexia in advanced life following gout, or in atonic dyspepsia dependent on senile loss of tone and impaired nervous energy of the stomach. In these small and alterative doses, it is likewise occasionally of much benefit in chronic gout, with or without chalky deposits in the joints. Indeed, it is one of the

best remedies in removing the local effects of this disease, as so it is in the sequelæ of bronchitis.

Arsenic is, generally speaking, ill borne by old people, in whom its alleged tonic properties are very doubtful. Except in certain scaly diseases, we have had, however, but comparatively little experience of its use in the aged; and having felt it necessary to diminish even small fractional doses, or entirely to suspend them, when administered for lepra or psoriasis, on account of the action of the remedy on the nervous system and mucous membranes, we are indisposed to have recourse to it wherever a less dangerous treatment promises equal success or benefit.

Hydrocyanic acid is another medicine which requires to be administered with extreme caution in advanced life; and its effects should be very carefully watched. Even small doses, not exceeding five minims of the diluted preparation of the "London Pharmacopœia," exhibited two or three times a day, occasionally create faintness, giddiness, obscurity of vision, trembling of the limbs, sleepiness, and other symptoms of its action on the brain and spinal marrow. It has often been a matter of surprise how old people ever get over the large doses of this most potent remedy which certain practitioners appear to be in the habit of prescribing, with a recklessness that betokens profound ignorance of its depressing influence on the nervous system, and its extreme danger.

In regard to *strychnia, veratria,* and other alkaloids of this kind, it seems needless to observe that their internal administration should never be had recourse to without great care; for although they sometimes seem to have less effect on the nervous centres in old people, and are tolerated in larger doses, owing, no doubt, to failing sensibility, than in younger subjects, their action cannot be foretold, and if injurious, the consequences are sure to be more lasting and more serious.

Turning from these potent and dangerous agents, we must not omit to add to the list of the more useful and safe remedies, peculiarly serviceable in the therapeutics of senile diseases, *revulsives* and the various *balsams.* Among the former, *turpentine epithems,* and *sinapisms,* by the certainty and rapidity of their action, are extremely convenient, and of frequent benefit in relieving internal congestion and rousing the nervous system. They possess an ad-

vantage over *blistering,* in enabling the practitioner to repeat them at will; but it is their expedition that entitles them to consideration, where immediate results are important, as in apnæa and stupor, or coma, and in certain affections of the heart. Blisters are often very slow in their operation, and if allowed to remain too long are apt to produce gangrenous ulceration, or severe irritative inflammation. *Issues* and *setons* have very justly fallen greatly into disfavour. Formerly much employed in the paralytic and cerebral affections of the aged, a sounder pathology has shown the absurdity of trusting to them in the cure or prevention of many of these diseases, and humanity has come to the aid of the physician in almost entirely discarding them.

With regard to *balsamic* remedies, the balsams of tolu and copaiva are often extremely beneficial in chronic inflammation of the pulmonary mucous membrane with increased secretion, and in catarrh of the genito-urinary organs. The latter balsam has at times a wonderful influence in catarrh of the bladder, even when consecutive to enlargement of the prostate, or calculi in the organ. It is also a most useful detergent in many indolent, foul, chronic ulcers; and with charcoal or powdered bark it will be found a valuable application in anthrax and in sloughing of the nates, from long-continued pressure.

SECTION III.—HYGIÈNE.

The hygiène of the aged is so extensive a subject that it can hardly be dealt with summarily, yet the more important rules for the conduct of old people in preserving health are neither numerous nor obscure. "Know thyself," is a divine precept applied to the mind which man has not unwisely extended to the body, as one of the first principles in old age to insure a still longer life, how to attain which has ever been a question of deep interest with popular and scientific authors, from Lord Bacon downwards. The consideration of this subject, the question of longevity, hardly comes within the scope of this work; but it seems indispensable to the completion of the design, to touch upon the means of preserving health in old age, however lightly; and there is also less necessity for dwelling on the subject here, since hygiènic measures form so important a part of the treatment of disease in general,

that they must necessarily be frequently referred to in the following pages—a remark which equally applies to the important subject just quitted.

Reflecting on the modifications that take place in the different organs, on the gradual and progressive impairment of their respective functions as life advances, and on the anatomical changes that precede or accompany their failing activity, and which increasing, *pari passu*, in number and extent with increasing years, promote and perpetuate their declining energy—it becomes apparent that an essential element in retarding the natural decay of the whole organism, vital and physical, and thereby preserving health, consists in apportioning the natural stimulus of each organ, or each system of organs, to its reduced power or capacity, in preventing undue excitement or depression, and eschewing with redoubled solicitude the recognised sources of disease.

Brain-work, Occupation of the Mind.—Acting on these principles, the brain should not be over-worked, as already observed, by continuous mental labour, abstruse study, or intricate operations in business, requiring much thought. The time has now arrived for applying the acquirements of youth and maturity, and "the stores of knowledge then accumulated," to the concerns of life, as occasion arises, calmly and sedately, as becomes age. Nature points out that the evening of our days is a season of retirement and quiet repose, of reflection and meditation rather than of action and excitement. Nor is this inconsistent or incompatible with pleasurable employment of the intellectual faculties. This is conducive to a healthy discharge of the cerebral functions, and, through the sensorium, has a salutary influence on the entire system; for while moderate exertion of these faculties is unquestionably beneficial to the whole being, idleness and listlessness lead to senile fatuity and atrophy of the brain. The love of reading, acquired in earlier life, and generally only then acquirable, often serves a good turn in declining years, and happy is he who, although feeble in body, still enjoys "communion with the wise and just." These, the companions of his solitude, the silent monitors of former times, now but too frequently become his only instructors and his only associates,—the link in the bereavements of advanced age that connects him with all that is agreeable in this lower world.

Diet.—The diminished capacity of the stomach, its reduced muscular power and declining nervous energy,—conditions equally appertaining to the remainder of the digestive tube, and the fewer wants of the system,—clearly point out moderation in eating and drinking, and suggest exclusively the use of those articles of diet that are known to be most nutritious and easy of digestion. The food should consist of a due admixture of animal and vegetable substances of the wholesomest and tenderest kind, easily reduced by the solvent power of the gastric juice, modified like other secretions by the progress of time. Although it should be rather more fluid than solid, liquids are but sparingly required, for the waste by perspiration and through the lungs is now greatly diminished; while the action of the kidneys themselves is also reduced, the amount of urine secreted being considerably less than in the adult. Moreover, by diluting the gastric juice, fluids still further weaken its solvent property, and in unduly distending the stomach, they interfere with its kneading or triturating action, whereby the various articles of food are more slowly brought into contact with the gastric juice, and digestion materially retarded. Where bad habits at meals have been acquired, they are broken with difficulty, but they should be gradually and resolutely abandoned. Heavy meals are most prejudicial, and are not rarely followed in elderly people by apoplexy. Many sudden and serious attacks of other diseases may be traced to a loaded and offended stomach—to an amount of food which at another period would be taken with impunity. Should the appetite still be keen, as it often is, the meals ought to be more frequent, and it ought never to be indulged without restraint. Nothing solid should be taken in the intervals. Minces and strong fresh-made soups thickened with bread, vermicelli, barley, or rice, are well suited, especially when the teeth have disappeared and the power of mastication has ceased. Milk and eggs, when they agree, are wholesome and highly nutritious. Light puddings often form an important portion of the diet of the aged. Many old people have a dislike to vegetables of every kind, and entirely discard potatoes from their meals. A more unfortunate error can hardly exist. If persisted in, a cachectic state of the system is induced, and scurvy in one form or other is sure, sooner or later, to make its appearance. At least one or two potatoes a day should be taken, or an equivalent quantity of fresh,

succulent vegetables. The former more generally agree; but, in numerous instances, greens and spinage are easily digested, and it will frequently be observed that hearty and healthy old persons indulge largely in these, and much enjoy salads of every kind. As regards condiments and fermented liquors, much depends on the past habits of the individual. The former give relish to the food, and are now less objectionable than at earlier periods of life, but are apt to promote a false appetite, and to encourage indulgence beyond what the stomach is able to bear, or what is really required for the wants of the economy; the latter, in moderation, are conducive to a healthy discharge of the different functions, and good old wine has almost ever been regarded as beneficial to the aged. A debauch at this time of life is an unmitigated error, a perilous folly; and frequent excesses rapidly undermine the best constitution. The reader is referred to the chapter on Dyspepsia for further and more detailed information on dietetics.

Exercise.—Exercise of some kind or other is almost essential to the preservation of health in persons of all ages—but in none more so than in the old. Walking exercise in the open air is the most beneficial of all. Next to it riding, and then driving on the road. So long as the aged subject can accomplish it with comparative ease and comfort, he should continue his daily walks, always short of fatigue or pain. Nothing so effectually promotes the more equable distribution of the blood, and averts the constant tendency to local congestion in the brain or abdomen. Its salutary influence on the functions of the lungs and skin are well known, and there is no organ or vital operation which is not more or less benefited by it. Long livers have usually been early risers and good walkers. The only substitute for exercise is shampooing and friction of the whole surface.

Clothing and Climate.—Cold has such a prejudicial effect on the aged, that it cannot be too carefully guarded against by warm clothing and thermal comforts. The greatly diminished power of generating heat and of preserving it, indicate the necessity of covering the entire surface with flannel, which should be worn both in summer and winter, in this climate, next the skin; invalids who suffer much from cold should be still further protected by wearing thin spun silk over the flannel, in winter and spring;

chamois-leather is too heavy and impermeable. They should sleep in cotton sheets, and wear cotton instead of linen shirts. During the night-time, in their sleeping-apartments, care should be taken to keep up a temperature of not less than 50° or 55° of Fahrenheit. "The temperature can never safely descend lower than 40° degrees," says Dr Farr;* "for if the cold that freezes water in their night-chamber do not freeze their blood, it impedes respiration, and life ceases when the blood-heat has sunk a few degrees below the standard." Congestion of the lungs from cold is a common cause of unexpected death in feeble old subjects. If possible, a warm part of the island, little exposed to cold winds, and of an equable temperature, should be selected as the place of residence during the cold months of the year. Several places on the south and south-east coast partly fulfil these objects; but, when convenient, the aged subject should go still farther south, and proceed to Nice, Rome, or Naples. The reputed extreme salubrity of Malaga, and its high mean winter temperature, viz. 54·41°, being six degrees warmer than Rome, seven than Nice, fifteen than London, together with a less mean annual range of temperature than any other place on the continent (*Francis*), seem peculiarly to recommend it as a suitable place of abode for the aged.

Cleanliness—Warm Baths—Friction of the Skin.—Scrupulous personal cleanliness is as essential to the health of the aged as good food and pure air. The skin, having in a great measure lost its high organisation, and become more and more unfitted for carrying off effete matters from the system, should have its action promoted by frequent ablutions followed by friction with the flesh-brush or a rough towel, by occasional tepid baths, and by the exercise and warm clothing already advised. When exercise can be taken, flannel garments should be made to sit rather loose and easy, particularly drawers, so as to admit of a certain amount of friction in the movements of the body. The activity of the skin in the adult, and its stimulation by bodily exercise, counteract the evil of neglecting the golden rule that cleanliness is next to godliness; but where these are wanting in old age, where the skin is dry, withered, and scaly, its pores contracted and numerically

* Third Report Registrar-General, p. 108.

diminished by reason of the atrophy of the sudoriferous glands, the necessity for encouraging a more vigorous discharge of its important functions by artificial means becomes obvious, and these are imperatively demanded when, on account of growing infirmities, the aged valetudinarian is incapable of any bodily exertion.

It is curious and interesting to observe that Homer, as Urquhart in his work on classical learning has already pointed out, seems to have been acquainted with the great principles of hygiène in old age, for the alleviation of the disorders of which Ulysses gives the following prescription to his father, Laertes :—

> "Warm baths, good food, soft sleep, and generous wine,—
> These are the rights of age, and should be thine."

And Cicero, after commending exercise and temperance as preserving some remnant of pristine vigour even in old age, judiciously adds, "We must make a stand against old age, and its faults must be atoned for by activity; we must fight, as it were, against disease, and in like manner against old age. Regard must be paid to health; moderate exercise must be adopted; so much of meat and drink must be taken, that the strength may be recruited, not oppressed. Nor, indeed, must the body alone be supported, but the mind and the soul much more; for these also, unless you drop oil on them as on a lamp, are extinguished by old age. And our bodies, indeed, by weariness and exercise become oppressed, but our minds are rendered buoyant by exercise." Nearly two thousand years have elapsed since this was written, and yet, as far as it goes, better advice cannot be given the old for the preservation of the health of mind and body.

Hufeland has well observed, in his remarks on the proper treatment of old age, that "people, with increasing years, should accustom themselves more and more to a certain order in all the vital operations. Eating, drinking, motion and rest, the evacuations and employments, must have their determined periods and succession. Such mechanical order and regularity, at this season of life, may contribute greatly to the prolongation of it." On another occasion, when treating of constipation in the aged, will be pointed out the great utility of directly and implicitly following the dictates of nature in regard to the evacuations, and especially of

acquiring regular habits in promoting the exoneration of the bowels at fixed and stated periods. Is it necessary to caution the aged of both sexes, but especially males, against the danger of putting off till a more convenient moment relief of the urinary bladder? How numerous are the instances in which death has ensued through infringing this law, and how still more numerous are the instances in which its infringement has been the occasion of long-continued suffering and permanent misery!

CHAPTER III.

CLIMACTERIC DISEASE—DECAY OF NATURE—BREAKING UP OF THE CONSTITUTION.

THE decline of the vital powers and degeneration of the organism sometimes proceed so rapidly and obviously, as to assume a truly morbid character. Accelerated by hardships, the depressing passions, the cares and anxieties of office, and domestic solicitude, this decay of the system is suspended, or disappears, as previously remarked, on the removal or abatement of these injurious influences; and instances are not wanting in which the natural tendency downwards is not only arrested in old age, but a change of a totally different kind takes place,—a remarkable attempt at rejuvenescence being observed, not without more or less success. The individual appears to grow young again. New teeth sometimes shoot forth even at very advanced age. The eyesight improves in others. Glasses which have been used for twenty years are thrown aside as no longer necessary; and even, it has been asserted, gray hairs have become black, the hearing has been restored after many years of deafness, baldness has vanished, and all the functions of life have returned to their fullest vigour.

It is with the former state of things we are now concerned,—with that rapid decay of the system more closely resembling morbid action than the almost imperceptible and silent changes of a physiological nature effected in the economy by the progress of years, and which the late Sir Henry Halford has called "Climacteric Disease."

The existence of this disease has been denied by some, while others have exaggerated its frequency and importance. The latter perhaps make too much of it, as they seem to regard almost every obscure and undefined affection occurring in advanced epochs of

life as no other than climacteric disease in some one of its forms. It is not found in any of our systematic works on the practice of medicine, with the exception of the well-known compilations by Dr Good and Dr Copland. It is but briefly noticed in the "Cyclopedia of Practical Medicine," while it is altogether omitted in the "Library of Medicine;" nor has Canstatt nor Durand-Fardell, in their treatises specially devoted to the diseases of the aged, alluded to it as a distinct affection. Gendrin speaks of *senile cachexia*, but only as the semblance of the different phenomena of decrepitude, "the last term of the progressive deterioration of the organic functions, the characteristics of which are the drying of all the tissues, the weakening of the muscular power, extending to the contractions of the heart itself, the hardening and ossification of the arteries, the thinning and atrophy of their transverse fibres, already pointed out by Haller,—all of these conditions rendering the circulation and nutrition insufficient for the wants of life."* Dr Copland,† with his usual ability, has, in a brief space, given a clear exposition of the disease, manifestly, however, like the account by Dr Good,‡ Sir James Clark,§ Dr Day,‖ Mr Van Oven,¶ and indeed of every subsequent writer, based on the admired paper by Sir Henry Halford in the fourth volume of the Transactions of the College of Physicians of London for the year 1813, which may also be found in the collected essays and orations of the lamented president of the College. A valuable monograph on the same subject, by Dr Henry Kennedy of Dublin, inserted in the 25th vol. of the "Dublin Journal of Medical Science," 1844, also deserves special notice, as it has considerably extended our knowledge of the disease, though it is somewhat doubtful whether at least two of the five cases he has recorded are not assignable to other causes than climacteric decay,—the fourth, presenting in a lady of about thirty years of age, being apparently an ordinary case of asthma with anomalous and hysteric symptoms,—the fifth, localised disease of the brain, very probably white softening, occurring in a gentlemen upwards of forty years of age.

Sir Henry Halford regarded the disease as solely one of advanced

* De l'Influence des Ages sur les Maladies, p. 65.

† Dict. of Medicine. ‡ Study of Medicine.

§ Sanative Influence of Climate. ‖ On the Diseases of Advanced Life.

¶ Decline of Life in Health and Disease.

life, occurring with the changes in the system in age so very irregularly, that it might occasionally be remarked at any time between fifty and seventy-five years of age. Dr Kennedy thinks this view erroneous, and "at least," he observes, "I may state with certainty, that an affection which agrees in every respect with climacteric disease is by no means unfrequently met with in individuals between twenty and thirty years of age."

It is due to the memory of Professor Waterhouse of the university of Cambridge, U.S., to record that, long before the publication of Sir Henry Halford's paper,—so long ago, at least, as 1807 (*i.e.*, six years previously), he clearly pointed out, in a letter to Sir John Sinclair,* the period and symptoms of "climacteric disease or decay," in the following observations: "There are certain periods of life, if I mistake not, which are scarcely noticed by medical writers,—viz., about the age of thirty-six, when the lean man becomes fatter, and the fat man leaner. Another, between the years of forty-three, fourty-four, and fifty, when his appetite fails, his complexion fades, and when his tongue is apt to be furred on the least exertion of body or mind. At this period his muscles become flabby, his joints weak, his spirits droop, and his sleep is imperfect and unrefreshing. After suffering under these complaints a year, or perhaps two, he starts afresh with renewed vigour, and goes on to sixty-one or sixty-two, when a similar change takes place, but with aggravated symptoms. During the natural change that takes place between forty-three and fifty, no particular organ suffers, but a gradual and uniform *deterioration* supervenes. At this time he first experiences a reluctancy to stoop; he prefers a carriage to riding on horseback; and he finds himself more affected by changes of the weather. He nevertheless commonly passes through this kind of '*moulting*,' and regains his health, with a little diminution of muscular strength, until he turns sixty; then the gravity of age is more strongly marked, and he begins to boast of his age and its prerogatives. This," he concludes, "is the result of my observations on others, compared with my own personal experience."

My own opinion is, that the disease is rarely met with as an idiopathic or distinct affection. Many years ago, imbued by the

* Code of Health and Longevity, vol. i. p. 33.

description given of it by Sir Henry Halford, I imagined that I had met with it in numerous instances; but I soon found that in those cases terminating fatally, and which I had set down in my own mind as climacteric decay or disease, death was the result of some latent affection of long standing, hidden from observation by the absence of its ordinary symptoms, the most frequent being tubercular disease of the lungs, organic disease of the liver, or cancer of one or more of the internal organs. And in cases terminating favourably, recovery took place after the subsidence of a coexisting malady, such as a dyspeptic, bronchitic, or gouty attack. It is the ingrafting of some malady on the senile constitution, premature or delayed, that forms a part, and no unimportant part, of the disease. I am satisfied that, until of late years, granular degeneration of the kidney, occurring in elderly people, without anasarca, must have frequently been put down as climacteric decay.

To the argument by which it is maintained that it is mere declension of strength and decay of the natural powers, and not disease, Sir Henry Halford replies by observing, that it may be sufficient to answer, that men frequently *rally* from the languid and feeble condition of their system into which the change had thrown them, become to a certain degree themselves again, and live for years afterwards; and he describes it as "a falling away of the flesh in the decline of life, without any obvious source of exhaustion, accompanied with a quicker pulse than natural, and an extraordinary alteration in the expression of the countenance."

"Sometimes," he observes, "the disorder comes on so gradually and insensibly, that the patient is hardly aware of its commencement. He perceives that he is sooner tired than usual, and that he is thinner than he was; but yet he has nothing material to complain of. In process of time his appetite becomes seriously impaired; his nights are sleepless, or, if he get sleep, he is not refreshed by it. His face becomes visibly extenuated, or perhaps acquires a bloated look. His tongue is white, and he suspects that he has fever. Pains are occasionally felt in the head and chest, and the legs are disposed to swell, yet there is no deficiency in the quantity of the urine, nor any other sensible failure in the action of the abdominal viscera, excepting that the bowels are more sluggish than they used to be.

"Sometimes the headache is accompanied with vertigo; and sometimes rheumatic pains, as the patient believes them to be, are felt in various parts of the body, and in the limbs; but, on inquiry, these have not the ordinary seat, nor the common accompaniments of rheumatism, and seem rather to take the course of the nerves than of the muscular fibres.

"In the latter stages of this disease the stomach seems to lose all its powers; the frame becomes more and more emaciated; the cellular membrane, in the lower limbs, is laden with fluid; there is an unsurmountable restlessness by day, and a total want of sleep at night; the mind grows torpid and indifferent to what formerly interested it, and the patient sinks at last, seeming rather to cease to live, than to die of a mortal distemper.

"Such," continues our author, "is the ordinary course of this disorder in its most simple form, when it proves fatal. When the powers of the constitution are superior to the influence of the malady, the patient loses his symptoms gradually, recovers his rest and his appetite, and to a certain degree his muscular strength and flesh; but the energies of his frame are never again what they were before, nor does the countenance recover its former volume and expression.

"But it is seldom that we have an opportunity of observing this malady in its simple form, and never, I believe, but in a patient whose previous life has been entirely healthy. We find it generally complicated with other complaints, assuming their character, and accompanying them in their course. It blends itself with the effects of any fixed organic mischief in the constitution; takes on the appearance of any periodical irritation to which a patient may have been subject, or adopts the features of a casual disease. When associated with organic mischief, it is difficult to distinguish the climacteric complaint from that train of symptoms which commonly supervenes, sooner or later, on diseased structure; but its presence ought to be suspected, if the complaints are all unusually exasperated, if a fatal result be threatened earlier than is usual in the common course of things, and, above all other indications, if that character be impressed on the countenance which peculiarly distinguishes this disorder."

Dr Kennedy has more minutely entered into the history of the disease, but agrees in the main with Sir Henry Halford as respects

its usual gradual mode of invasion, the character of the symptoms, diagnosis, and treatment. Like him he lays great stress on the remarkable change the countenance undergoes in the progress of the complaint; "it is not merely that the individual looks ill, but all at once, as it were, several years are added to his life, and he gets the credit of being much older than he really is." Among the most common symptoms ushering in the attack, are pains of a darting, transient, and periodic character passing through the frame, or confined to a certain part. Another common symptom is weakness of the knees, sometimes amounting to absolute pain. After these pains have existed some time the appetite begins to fail; it is soon entirely lost, and finally, in a well-marked attack, there is an utter aversion for all sorts of food. Then there is loss of flesh and strength, both of mind and body, and, above all, the sleep goes astray. The loss of flesh and change in the expression are almost constant symptoms, as already described by Sir Henry Halford, but not so the other symptom, viz., quickness of the circulation,—Dr Kennedy having, he says, seen cases where from first to last the pulse was not raised in the slightest. Nor has he ever seen one without symptoms referrable to the head, chest, or abdomen supervening. When the head is affected, pain is the most common complaint, marked by the most extraordinary periodicity; or there may be a sense of weight instead of pain, aggravated by any movement of the head; while in other instances there is giddiness, or a sense of blood flowing to the head, giving rise to the most distressing throbbing;—each and all these feelings are almost invariably periodic. These symptoms may be, in a still more aggravated form, accompanied by numbness, or even paralysis, of one side of the body,—not a complete paralysis, as it is recoverable from entirely. As respects the renal secretion, Dr Kennedy differs from Sir Henry Halford in observing that it is diminished,—patients themselves, at least, saying that it was not passed in the usual quantity. In many instances lithates are deposited throughout the progress of the disease.

According to Sir Henry Halford, though the disease is sometimes equally remarkable in women as in men, yet the severer and more characterised forms occur in men,—a fact which may be accounted for by this sex being more exposed to its exciting causes. Dr Kennedy coincides in this view, though in his own

experience he has met the disorder fully as frequently in the one sex as in the other. He thinks that, as a general rule, men suffer more during the progress of the disease from derangement of the digestive system and brain, while, on the contrary, females suffer more from symptoms referable to the lungs or heart.

Such are the principle features of this disease, which, however, vary greatly with the pre-existing pathological condition of the patient, hereditary constitution, and general mode of life. In common language, it is called "a breaking up of the constitution," which, in truth, as Sir James Clark observes, it generally proves to be, if not judiciously treated. In its pure and simple forms it is chiefly confined to persons in the middle and upper ranks, of a nervous and sensitive temperament, with warm affections and keen sympathies,—men and women who, from the peculiar constitution of their nature, are injuriously influenced by events and circumstances which are entirely unheeded by minds of a different stamp, or bodies cast in a less delicate mould. The best examples occur in our own trying, laborious, and anxious profession, in literary persons, clergymen, lawyers, and also in elderly spinsters who devote themselves to visiting the sick and poor. These ladies often become suddenly aged without obvious cause, fail in health, suffer a variety of anomalous symptoms, lose flesh, acquire sharp features, an angular, shrivelled form, and after a time recover, but never entirely regain their former plumpness, nor lose the characteristic alteration in the countenance thus rapidly established. Among tradesmen and labourers, generally less accessible by appeals to the feelings, whether in relation to others or themselves, the malady very rarely presents itself in an uncomplicated form, or, at least, the early, what may be called the first stage, has passed away before advice is sought, and has entered upon its subsequent stages when it is associated with functional or organic disease of some of the viscera, or with gout and its numerous complications. Besides the complaints already mentioned, derangement of the colon (colonic dyspepsia), sciatica, urinary affections, erythema, and other cutaneous eruptions, are its most common accompaniments. The disease is principally met with in people of between fifty and sixty years of age, though, as above observed, it may occur before or after that. At this age men are busily engaged in the affairs of life, still struggling with its cares and anxieties, and

exposed to disappointments and reverses which wound the feelings and lacerate the heart. Later, in the succeeding decennial periods, they have either reached the summit of their hopes and ambition, or they have failed in their aspirations and fallen behind in the race, and now calmly resign themselves to their fate. "Old age," says a reviewer,* "has now quieted down the irritability and blunted the overstrained sensibilities of our nature, the bodily health becomes often very strikingly improved, and the remaining portion of life is passed much more smoothly and equably than the ten or twelve years that had preceded the change. The feelings are now much less excitable; the chagrin of disappointed hope or ambition does not sink so deeply, and a certain degree of apathy creeps on, rendering the individual more submissive to the present and less anxious about the future."

The moral causes now hinted at are a fruitful source of the peculiar phenomena constituting the disease, or they powerfully predispose the body enfeebled by years or adverse circumstances to the injurious impressions of every-day accidents, which the resiliency of youth and the vigour of life resist with scarcely an effort. "The influence of grief on the body," says Sir Henry Halford, "is very different at an early from what it is at a late period of life. A mind actively engaged in youth in the pursuit of fame and fortune, is hardly vulnerable by any disaster which does not immediately stop its career of success; and if a deep impression be made by misfortune, new schemes of ambition, and the gradual influence of time, contribute to obliterate it; but sorrow late in life has fewer resources, and more easily lets in disease. Have a man's circumstances been suddenly overwhelmed by some unexpected calamity? There is not time to repair his losses, to recover his station in society, and he pines in gloomy despondency. Or has death inflicted the wound in his peace of mind? At this time of life, it may be, the partner of all his happiness and all his cares has been torn from him,—or a child, who had grown up to be his comfort and support,—or, perhaps, a friend, a contemporary, with his regret for whom there is mixed an apprehension that the next blow may fall on himself." How often do we see an aged husband or wife soon followed to the grave by the bereaved partner,

* M. C. Rev. 1845, p. 372.

and how suddenly aged do one or other become when disease threatens the separation, or effects it!

Of the other causes of this disease, a common cold seems to be among the most frequent. "When the body is predisposed to this change," Sir Henry Halford remarks, "any occasion of feverish excitement, and a privation of rest at the same time, will readily induce it." "I have known," says he, "an act of intemperance, where intemperance was not habitual, the first apparent cause of it. A fall which did not appear of consequence at the moment, and which would not have been so at any other time, has sometimes jarred the frame into this disordered action. A marriage contracted late in life has also afforded the first occasion to this change; but, above all, anxiety of mind and sorrow have laid the surest foundation for the malady in its least remediable form."

The duration of the malady varies with the nature and importance of the associated circumstances and original powers of the constitution. Slow in its invasion, it is equally tardy in its decline, though occasionally people seem to recover from it with marvellous rapidity after the critical point has been turned. Dr Kennedy states that he has never seen it occupy less time than between four and five months, while, on the other hand, some individuals were not quite well at the end of two years. He considers its average period to be about nine months. Eighteen months or two years has been the usual time it has lasted, in any marked examples that have fallen under my observation, where recovery has taken place; but then these were instances occurring in persons above fifty years of age. It has lasted longer in other cases of a doubtful nature, by which I mean obscure forms of disease modified by the senile constitution, and which, in my estimation, ought scarcely to be regarded as belonging to the malady. These were, for the most part, cases of functional or organic disease, perpetuated and aggravated by the natural decay of the frame, the existing conditions mutually acting and reacting on each other, and recovery or death ensuing according to the subsidence or suspension of the associated affection, leaving the individual, in favourable examples, changed in appearance, but recovered in spirits and general health.

It seems unnecessary to add, that, as a general rule, the prog-

nosis in this disease is unfavourable. In considering it, the physician must be guided by the progress of the complaint and the nature of the co-existing maladies. In the purer and simpler forms, where the disorder has been gradually advancing for many months, unassociated with renal symptoms, or any defined disorder of an important nature, and the pulse, the skin, and digestive organs, still retain a nearly normal condition,—the disease may be expected to end satisfactorily. The non-occurrence of another disease, more or less clearly connected with the primary disorder, is a surmise, if not a proof, that the constitution still possesses a certain degree of vigour, by which it may yet resist the progressive decay of the organism, and shake off the silent operations that appear to be threatening its destruction. The younger the patient the greater are the hopes of his ultimate recovery. Some assistance will also be derived in forming an opinion, by a knowledge of his previous medical history, including hereditary longevity. Complete restoration to health, though exceptional, is nevertheless not unfrequent. Dr Kennedy states that patients between fifty and sixty years of age, after having passed through the disease, have expressed themselves as feeling quite well, and have appeared to their friends and others to be so. Dr Waterhouse, who, in truth, seems to have been the original describer of the disease, and from whom I have quoted, appears to have been of a similar opinion. And I have in my mind's eye two cases which only recently occurred to me, the one in a clergyman above sixty years of age, and the other in a general officer approaching seventy, where perfect recovery has taken place. In the latter instance the legs were œdematous for months, and the patient seemed to be slowly but inevitably sinking into the grave, some old-standing infirmities increasing all the time, and apparently hastening the threatened end.

The true nature of this disease is still unknown, though, as already said, it appears essentially to consist in a decline of the vital powers and nutritive function,—a failure of the *vis medicatrix naturæ* constituting one of its most characteristic phenomena. Where it commences, and in what manner, we are equally ignorant. Sometimes it would appear that the nervous energy is primarily affected, at other times that assimilation and sanguification are chiefly defective, and that this derangement is the first link in

the morbid concatenation that follows. In the latter instances, together with general debility and emaciation, the countenance, in assuming its characteristic change, becomes anœmic, and the whole surface partakes of the same aspect. This, indeed, is far from unfrequent in advanced life without any other sign of disease. When once established, senile anœmia never disappears. Though the person may live many years afterwards, he never loses this palor of the countenance, notwithstanding the possession of good health. The anœmia is usually associated with wasting and shrinking of the frame, and both together constitute a frequent form of climacteric decay, though not necessarily disease.

As in other respects, so in regard to the treatment, very little has been added to the observations of Sir Henry Halford on this malady. "Physicians," says he, "will not expect me to propose a cure for it. In fact, I have none to offer with confidence, in that view, beyond a caution that the symptoms of the disease be not met by too active a treatment. Whatever weakens the general system must be detrimental; and it seems in all cases of this kind more prudent to direct local than general evacuations for the relief of occasional congestions in the blood-vessels." A tentative method should be followed, new symtoms should be watched, carefully traced to their right source, and treated according to acknowledged principles with due regard to the declension of the vital powers generally. A sustaining and invigorating plan of treatment suggests itself by the prominent features of the disease, the accompanying debility, emaciation, and loss of tone of the whole organism. In the more simple forms of the malady, before the occurrence of complications demand special attention, medicinal remedies should be subservient to hygienic measures, and, throughout the progress of the complaint, the judicious employment of these means, along with whatever other remedies the peculiar character of the symptoms may seem to require, form a most important part of the cure. The general measures advised in the preceding chapter for the preservation of the health of the aged should be enforced. Among these, change of air and scene are peculiarly serviceable in this complaint. The proper period for this step, according to Dr Kennedy, is after at least one-half of the time usually occupied by the disease has

elapsed, that is, he observes, about five months, when it will have good effect, and tend powerfully to restore health. When practicable, the patient should proceed to a mild and genial climate. A visit to the classic shores of the Mediterranean, and a residence, during the colder and more trying months, at Nice or in Egypt, on the banks of the Nile, will be beneficial to such as are not too far advanced in life as to render so distant a journey irksome and inconvenient. A friend of my own, in his fiftieth year, who, with this disorder, suffered, as is common, from atonic dyspepsia and bronchial irritation, derived signal advantage from this measure. He was but a few weeks in Egypt when all the more pressing symptoms left him, and he returned to England the following summer almost entirely restored to health, though on his departure the preceding year he seemed to be dying by slow degrees. The advice here tendered has the high authority of Sir James Clark to recommend it. "From whatever cause," he observes, "the disorder proceeds, one or two winters passed in a warm climate, with the adoption of such a regimen and the use of such other remedial measures as the particular case may require, will prove of essential service in arresting the progress of decay and restoring the invalid to better health." Dr Warren of Boston, U.S., informed Sir James that he frequently remarked the beneficial influence which a visit to Europe had in renovating the health of his countrymen about the middle period of life, when the constitution had begun to flag, from application to business and the cares and duties of life; and he himself experienced, from the same measure, a marked and lasting improvement in his own health. "When a change of climate," Sir James Clark continues, "cannot be accomplished, great benefit may be obtained from a change of air in our own country, from the use of warm or tepid sea-bathing, and a course of such warm mineral waters as are suited to the case. But to derive permanent benefit from these measures, the invalid must eschew those causes which first brought him into jeopardy, and henceforth adopt a mode of life more consistent with his age and constitution."*

In aid of these and other hygiènic means, the vegetable tonics will be found of great value. Among these quinine deserves con-

* The Sanative Influence of Climate. 1846. Pp. 102–3.

fidence, but some of the warm aromatic bitter effusions may occasionally be substituted with advantage. Where anœmia accompanies the complaint, it may be advisable to administer the citrate of iron and quinine, or some other preparation of iron, such as the muriated tincture, in small doses. Large doses disagree and add to the existing constipation. In a chronic malady of this kind the judicious practitioner will occasionally intermit all medicines, with the exception of such as may be required to remove any pressing symptom. He must then trust to diet and regimen.

At more advanced stages of the complaint, or where it has been attended from the beginning with disorder of any particular organ, along with all these means, such remedies must be prescribed as the nature of the associated malady demands. Anodynes may be required to allay bronchial irritation, or to subdue neuralgic pains. Colchicum becomes necessary in gouty forms, where symptoms of this kind are ingrafted on the malady. But it would be endless to go over the ground in a disease presenting so much variety of character and symptoms. Two of these require special notice,—viz., torpor of the bowels and sleeplessness. The former must be alleviated by medicines which procure feculent motions. Sir H. Halford was partial to the decoctum aloes compositum. In combination with the compound infusion of gentian, it usually answers satisfactorily; but the compound rhubarb pill, or the compound aloctic pill, does equally well, and is more convenient. Sleeplessness is not so easily overcome—opiates generally fail, and are injurious. Occasionally it appears to arise from feeble circulation and coldness of the feet. Sometimes it depends on exhaustion, and is then obviated by a light meal taken immediately before bedtime. A glass of spring water taken at that time is also now and then successful, and often more effectual if there be added a teaspoonful or two of rum or brandy; a few turns in the open air just before going to rest sometimes secure a good night. Curtains should be abolished, and fresh air freely admitted, care being taken to maintain sufficient heat by good open fires. Lowness of spirits, and the apprehension of impending dissolution, should be met by encouragement and cheerful assurance. Fortunate is the sufferer who, under these depressing influences, is surrounded by a circle of true friends where cheerfulness and a mutual confidence reign. "For the rest," says Sir Henry Halford, "the patient must

minister to himself. To be able to contemplate with complacency either issue of a disorder which the great Author of our being may, in his kindness, have intended as a warning to us to prepare for a better existence, is of prodigious advantage to recovery, as well as to comfort, and the retrospect of a well-spent life is a cordial of infinitely more efficacy than all the resources of the medical art."

PART II.

DISEASES OF THE NERVOUS SYSTEM.

CHAPTER I.

SENILE ANATOMICAL CHARACTERS OF THE BRAIN, SPINAL MARROW, AND THEIR INVESTMENTS—GENERAL OBSERVATIONS ON THE DISEASES OF THE NERVOUS SYSTEM IN THE AGED.

THE nervous centres waste, harden, and lose weight, and the nerves participate in these changes. Cazauvielh asserts, however, as quoted by Rokitansky,* that the cerebellum retains the full size in the aged which it had reached at the completion of growth. The atrophy of the brain is accompanied with more or less flattening of its surface, widening and diminished depth of its anfractuosities. With the general diminution in volume, it gradually loses weight after attaining its maximum development, between the fortieth and fiftieth year. Clendining† found it in males above sixty years of age, a fifteenth part lighter than that of adults below sixty years of age. He thus confirms Desmoulins's statement, that at the age of seventy it is from a fifteenth to a twentieth lighter than at middle age. Hardening is less constant than wasting and loss of weight, though that change is very generally observed. The cortical portion is thinner and darker than in adults, and the medullary portion is often void of its glistening

* Path. Anat., vol. iii. p. 387, by Syd. Soc.

† M. C. Trans. vol. xxi. p. 52.

white appearance, which gives place to a dull white or gray, and frequently to a pale drab colour in very old age.

The membranes are almost always thicker, more opaque, and more resisting. The opacity is particularly remarkable in the arachnoid covering the upper surface of the brain, and deepens towards the edge of the hemispheres, where it is of a milky colour. In the midst of this opacity, on the upper borders of the longitudinal fissure separating the hemispheres, the pacchionian glands are seen greatly increased in volume, frequently of a brownish colour, and at other times in a state of fatty degeneration. It is the general enlargement of these bodies (recently ascertained to be villi of the arachnoid) in the latter periods of life, and their absence before birth, that led Meckel and others to the belief that they were morbid productions.

The dura mater is condensed, acquires immense strength, adheres firmly to the bone, and presents great difficulty to the removal of the calvarium. Cartilaginous and ossific deposits are not unfrequently found on it, and are chiefly met with on the falx and tentorium. The tela choroidea and plexus choroides, particularly the latter, are often loaded with sabulous matter, and occupied with numerous vesicles, varying in size from a pin-head to a garden pea.

Along with the shrinking of the brain there is a remarkable increase of the cephalo-rachidean fluid, which amounts to eight, ten, or twelve ounces, according to the degree of atrophy, instead of two or three ounces, as in the adult, by which provision the vacuum that would otherwise exist within the skull is filled up, and frequent accidents to the brain by concussion are prevented. The sub-arachnoid cellular tissue is also very frequently infiltrated with serum. All the ventricles contain more than the usual quantity of liquid, and the lateral ventricles acquire additional size, and are often filled with limpid fluid.

The arteries ramifying through the substance of the brain and meshes of the pia mater are usually thickened. Those of a larger calibre, especially the basilar artery, are occasionally uniformly dilated in some portion of their extent, or present the dilatation known as saccular or fusiform. This artery, and the branches of the carotid forming with it the circle of Willis, are, in a great majority of persons over sixty years of age, partially

obstructed by fibrous or fibro-cartilaginous deposits, which can generally be squeezed out, carrying with them portions of the internal tunic. The thickening is chiefly confined to the middle coat, but affects the internal also. Being usually disseminated, intervals, more or less apart, retain a normal condition and transparency. Ossification or cretification, and fatty degeneration of these vessels and vessels of a smaller calibre, are very common. In ninety-four persons above sixty years of age, forty-two of whom were free from any vestige of disease of the brain, Durand-Fardel found the vessels apparently in a healthy condition twenty-two times; they were thickened or ossified in the remaining seventy-two cases. Ossification itself existed in sixteen instances only. The veins are seldom changed in texture, but they are preternaturally enlarged, and generally engorged with blood. Occasionally they seem thinner, at other times thicker, from fibrous deposit, and more opaque than in middle life.

Durand-Fardel carefully examined the spinal marrow in twenty-three individuals of from sixty to eighty-two years of age. In a female seventy-four years old, who for nine years had been affected with trembling of the limbs, which afterwards gradually became partially anchylosed without pain or deformity, and without weakness of the sensibility of the skin, the spinal marrow was firm, the inferior third much hardened; the gray matter was pale. No apparent modification of the nervous function had existed in the remaining cases. The spinal cord in fifteen of the number seemed perfectly normal. In five it was generally, and in different degrees, firmer than natural. On the contrary, in two cases it was less consistent, and even softer, though neither in the former nor in these cases could the change be assigned to any determinate pathological character. In the remainder, though the spinal marrow appeared of smaller volume in some instances, it was less constantly wasted than the brain is in the old. He found cartilaginous or fibrinous patches on the arachnoid coat in three cases.

Rokitansky* says, "Total atrophy of the spinal marrow comes on in old age simultaneously with the same affection of the brain, and its characteristics are identical with it,—viz., diminution of volume and dirty whiteness of the fibrous columns, a rusty

* *Loc. cit.* vol. iii. p. 446.

brownish fawn tint of the grey substance, and toughness of the white substance, even to a degree like that of leather. Chronic effusions of serum accompany it, and opacity, thickening and ossification of that membrane." "Not unfrequently," he adds, "the cord, discoloured as before mentioned, is infiltrated with serum, and its substance is then soft and withered."

The nerves, as we have said, also participate in the general atrophy of the brain and spinal cord, though the changes in their structure are less obvious. They are drier, and consequently duller on incision, than in younger individuals, and at the same time less vascular. Lobstein, quoted by Wedl, noticed that the condition of dryness was always more evident in the branches of the great sympathetic than in the nerves proceeding from the brain and medulla oblongata. "This absence of moisture is to be attributed partly to the atrophy of the nutrient vessels running in the neurilemma and in the interstices between the nerve-tubes, and partly to the wasting of the nerve-medulla in the primitive tubules. Engel has observed the nerves, especially in advanced age, to be flat, thin, flaccid, lacerable, and enclosed in a thick mass of fat, which also penetrated among the fasciculi of the nerve. The *ganglia*, together with their smaller volume, also present a relatively less quantity of ganglion-cells, whose contents also appear to contain more pigment."*

Next to diseases of the respiratory organs, the diseases of the nervous centres constitute the largest number of admissions of an important nature into hospitals allotted to the old. The mortality they occasion is very great; and it is as singular as it is interesting, that the ratio of deaths from disease of this system very nearly corresponds at both extremes of life, though the diseases are different in character and frequency. Thus it has been calculated that the annual deaths in the metropolis out of 1,000,000 living under the age of fifteen, are, from diseases of the nervous system, 9310; and at sixty and upwards, 9384.† In infancy and childhood, it is well known, the mortality from hydrocephalus and convulsions is frightful. These diseases are replaced in advanced life by apoplexy and paralysis, the deaths from which rather exceed the deaths from hydrocephalus and convulsions at the former period of

* Wedl, *loc. cit.* p. 179 and p. 181. † Fifth An. Rep. Reg.-Gen., p. 456.

life; for, while hydrocephalus and convulsions appear to carry off annually out of 1,000,000, 7955 under fifteen years of age, apoplexy and palsy are fatal to no fewer than 8011 persons above sixty.* Next to apoplexy and paralysis, epilepsy appears to be the most fatal defined disease of the nervous system at advanced periods of life, although it is much more frequent and fatal between fifteen and thirty-five years of age than subsequently. It is often confounded with other diseases in old people.

In the general returns of the Registrar-General, softening of the brain is not specified separately. Many of the deaths attributed to apoplexy, paralysis, and epilepsy, are due to this disorganisation, the frequency of which in advanced life and old age is so great that it is justly regarded as almost especially a disease of the involution period. Were greater precision attainable, meningitis would also figure prominently in these returns as fatal to many persons beyond fifty years of age. Insanity or dementia is also frequent at this period; and the tendency to it appears to increase with the advance of life after thirty till seventy-five or eighty is approached.

Of the less important or less fatal forms of disease, referrible to the nervous centres, vertigo, tremor, and disorders of the different senses are extremely common. Neuralgic affections are upon the whole not frequent, but when observed they are often severe and obstinate. Intermittent painful affections of the scalp, apparently dependent upon exalted irritability of the cutaneous and deeper-seated nervous filaments, generally occupying a space of an inch or two in diameter, not as in clavus coverable by the tip of the finger, are also not unfrequent. Perverted sensation, such as of heat or cold, limited to a similar extent of the scalp, is also common. Anæsthesia of the scalp appears likewise to be more frequently encountered at advanced periods of life than earlier. All these deviations from the normal condition of the sensory nerves occur in other parts; but I have instanced the scalp, as they seem to me more frequent there than elsewhere in elderly persons than at middle age. They very probably depend on localised irritation of the nervous centres and irregular circulation, limited congestion, inflammation, anœmia, or softening, affecting remotely

* *Loc. cit.* p. 456.

the nervous filaments distributed on the surface. The male sex is greatly more exposed to the diseases of the brain and its investments than the opposite sex, though in the extreme of life, in persons approaching eighty, the difference diminishes, and still later becomes almost inappreciable.

The modification which the nervous function undergoes in the progress of years is strikingly illustrated by the diminished susceptibility to convulsive affections in advanced life. No longer endowed with the irritability of infancy, puberty, and adolescence, the predisposition to purely spasmodic diseases declines in a remarkable manner. When they occur, diseases of this class are of much more serious import than at earlier periods of life, and are rarely persistent without organic lesions of the nervous centres or their investments. Convulsions, chorea, and hysteria, are rare after the critical period. Tetanus obeys the same law, though less obviously. Hooping-cough, notwithstanding the extreme prevalence of bronchial and other affections of the respiratory organs, is so seldom met with beyond middle life, that out of an aggregate number of 61,151 deaths caused by it in England in the seven years 1848–54, but twenty-seven occurred in persons above thirty-five years of age.* Heberden mentions that he saw this disease in a woman of seventy, and in another of fourscore years. In 1841 I had a man of this age under my care in whom the paroxysms were severe and frequent; and though he ultimately recovered, convalescence was tedious. The late Dr R. B. Todd informed me that he once attended a man and wife, both about seventy, with this disease. They perfectly recovered. But of the above twenty-seven fatal cases in persons above thirty-five, only four occurred after the sixty-fifth year of age. Nor does epilepsy appear to be an exception, for, though very fatal at advanced periods of life, it has usually existed for many years, or returned after long absence; and the cases are comparatively unfrequent in which it shows itself for the first time in old age, in a genuine, well-marked convulsive form, such as it generally presents in the young, or in middle life. Moreover, the severity of the paroxysms usually diminishes with the progress of years in the aged.

* Eighteenth Ann. Rep. Reg-.Gen., p. 150.

CHAPTER II.

MENINGITIS.

INFLAMMATION of the membranes of the brain is by no means unfrequent at advanced periods of life. We are too much inclined to regard it as almost solely appertaining to infancy, and the first ten or twelve years, because it is then, and for some years subsequently, that we meet with it in its most unequivocal forms, with acute symptoms and well-marked anatomical characters. There is reason to believe, however, that still later it is much more common than is generally imagined, and there can be no question that it is then often confounded with typhoid, typhus, and "ataxic fevers," to which, in its symptoms, it bears a very close resemblance in the decline of life.

The disease seems to be still more frequent among elderly subjects on the Continent than in this country. Numerous cases are recorded in the French and other journals of its occurrence in septuagenarians; and so common, it would appear, is acute meningitis in old persons in Germany, that, according to Dr Day, Schönlein regards it as essentially a disease of declining life.* It seems that it is by no means frequent in the great hospitals allotted to the aged at Paris, since Durand-Fardel met with but a few rare instances of purulent meningitis at the Bicêtre and Sâlpêtrière; and Cruveilhier's great work on Pathological Anatomy, drawn from observations made at the latter hospital, contains only two cases in persons above fifty, both of whom were men, one fifty-three, and the other seventy-eight years of age.

Two forms of the disease are met with, the *acute* and *chronic*. Both present great varieties in their character and progress.

* Day on the Diseases of Advanced Life, p. 156.

Symptoms.—Acute meningitis seldom occurs suddenly in advanced life with the intense symptoms accompanying it in early manhood. Usually it commences insidiously, without rigors, and very frequently some days elapse before it sufficiently declares itself to be recognisable even by persons familiar with the diseases of old age. Among the first symptoms are peevishness, or irritability of temper, restlessness, more or less confusion of thought, inattention, and forgetfulness. If infirm, and already an inmate of an hospital, the patient commits strange mistakes, takes possession of another's bed, uses the spittoon instead of the chamber-pot, and is frequently found lying outside the clothes, or with his feet where his head ought to be. When addressed, his answers are rational, but still there is a peculiarity in his manner and expression of countenance, an apparent slowness of comprehension, and a vacancy of the eye, that warns the physician of the approach of some important cerebral disease. Along with these symptoms, we remark prostration; in walking the gait is unsteady, and in lifting anything to the mouth the hand trembles. The pulse is natural, the tongue clean, the appetite but slightly, if at all, impaired, the bowels are regular, and the skin is of natural temperature. The symptoms are still purely of a nervous character, and there is as yet little or no vascular excitement, local or general. While these or like symptoms are being developed, after twelve, forty-eight, or sixty-two hours, generally within twenty-four hours, more or less febrile reaction is observed; but very seldom, as in the adult, is there much heat of skin, redness of the face, or acceleration of the pulse. Nor is headache a prominent symptom; and vomiting, frequently distressing in youth and in childhood, is seldom present. The eyes are suffused, the pupils either slightly contracted or natural. Knitting of the eyebrows, intolerance of light, and acuteness of hearing,—common and characteristic of the disease in early life,—are comparatively rare. The scalp is hotter than natural, the rest of the surface of moderate warmth. The feet are frequently cold. In many cases, the only physical indications of increased vascular excitement in the head observed, are the injection of the eyes and heat of the scalp, both of which are valuable symptoms. Towards evening there is generally increased febrile disturbance, denoted by flushing of the face, where it had been previously pale and dejected, dryness of the skin, greater heat of the scalp, and

acceleration of the pulse. Wandering, low muttering delirium, and incessant talking, are now frequent and characteristic symptoms. Maniacal excitement is uncommon. The general features of the disease are of a typhoid description. The tongue becomes very dry, and is generally brown in the centre. There is usually great thirst. The patient drinks greedily, but seldom asks for liquid. He now refuses all food, or takes but a very small quantity at a time when presented to him. The bowels cease to act without medicine, but are not obstinately confined. Nervous twitchings and subsultus are observed in the worst cases. If raised in bed, these symptoms are frequently induced when otherwise absent, and the head trembles as well as the upper extremities. For a day or two the patient still answers questions rationally, though perhaps slowly and hesitatingly, when roused from the reverie in which he is now generally wrapped. He moans, but hardly ever complains. Headache is certainly still slight or unfrequent. Unless pointedly asked the question, there is never any allusion either to it or to giddiness or tinnitus aurium. The absence of headache is a remarkable fact, considering that even in the most acute pus-forming or false membrane-forming meningitis it may be entirely wanting from the beginning. At a more advanced stage there is coma, with loss of consciousness, sometimes slight convulsive motions of the limbs, frequently retention of urine or involuntary discharges. When fatal,—and it is so in the proportion of one in three,—the disease terminates in ten days or a fortnight from the first setting in of inflammatory symptoms; but three weeks occasionally elapse. Resolution or death is its usual result; it seldom assumes a chronic form, though in some cases it permanently impairs the intellect, and generally weakens the whole frame.

In numerous examples the first symptoms observed are dulness of intellect, somnolence, with slight frontal pressure, dryness of the tongue, and thirst; in a few rare cases, the disease commences with convulsions, followed by maniacal delirium, and evident local vascular excitement; in others, loquacity, with redness of the face and heat of the scalp, usher in the disease. A well-marked case of this description, judiciously treated by Messrs Hoffmeister and Cass, of Cowes, I saw on several occasions with these gentlemen in 1847. The patient, a distinguished officer seventy years

of age, of reserved habits, gouty and rheumatic, was observed to become unusually talkative and easily excited. In a day or two afterwards feverish symptoms appeared, with flushing of the face, irritability of temper, heat of the scalp, and slight headache. From this period there never was any doubt of the existence of acute meningeal inflammation. He recovered, but all his previous infirmities were aggravated, and his constitution was irretrievably shattered by the attack. A very similar case occurred in an inpensioner of Chelsea Hospital, also seventy years of age. In this instance the patient sang and talked incessantly.

The progress of the disease is equally inconstant. In not a few cases the symptoms of febrile excitement are wanting, and excepting tremors, nervous twitchings, muttering delirium, and dulness of comprehension, with perhaps dryness of the tongue, there are no phenomena indicating cerebral or meningeal inflammation until a short time before death. Dulness of intellect and stupor, with more or less insensibility of the limbs and relaxation of the sphincters, are frequently prominent symptoms throughout the whole progress of the disease, as if the medullary substance of the brain were congested or suffered compression from early exudation on the surface. Examples of this description, of an apoplectic character, are more frequently met with in old persons addicted to fermented liquors, in whom there exists a preternatural enlargement of the cerebral vessels from repeated engorgement. The meningeal and cerebral veins are in such cases frequently found greatly dilated, leaving little doubt that during life there existed excessive venous congestion. In these cases the symptoms are masked, and though paralysis of the limbs is wanting, they are apt to be confounded with effusion into the brain, or softening of its texture.

Diagnosis.—The disease with which acute senile meningitis is most likely to be mistaken is typhus. The dryness and brownness of the tongue, the muttering delirium, excessive prostration, injection of the conjunctiva and heat of scalp, equally appertain to either affection; but, in meningitis, the lurid hue of the surface and the mulberry rash, characteristic of typhus, are absent, while the increased heat of the skin is very generally limited to the forehead or scalp in the former, instead of being diffused as in the latter disease. Typhus attacks the poor preferably, and may

generally be traced to exposure to contagion when it seizes the rich. Meningitis appears to have no particular predilection, affecting rich and poor indifferently. The former is a general disease, implicating all the solids and fluids; the latter is mainly local. The head is primarily and principally affected, the system secondarily. Acute, sthenic meningitis can only be mistaken for inflammation of the substance of the brain itself. Delirium is more marked and frequent in the former, and convulsions, rigidity, or paralysis of the limbs, more pathognomonic of the latter disease; but in truth there are no positive and distinctive phenomena peculiar to inflammation of the cerebral tissue itself, or the membranes only; besides which, meningitis is generally conjoined with cerebritis, the inflammation of the membranes usually extending to and engaging the cortical portion of the brain. The differential diagnosis, could it be made, is in reality unimportant, as the treatment of both diseases is precisely alike. Delirium tremens is another affection with which meningitis is very liable to be confounded, and conversely. That disease is chiefly characterised by wakefulness, extreme restlessness, delirium, and tremor. The eye is staring and agitated. The countenance generally bespeaks terror, and the delirium is of this character, the patient usually conceiving that he is about to undergo the most dreadful punishments for slight offences and imaginary crimes. In meningitis, though the patient is sometimes plunged in the deepest melancholy, the delirium is commonly of a low, muttering description, and quite incoherent, while at the same time somnolence and stupor, instead of wakefulness and animation, are ordinarily observed. The previous habits of the patient also assist the diagnosis. Delirium tremens in advanced life invariably, I believe, immediately, succeeds continued tippling or a debauch. It is, however, worthy of remark that this disease is frequently in the aged accompanied with inflammation of the meninges.

Causes.—Setting aside those cases of the disease originating in mechanical causes,—injuries of the head, disease of the bones, and morbid growths, possessing no peculiarity in advanced life, and not referred to in the preceding account,—the causes of meningitis are often obscure and unsatisfactory. Persons addicted to the free use of alcoholic liquors are more liable to the disease than others, and there is little doubt that a fit of intemperance occasionally induces

it, though less frequently than it does delirium tremens. Exposure to the rays of the sun is a well-known source of the disease in earlier life, and appears to be equally conducive to it at later epochs. Gout and rheumatism predispose to it, if they do not actually produce the disease itself—constituting *gouty* and *rheumatic* meningitis. An extremely well-marked case of the former description occurred in an in-pensioner of Chelsea Hospital, fifty-eight years of age, in 1852. With an attack of acute gout, affecting the ankles and hands, supervening in the chronic form of the malady, there were head-symptoms, delirium, continual muttering, somnolence, nervous twitchings, &c. The patient survived about a fortnight. On inspection, the arachnoid and pia mater were found minutely injected over a great part of the upper surface of the brain; and lining the dura mater, in the corresponding situation, there was a false membrane of considerable thickness, on peeling off which, the parietal layer of the arachnoid presented a highly vascular appearance from minute capillary injection. Meningitis also appears to be an occasional, if not a frequent consequence of Bright's disease of the kidneys, and other lesions of these organs, impairing the efficient performance of their functions. Almost every case occurring in the old may be traced to one or other of these three sources—gout, rheumatism, or albuminuria; and the disease in them is very rarely if ever idiopathic, unless the few instances produced by the direct causes above alluded to be considered as entitled to this appellation.

Anatomical Appearances.—The disease is found almost always limited to the arachnoid and pia mater, and more frequently to the membranes covering the upper or convex surface than base of the brain. The dura mater itself is very rarely the seat of primary, so-called, idiopathic inflammation. The various results of inflammation present themselves, from simple vascularity and increased serous effusion only, to purulent deposits, deposits of lymph, thickening, and the formation of false membranes. The pia mater is often highly injected, and its meshes engorged with blood and serum. When this membrane is chiefly engaged, a sero-purulent fluid is frequently found, giving a greenish appearance to the surface of the brain, and widely raising the arachnoid. Opacity and thickening of both the pia mater and arachnoid, especially along the margin of the hemispheres, is so common after the meridian

of life, as in minor degrees scarcely to be regarded as morbid. There are few cases in which the surface of the brain itself, in the immediate vicinity of the inflamed meninges, is not found to have participated in the disease.

Primary inflammation of the lining of the ventricles is rare in advanced life, and, as before mentioned, the membranes on the convex surface of the brain are more frequently affected than at the base of the organ.

Treatment.—It very rarely happens that the symptoms of the disease are of so intense a character as to demand general bleeding, but in vigorous constitutions this measure is sometimes necessary, and venesection may then be employed with benefit. In illustration of this, I may mention the case of an in-pensioner of Chelsea Hospital, sixty-eight years of age, muscular, thick-set, and healthy, who was admitted into the infirmary thereof in the summer of 1855 with all the symptoms of meningitis, accompanied with high mental excitement, flushing of the face, brightness and restlessness of the eyes, heat of the scalp, perpetual loud talking with laughter; incessant efforts to get out of bed; occasional rigid extension of the index finger and contraction of the forearm, particularly strong on attempting to bleed or control him. These symptoms had set in the preceding evening. His pulse was quick and full, the tongue clean. Bleeding was performed to the extent of sixteen ounces, the blood flowing in a large, remarkably florid stream, with but slight impression on the action of the heart. It had, however, the effect of subduing the mental excitement and reducing the redness of the face. A few hours afterwards he was much more rational, less talkative, and the pulse had fallen from 120 to 100. Now, as yet, his bowels had not been opened, and the only medicine given him was the sulphate of magnesia in the infusion of senna, so that the improvement was justly due to the bleeding. On the following day he was still better, though suffering from frontal headache, with suffusion of the eyes, &c. The disease pursued a mild course, and the man perfectly recovered. It is more than likely that in this case the inflammation of the membranes was associated with inflammation of the periphery of the brain from the commencement. Of the existence of phrenitis, in the common acceptation of the term, none of the medical officers had ever any doubt.

The examples, however, in which bleeding from the arm is obviously necessary and expedient, are nevertheless few in comparison to those in which such a proceeding would be improper; for though at the onset the prostration accompanying the disease is often more apparent than real, but a short time elapses before the symptoms assume a character to forbid active treatment. In by far the greater majority of cases, local must be substituted for general blood-letting, even at an early period of the disease; and in its advanced stages, opening a vein would hasten a fatal termination. Except in such an instance as I have alluded to, attended by high cerebral excitement and vascular action, local blood-letting is not only infinitely more safe, but more beneficial, and it can be repeated from time to time, as the nature of the symptoms may indicate, while general blood-letting can very rarely be resorted to more than once, and that only at the commencement of the attack. The beneficial effects of local blood-letting may be greatly aided by position, and the constant application of cold to the head.

No time should be lost in opening the bowels. Four or five grains of the compound extract of colocynth, with two or three grains of calomel, should be given, and followed up in a few hours, in uncomplicated cases, with salts and senna. In feeble, emaciated, or exhausted habits, care should be taken not to act too sharply; but, where purging can be borne, the saline aperients are of great service. Mercury appears to have a beneficial influence in arresting the progress of the disease, and averting its consequences in uncomplicated attacks, not dependent on gout or granular degeneration of the kidneys. A grain or two of calomel should be administered every two or four hours, and the mouth, if possible, very gently touched. Where local bleeding is not repeated, the calomel may be conjoined with James's Powder, or fractional doses of tartar emetic. Sufficient care must be taken not to depress the vital powers below a just relation with the activity and nature of the existing symptoms. Having this in view, it will also in general be advisable to allow a fair proportion of nutriment, milk, strong beef-tea, sago, &c., from the beginning. Although light and noise may not disturb the patient, the room should be darkened and quiet maintained.

When the more active symptoms are subdued, and stupor has

succeeded excitement, a blister should be placed on the nape of the neck, and the raw surface afterwards dressed with blue ointment. Blistering ought invariably to be delayed till the period of active excitement has ceased or abated. Cold should still be continued to the head, alterative doses of calomel or blue pill administered, the bowels regulated, and the strength supported by mild unstimulating nutriment. During convalescence, and in certain cases characterised by nervous irritability, sedatives, especially henbane, or even the muriate of morphia, may be prescribed with great benefit.

In the secondary forms of the disease succeeding albuminuria, our chief resources are, leeches to the mastoid processes, cold to the scalp, and blisters to the nape of the neck. Mercury is then of little or no avail; indeed it is prejudicial. When the disease accompanies or follows gout or rheumatism, very similar measures are required; in addition to which we should endeavour to maintain or elicit the original affection by mustard cataplasms and tepid pediluvia, while at the same time the poison itself should be destroyed or its formation prevented by the internal exhibition of colchicum with alkalies.

Chronic Inflammation of the Membranes of the Brain.—If the invasion, development, and progress of the acute form of the disease be frequently obscure, this is still more generally the case in the chronic variety. In numerous instances the disease is entirely latent. The patient is reputed to labour under some obscure cerebral affection, and all the usual symptoms of inflammatory action within the skull being absent, chronic softening of the brain, or hydrocephalus, is presumed to be the malady under which he is suffering, where neither paralysis nor convulsions are present.

The disease appears to be generally of a chronic nature *ab initio*, —chronic in regard to the subdued and insidious character of its symptoms, while at the same time it pursues a strictly chronic course, seemingly now and then existing for a term of one or two years. I have never known it follow the acute form of the disease. Like it, it is a not unfrequent result of albuminuria, and repeated attacks of delirium tremens. It occasionally also appears to be dependent upon gout and rheumatism.

Symptoms and Progress.—Chronic meningitis in the aged is

almost uniformly accompanied with great impairment of the mental faculties, frequently with thickness of speech, and paralytic weakness of the lower extremities, the gait being tottering and feeble. The energies of the whole system are reduced; all movements, whether of the upper or lower limbs, are performed slowly, awkwardly, and with more or less uncertainty. The functions of organic life also appear to be impeded. The appetite sometimes remains good, but digestion is slow; the bowels are inactive, and the various secretions are either vitiated or diminished. Vertigo, singing in the ears, marked loss of memory, slowness of comprehension, periodical fits of passion, and occasional attacks of headache, with or without signs of local vascular excitement, are frequently observed. Sooner or later, the aged invalid takes to bed reluctantly. There he lies uncomplaining, vegetating, the mere wreck of what he formerly was, both in mind and in body, gradually sinking, and dying often in consequence of sloughing of the hips and nates. "The general paralysis of the insane" is frequently but a form of this disease.

Anatomical Appearances.—On *post-mortem* examination, the cerebral layer of the arachnoid, particularly covering the convexity of the brain, is found thickened and opaque. This membrane at the same time acquires considerable tenacity. In one instance coming under my observation, these changes were of the most marked character, a portion of the arachnoid, nearly an inch square, being fully the eighth of an inch thick, in appearance like the boiled white of an egg, and equal to the peritoneum in toughness. The pia mater also becomes thickened, opaque, and injected. A considerable quantity of serum separates both membranes, and the cavity of the arachnoid very generally contains a large quantity of a similar product, perhaps, however, less the result of inflammatory action than the consequence of accompanying senile atrophy of the brain. The ventricles also contain much serum.

Treatment.—Could the disease be recognised at an early period, relaxation from business, the avoidance of all sources of cerebral excitement, restriction from stimulants, attention to diet, and counter-irritation, might arrest its progress; but, as it is, we seldom meet it until it has either entailed organic lesions, or until the period has passed when these and like measures might have proved beneficial. In general, there is little more for the practi-

tioner to do than to watch the health and alleviate particular symptoms. An open state of the bowels ought to be preserved. Periodical attacks of headache or insanity may be relieved by a brisk purge or moderate doses of calomel and colocynth, followed up by an enema; while, at the same time, the head should be kept cool by cloths dipped in vinegar and water. If signs of vascular excitement are at any time present, two or three leeches may be applied behind the ears. The bladder must be emptied by the catheter, should retention of urine arise; and where, on the contrary, there is dribbling, a proper apparatus must be worn. Although stimulants are prejudicial in the early stages of the disease, and must be eschewed during attacks of excitement, in the advanced stages, when the vital energies are failing, and bed sores threatened, a moderate allowance of wine is required. By good nursing, cleanliness, attention to position, and the use of the hydrostatic bed, the fatal event may be deferred, and great suffering spared.

CHAPTER III.

ACUTE AND CHRONIC HYDROCEPHALUS SENILIS—ŒDEMA OF THE BRAIN.

Serous apoplexy has been described by some writers as the acute hydrocephalus of old persons. In the general view taken of acute hydrocephalus in this country, in which it is regarded as the result of simple or tubercular meningitis, this disease is rare at advanced periods of life. It is, however, not entirely unknown, even in extreme old age, as a substantive disease dependent on tubercular inflammation of the membranes of the brain. There seems reason to believe that, from a variety of concurrent causes, the normal quantity of the cerebro-spinal fluid is sometimes suddenly augmented, so as to constitute a form of acute hydrocephalus. Fits of stupor, gradually passing into coma, with more or less incapacity of muscular motion, lasting from a few hours to some days, without paralysis or permanent injury to the senses, and very common in old age, are not improbably occasionally due to this cause. Attacks of this nature are frequently met with in very old subjects suffering from pulmonary and cardiac diseases, impeding the return of blood from the head, and also in such as have previously experienced true apoplectic seizures, with or without consequent palsy. Old drunkards, and those especially who have had repeated fits of delirium tremens, are prone to these seizures. Congestion of the brain, or of its investments, is a consequence of all these states and conditions, and serous effusion follows. In those cases which terminate fatally, either suddenly or after a few days, or at still more advanced periods, it not unfrequently happens that all traces of congestion are absent, and the only morbid appearance observed is an increased quantity of serum in the ventricles of the brain and beneath the arachnoid, with, perchance, vestiges of for-

mer disease of the substance of the brain or its membranes. As it is impossible accurately to estimate the normal amount of fluid in these situations in any one instance, it is often difficult to say that it is increased in quantity. This is more particularly the case with that contained in the sub-arachnoid space. When it exceeds three drachms in either lateral ventricle, it may be regarded as abnormally augmented. As we shall presently see, it is generally in both situations greatly increased in old age; and there can be little question that its influence in the production of apoplectic affections has frequently been overrated.

Chronic senile hydrocephalus mainly, if not essentially, consists in an increase of the cerebro-spinal fluid, consequent to senile atrophy of the brain, and is a beautiful instance of a conservative design, rather than of disease, by which the shrunk brain is in some measure preserved from the accidents to which it would ever be exposed were the space between it and the skull left unoccupied. The amount of fluid varies with the degree of wasting of the brain, and is therefore largest where the bulk of the organ is most reduced. In aged subjects, Magendie collected as much as eight, ten, or twelve ounces from the cranio-spinal cavities, according as there was a greater or less amount of atrophy of the brain. The effusion is not limited, as this author and those who have quoted from him assert, to the ventricles and sub-arachnoid space. The cavity of the arachnoid also contains more or less fluid. The chief seat, however, of the effusion is beneath the arachnoid and in the lateral ventricles. When the effusion is considerable, it also occupies the third, fourth, and even the fifth ventricles. One or both of the lateral ventricles are sometimes enormously dilated. Rokitansky says, "The hydrocephalus is symmetrical or otherwise, according to circumstances. The quantity of serum," he observes, "contained in the ventricles, and the dimensions to which these cavities are enlarged, are measured by the degree to which the brain is atrophied. The former very commonly equals an ounce and a half; it often amounts to two or four, and may reach even to six ounces." The meshes of the pia mater are infiltrated, and, together with the arachnoid, this membrane is thickened. Usually the choroid plexus is paler than natural, and it is very frequently studded with serous cysts varying in size from that of a millet seed to a garden pea. The fluid, in the different

situations in which it exists, is limpid, and it is particularly clear in the ventricles.

Such is an outline, and perhaps, for all practical purposes, a sufficient account, of this form of hydrocephalus, the importance of which, like the preceding, has unquestionably again and again been exaggerated, and symptoms attributed to it which in reality pertain to the condition of the brain on which it depends. The associated hypertrophy of the meninges, particularly of the arachnoid, generally, but not invariably, accompanying the effusion, like the effusion itself, is a provision against injury, assisting in filling up the vacuum in the skull, but, above all, guarding against rupture. The best examples of these changes are found in individuals very far advanced in life who have fallen into a state of dementia, and ultimately, for a longer or shorter period, become bedridden. Such persons often die without any obvious cause; they cease to exist, through a gradual and progressive failure of the nervous function; and it is impossible to ascribe dissolution to any one lesion, but to a general decline of the vital powers, through death commencing at the nervous centre.

Œdema of the Brain.—As an *acute* or *idiopathic* affection, serous infiltration of the cerebral substance is rarely met with in advanced life. *Chronic œdema* is, however, common, and is generally associated with œdema of other parts, or with atrophy of the brain. It is consequently often present with the chronic form of hydrocephalus, just noticed, and originates in the same causes. Whatever promotes persistent venous congestion of the brain seems capable of producing œdema there. We thus meet with it in bronchial affections, emphysema of the lungs, chronic pneumonia, phthisis, and in dilatation of the right cavities of the heart; but it even then almost always co-exists with wasting of the substance of the brain, and frequently with senile cachexia and general debility.

The section of a brain thus affected exudes a quantity of serum, and the cut surface of the white substance presents a glistening aspect, which, in the atrophoid brain of old age, is of a light drab, dirty-white, or fawn colour, instead of pearly white, as in the young. In its highest degree, as observed by Rokitansky, the infiltration breaks down the texture of the brain into a diffluent watery pap, from which serum escapes in larger quantity, occasioning a form of white softening, which is seen mostly in the

neighbourhood of the ventricles.* The œdema is almost always limited to the superior regions of the brain. The cerebellum is rarely affected.

Symptoms.—Chronic œdema of the brain is accompanied with symptoms of compression of this organ, gradual in their invasion and progress, and varying in degree with the amount of serosity and actual condition of the cerebral texture. It impairs the different mental faculties, blunts sensation, and occasions more or less paralytic weakness, general or local, according to the nature and extent of the œdema. Many of the old, bedridden, and infirm persons, seen in every workhouse and hospital, lying in a state of mental and physical torpor, half unconscious, and incapable of assisting themselves, labour under an advanced stage of this affection. Rokitansky thinks it very probable, that, in advanced age, after having slowly and gradually reached a certain relative degree of intensity, it occasions those common and unexpected deaths which simulate apoplexy. As a general rule, he farther observes, hæmorrhage does not take place in an œdematous brain.†

Treatment of Senile Hydrocephalus and Œdema of the Brain.—It is manifest that the affections we have been considering in this chapter can very seldom of themselves be objects of treatment. They are more generally to be suspected than ascertained during life; and so various are the associated circumstances under which they appear, or upon which they depend, that, could they be diagnosced with certainty, the treatment must vary with the precise nature of the symptoms and general condition of the patient. Constipation is almost always an obstinate accompaniment of these and like affections, and very frequently it requires the most active medicines,—gamboge, croton oil, and similar drastic cathartics for its removal or alleviation. I know of no means so effectual in rousing the faculties and improving the general condition of such patients as an occasional active purgative. Old persons, who for days lie in a semi-comatose condition, from which they are only partially and temporarily roused, on being questioned, appear suddenly to have a veil uplifted from their mind and a weight removed from their limbs after free action of the bowels. They slowly relapse into their former condition, again to be relieved

* Rokitansky, Path. Annat. by Syden. Soc., vol. iii. p. 403.

† *Loc. cit.*, p. 404.

by like treatment. And we can, in general, only hope for so much. By attending to the excretions, particularly the condition of the urine, employing mild diuretics where this secretion is deficient, promoting the action of the skin by tepid bathing and warm clothing, regulating the bowels as far as we can by mild laxatives, followed up occasionally by still more powerful ones, we do almost all we can do in these cases, while as yet the patient is not entirely confined to bed. When this period arrives, which sooner or later it inevitably does, it will require constant care and attention to avert ulceration and sloughing of the parts exposed to pressure. The usual means must then be employed to support the waning strength, and administer to the comfort of the helpless sufferer.

CHAPTER IV.

VERTIGO.

THERE is scarcely any complaint for which the practitioner is more frequently consulted by persons advanced in life than this, and few that more frequently baffle his efforts. Nor can we be surprised at the extreme prevalence of vertigo, the obscurity that envelopes it, and the too generally unsatisfactory results of treatment, in chronic cases, when we consider the variety of circumstances under which it occurs.

Causes.—In a practical work devoted to disease in a particular class, it would be out of place to advert to the various singular and unsatisfactory theories, or mere hypotheses, that have been offered to explain the immediate cause of vertigo; among the last of which is that propounded by Romberg, who places it among the hyperæsthesia of the nerves of muscular sense. As the centre of sensation, real or illusory, and the fountain of sympathy, derangement, functional or organic, can exist in no part of the animal economy without disturbing the brain; and vertigo in its different degrees and associations may truly be regarded as as much a symptom of disease or disorder of that organ as cough is of the respiratory apparatus. It is the most common of all sympathetic affections referrible to the brain, while it almost uniformly accompanies the various changes of which its substance or investments are susceptible, and is not unfrequently the very first indication of approaching serious disease in the head. When resulting from structural alterations, it is more especially met with as an accompaniment of acute and chronic softening of that organ, hardening of its substance, tumors imbedded in its texture or pressing on its periphery, and chronic thickening of the membranes; lesions of great frequency in advanced life, often insidious and uncertain

in their origin and progress, and frequently, for a long period, productive of no other inconvenience than more or less vertigo of a persistent character.

Among the most frequent causes of this very common complaint in old age is a diseased condition of the arteries of the brain, which is the rule, instead of the exception, in persons beyond sixty. Not only is the circulation in the brain thereby impeded and interrupted, but rendered irregular in its course and distribution. The rigid canals, ceasing to exert any influence on their contents, are like so many pas ive tubes. Here and there, blocked up by calcareous, fibrinous, or fatty deposit, congestion is promoted in one portion and anæmia in another. Incapable of accommodating themselves to the state of the general circulation, the delicate structure of the brain is thus perpetually exposed to a serious disturbing influence. And in no other organ more than in this does a healthy tone of the circulation pervading it seem requisite to the smooth, unruffled performance of its various functions.

Vertigo accompanies, and is symptomatic of, two directly opposite conditions of the cerebral circulation. It equally attends plethora or anæmia of the brain. As regards sound, discriminating, safe, and successful treatment, it is of the utmost importance that this fact should be borne in view; for, though the time has long since happily gone by when giddiness was regarded as but another expression for fulness in the head, and monthly cuppings ordered for the safety of the sufferer, there are still not a few who incline to this opinion, and follow an erroneous, not to say a dangerous practice. Vertigo in advanced life is much more generally produced by anæmia than plethora, and it is still more frequently associated with, if not dependent upon, general debility and exhaustion than vigour of the system and determination to the head; and consequently more benefited by measures adapted to improve the strength and promote the circulation in the brain, than by a plan of treatment calculated to lower both. This is not only true of those simple forms of the complaint which we cannot trace to any other source than a redundancy or deficiency of the vital fluid throughout the system generally, or locally affecting the brain only or chiefly, but it is also true of the numerous cases of giddiness complicated with, and arising from, disease of

the heart. The most persistent and aggravated examples of this description are met with where the walls of this organ are atrophied and dilated, and its action enfeebled, as in fatty degeneration; or, again, where, through a patulous state of the aortic valves, the supply of blood to the brain is defective. The robust, florid, and corpulent city alderman is less subject to this complaint than the anæmic, ill-fed, half-starved, and emaciated pauper.

Vertigo from plethora occasionally follows the suppression of habitual sanguineous discharges, bleeding piles, epistaxis, hæmaturia or mœlena, and is a common sequence of the cessation of the menses; but in most of these instances the attacks are temporary and remediable, and the severest forms of the complaint are encountered where there is a constant loss of blood from the lower bowel or uterus, with general anæmia.

Besides excess or deficiency of blood in the brain, as a cause of this complaint, impurities circulating in the blood, where there is neither excess nor deficiency, appear to occasion it in many cases. Vertigo is a common accompaniment of diseases of the kidney and biliary organs. Gouty subjects are peculiarly liable to it, and it is equally common in all affections impeding the decarbonisation of the blood. In cardiac complications, giddiness is sometimes as much due to this cause as to congestion of the brain. Old drunkards, and especially those who have experienced delirium tremens, suffer much from giddiness. It is peculiarly characteristic of epilepsy, and, with momentary loss of consciousness, is one form of this disease. Chronic vertigo is in a great number of cases referrible to indigestion and habitual constipation, and it is singular that it more frequently attends functional derangement of the stomach than organic disease of this viscus.

We meet with some curious examples of vertigo. A colonel in the army, whom I have attended on several occasions for attacks of congestive headache, and who is very liable to giddiness on the least derangement of the stomach, is almost sure, however well he may be, to be seized with it if he walk upon asphalt. He is thus obliged to avoid certain parts of London, often to his great inconvenience. This is no fancy, as he has frequently been attacked when previously quite unaware of the nature of the pavement. It is singular that he can walk upon snow or sand without suffering.

Dizziness is frequently joined with tinnitus aurium, muscæ

volitantes, obscurity of sight, and confusion of thought. Originating in so many pathological causes, it is in advanced age especially that we see its most varied, complicated, and obstinate forms, and it is then that we more frequently encounter the singular varieties in which the individual falsely perceives objects moving perpendicularly upwards or downwards, and in which he experiences the disagreeable and distressing sensation of falling backwards or forwards, or of sinking into the earth—modifications still as inexplicable as the more ordinary attacks of the disorder accompanied with the illusory sensation of circumrotatory motion.

Duration.—Occurring under so many different circumstances, the duration of this complaint is very various. Although not unfrequently the immediate forerunner of cerebral hæmorrhage, or palsy from softening of the brain, it has been known to last a lifetime, and it is not uncommon to find that it has been of almost daily occurrence for periods of ten, twenty, or even thirty years, combined with other symptoms usually considered as proofs of determination of blood to the head. I know of one instance of this kind, where the individual, an old soldier, has hardly been free from it these twenty years, and yet some attacks are so excessive that he is obliged to sit down or hold on by the nearest object to prevent himself from falling. If we except occasional attacks of "sick headache," or gout, such sufferers not unusually, in other respects, enjoy good health. Examples of non-plethoric vertigo, of vertigo from anæmia of the brain, of long continuance, are also abundant; but as this state is very often dependent upon, or associated with, impaired general health, their duration is necessarily more limited.

Prognosis.—In estimating the import of vertigo, it is of the first consequence to ascertain the duration of the affection, and the circumstances under which it appears. The more recent the attack, the greater the necessity of watching the case, and the greater the caution in pronouncing the result, unless it can be traced to some obvious source,—derangement of stomach, suppression of habitual discharges, or loss of blood. If the individual has at a former period experienced a fit of apoplexy, however remote, and however perfect the recovery, we must not conceal from ourselves the too frequently portentous character of the warning, more especially should it be combined with dimness of vision, formication,

numbness, the pricking sensation familiarly known under the name "needles and pins," or neuralgic pains in the extremities. And the apprehension is not much lessened by the circumstance that the person is apparently in his usual state of health, or even expresses himself as having lately been feeling better than ordinary. It is the association, however, with one or more of these symptoms, or the fact of a former attack of apoplexy or palsy, that attaches unusual importance to the occurrence of vertigo, and awakens in us a sense of danger. In a vast number of cases, vertigo is a fugitive symptom; but a first or second attack, in a person beyond the middle of life, such as induces him to solicit relief, ought not assuredly to be disregarded. Where the complaint has assumed a chronic form danger may have ceased; but the prospect of ultimate recovery diminishes with the past duration of the affection and the nature of the existing associations.

Treatment.—Passing over the symptomatic attacks of the disorder, from lesions of the brain, dyspeptic, pulmonary, cardiac, and renal affections, the treatment of which is chiefly subservient to the primary maladies, we come to those more particularly of an idiopathic character; and here, as indeed in the secondary forms of this complaint, the first question for the consideration of the practitioner is, whether plethora or anæmia of the brain is present. The solution of this question determines him to advise depletory measures, or a tonic and restorative treatment. I have already stated my opinion, that the vast majority of cases of vertigo in advanced life belong to the latter category, and that few, comparatively few attacks proceed from determination to the brain, however common giddiness may be in a congested state of that organ from disease of the heart and lungs. Without, therefore, pretty clear evidence of determination of blood to the head, such as throbbing, redness of the face, congestion of the eyes, buzzing in the ears, with or without associated hypertrophy of the left ventricle, and fulness and freedom of the pulse, we should be cautious in recommending general or local blood-letting. In full habits, and in doubtful cases of recent origin, a single cupping may be practised, and the patient should be put on a restricted diet, debarred the use of stimulants, and an open state of the bowels enjoined. But it occasionally happens, that even this cautious line of treatment and change of habits of life are followed by an

aggravation of the disorder, where, however inexplicable and paradoxical it may appear, an entirely opposite plan of treatment brings with it the required relief. This has been observed where reason and experience in analogous cases have dictated copious bleedings. Dr Elliotson* has mentioned a case of the kind, occurring in a strong old gentleman upwards of sixty years of age, with a florid complexion and in full vigour, who had a constant sensation as if he were going to fall forwards,—a sense of plunging as he sat in the chair. He had no pain at all, but he had heat, and the throbbing in his forehead was "terrific." Conceiving that antiphlogistic treatment was required, particularly as the patient was a very excitable person, Dr Elliotson recommended that it should be put in practice, and that the diet should be low; but these measures, he understood, were enforced without the least benefit. Meat, wine, and stimulants of all kinds were afterwards allowed, and it was said the patient got perfectly well. Dr Elliotson appears to regard vertigo as very frequently connected with phrenitis, in the absence of sympathy with the stomach and intestines, and is an advocate for bleeding; but he justly observes, simple vertigo may depend upon an opposite state of the brain, and, commenting on this case, says, "Here was an instance of vertigo of this kind; it was difficult for me to form an opinion, though I had paid great attention to these diseases, and I formed a wrong judgment. I thought antiphlogistic treatment would be best, and it is possible that the other mode might not have succeeded, if the anti-inflammatory treatment had not been put in practice first." In a similar instance of a threatening aspect, occurring in a corpulent old female of sedentary habits, with a thick neck and florid complexion, in whom I could only account for the vertigo by supposing an accumulation of blood in the brain, a lowering course of treatment ended in aggravating the complaint, and inducing singing in the ears and dimness of vision, all of which subsided in following an opposite mode. It must be admitted that cases like these are exceptional. They warn us, however, not to trust too much to reducing measures, but to feel our way, and to be guided more by the result than by theory, or a too confident reliance on diagnostic accuracy. Nor are they quite unintelligible.

* Principles and Practice of Medicine, by Rogers, p. 457.

No doubt they are occasionally examples of vertigo from stagnation of blood, impeded or disordered circulation in the brain consequent to the diseased state of the arteries, formerly referred to, and which, under such circumstances, is more likely to be embarrassed by means calculated to reduce the contractility of the affected vessels than by such as maintain power and promote the circulation generally.

In the absence of the symptoms and signs of determination to the head, in the vertigo from anæmia of the brain, or debility and exhaustion of the system, and which forms are generally associated with pallor, feebleness of the heart's action, corresponding weakness of the pulse, and temporarily relieved by stimulants and the recumbent posture, quinine, iron, and other tonics, together with a generous diet and a regulated allowance of wine, are required. Attention ought at the same time to be paid to the state of the bowels, and their regularity provided for. In numerous instances of this class, the decoction of bark in equal proportion with the compound gentian mixture, to which may advantageously be added the carbonate of ammonia, will be found serviceable. Bark, wine, passive exercise, and animal food, are our main resources in such cases, and they often succeed in entirely removing the complaint, even at very far advanced periods of life; but whether they do or not, this line of practice relieves anxiety. It is a comfort and a consolation to the patient to be told that his ailment proceeds from a deficiency rather than an excess of blood in the head; for, popularly, the former condition is always regarded as exempt from danger, while the latter is viewed with great apprehension.

It is superfluous to relate cases of vertigo treated on this principle, but the following are perhaps not undeserving attention :—

Case 1.—A lady, sixty years of age, who had repeatedly been under my care during the preceding thirteen years with rheumatic complaints, was, in the month of October 1853, seized with giddiness, numbness in the course of the ulnar nerve, and prickings in the corresponding thigh and leg. Her general health was good, and the different functions seemed to be performed regularly. Naturally pale, languid, and nervous, and of extremely temperate habits, I attributed the symptoms to anæmia of the brain; at all events I had no hesitation in recommending a tonic plan of treatment. She had been ill about a month before I was consulted.

Various means had been tried, and among the rest a series of mustard cataplasms applied to the back of the neck. The greatest abstemiousness had been observed; all stimulants were set aside, and animal food taken most sparingly, under the terror of impending apoplexy. Totally opposite measures were advised. Wine was ordered three times a-day, butcher meat twice daily, and a mixture of the infusion of cascarilla with the carbonate of ammonia and sweet spirits of nitre prescribed morning and evening. In a week she was nearly well, and in ten days more all the suspicious symptoms had entirely left her.

Case 2.—A general officer, sixty-three years of age, holding a high civil appointment, entailing anxiety and confinement, small in frame, pallid, but usually in the enjoyment of good health, with the exception of occasional neuralgic attacks in the stump of a limb amputated after a gunshot wound forty years previously, experienced repeated seizures of giddiness of a most annoying if not alarming character during the last two years. These attacks were judiciously treated by his ordinary medical attendant; and under the influence of the citrate of iron and like remedies, together with a meat-lunch and wine, they ceased to be frequent or troublesome. I have no doubt, had other treatment been resorted to, the most serious consequences might have ensued.

Every workhouse and hospital could furnish innumerable examples of persons relieved and cured of this complaint by a short residence within the walls, simply by an improved and regular diet.

In obscure cases, unconnected with any obvious complaint or pernicious habit, and suggesting no particular indication, I have seen benefit derived from a perseverance in diuretic medicines. It is obvious that too much attention cannot be bestowed on the state of the various excretions. Setons and issues are seldom resorted to now-a-days, and the sooner they are wholly discarded the better.

CHAPTER V.

EPILEPSY.

Epilepsy is justly regarded as more peculiarly a disease of youth and manhood than of subsequent periods of life. After twenty, until sixty or seventy, the disposition to it appears to decrease, though neither steadily nor regularly with each quinquennial period. About seventy it again increases in frequency. No age is exempt from it; and the mortality it occasions in advanced life, whether originating then or earlier, entitles it to a place in this work.

I have said that no age is exempt from it. Heberden* noted several who began to be epileptic at almost every year between twenty and fifty; a few had fallen into it at sixty, and he saw one whose first attack was in the seventy-fifth year of his life, who from that time was often visited with it for at least six or seven years, and probably as long as he lived. Romberg† attended a lady fifty-six years of age, who in her fifty-fifth year, after the cessation of her menstrual period, was seized with epilepsy, the paroxysm of which only occurred at night time. According to the same author, Maisonneuve has related two cases, one of which occurred in a man of seventy-two years, who was first attacked in his sixty-ninth; the other in a female of seventy-five, who was first seized in her sixty-second year. In eighteen epileptics at the Sâlpetrière, MM. Bouchet and Cazauvielh found three who, at the period of decease, were respectively fifty-two, seventy-four, and seventy years of age, the first of whom had only been epileptic four years, the second seven years, and the third five years.‡ Out of 232 cases collected by M. Beau, the disease first manifested

* History and Cure of Diseases, p. 163.

† On the Dis. of the Nervous System. Sydenham Soc., vol. ii. p. 209.

‡ Note in Dict. de Med., art. Epilepsie, tome xii. p. 197.

itself between forty and fifty years of age fifteen times, and between fifty and sixty, four times. Within the short space of three years I had under my care no fewer than ten cases, all occurring in men above sixty-five years of age, in a population of 500, and in an institution from which epileptics are excluded when the disease is known to exist prior to admission. In six of these the fits did not appear till after the sixtieth and sixty-third year had been attained. One man, of sixty-five years of age, was first seized at the age of sixty-three; another, of the age of sixty-eight, after an interval of fifty years, at the age of sixty-five; a third, seventy years of age, ten years before, at the age of sixty; a fourth, sixty-nine years of age, when in his sixty-fifth year; a fifth, in his sixty-sixth year; and a sixth, seventy-three years of age, when in his sixty-fourth year. In the remaining four cases the date of the first attack could not be ascertained. They occurred in men sixty-four, sixty-six, sixty-seven, and seventy years of age. In analyzing fifty-two cases of the disease, occurring exclusively under his own observation, Dr Sieveking* found that the epileptic paroxysm first appeared in sixty-nine per cent. from infancy to twenty-six years, inclusive; in fifteen per cent. from twenty-one to forty years, inclusive; and in precisely the same ratio from forty-one to fifty-five years, inclusive.

It would thus appear that epilepsy occurring for the first time at advanced periods of life is by no means so rare as seems generally to be supposed. Of its existence and fatality in very old age, the returns of the Registrar-General give ample proof. Thus it has been calculated† that, in the metropolitan districts, while 125 died by this disease annually out of 1,000,000 living between fifteen and sixty years of age, 305, nearly three times the number, were carried off by it at sixty years of age and upwards out of the same number living. It must be remembered, however, that epilepsy is a chronic disease of variable duration and effects, and that the longer it has existed the more likely is it to entail, or be complicated with, serious structural changes in the nervous centres, tending towards a fatal termination. In many instances, in which it is met with above the age of fifty, it has originated earlier in life. The interval between the paroxysms is

* M. C. Trans., vol. xl. p. 157.

† Fifth Annual Report of the Registrar-General, p. 456.

sometimes so extended, that as many as ten, fifteen, twenty years, or more, have elapsed between the last and present attack, so that in old subjects a difficulty frequently presents itself in acquiring exact information as to the period at which the disease was first observed to occur. Dr Elliotson had an old lady under his care who had had epilepsy when a child every few weeks; the fits grew rarer till puberty. During the menstruating period they disappeared, "and she had no fit for *thirty* years; but when menstruation ceased, they returned every year or two." I have above alluded to an instance in which there is reason to believe that the disease reappeared after it had been absent *fifty* years.

Judging by its mortality, epilepsy is more frequent in the female than male after forty. It has been calculated, that out of 100,000 dying in the metropolis from different causes, 2010 males die of this disease between the ages of forty to seventy, and 2458 females. That this prevalence and fatality is owing to the influence of the cessation of the menses, and to uterine affections, seems proved by the fact, that while but 1082 males are carried off by the disease at the age forty to fifty out of 100,000 deaths from various diseases, no fewer than 1328 females die by it at the same age; and the influence of menstruation is still further illustrated by 1271 females dying of epilepsy out of 100,000 deaths at the age fifteen to twenty, and but 866 males at the same age.*

While I have thus endeavoured to show that the disease is not only more frequent and more destructive at advanced periods of life than is generally believed, it is important to observe that fatal cases of the convulsive form of apoplexy—that form more particularly perhaps met with in old subjects, of cerebral hæmorrhage, accompanied with convulsive movements of the extremities or features, or of both—are often confounded with epilepsy. Softening of the brain is so commonly productive of muscular contractions or convulsions, that it frequently simulates epilepsy, and must also often be mistaken for it; but, on the other hand, I cannot help thinking that the wide-spread belief of the rarity of genuine epilepsy in old age deceives many, and leads them to attribute to syncope and to vertigo, and even to apoplexy itself, those more obscure and not less important attacks of the disease,

* See Fifth Annual Report of the Registrar-General, pp. 317–321.

unattended with convulsions, and productive of but temporary or incomplete loss of consciousness.

This form is perhaps still more common than the more violent attacks, when the disease appears for the first time in advanced life. It is the vertiginous epilepsy of some writers, the "*petit mal*" of the French, in contradistinction to the "*haut mal*," or convulsive epilepsy; and if it is not more frequent than this form in old age, it is doubtless oftener seen then, relatively speaking, than earlier. It frequently precedes convulsive epilepsy for some time; and those who are subject to this variety of the disease have occasionally milder seizures without convulsions. As old age advances, the disease frequently assumes the non-convulsive character.

Symptoms.—Attacks of this kind set in variously, with or without premonitory symptoms, and present different degrees of intensity with regard to the state of the mental faculties. Sometimes the patient suddenly loses consciousness, and falls to the ground in a state of total insensibility, after uttering a faint shriek, and recovers his senses in a few seconds, or in a minute or two. In other cases there is no scream whatever, merely vertigo with an approach to insensibility; or consciousness is so instantaneously restored, that the person is not aware of having lost himself for a moment, and is assured that all the while he was perfectly cognisant of what took place, though unable to give utterance to his wants or feelings. Such patients may be seen lying like statues, pale or livid, with open eyes and relaxed and powerless limbs. Occasionally a slight convulsive twitch of certain muscles of the face or extremities, sometimes mere rigidity of a finger, accompanies these attacks; but often they are unattended with any muscular movements whatever. Vertigo, with faintness and transient or incomplete loss of consciousness, then characterise them.

Case 1.—A gentleman, now sixty years of age, whom I have frequently seen in this state, tells me, that immediately before the attacks come on he suffers from various "queer" and indescribable sensations in his head, with giddiness. He sometimes experiences a feeling of pressure on the top of the head, and is sick at stomach, but never vomits. Almost always he has time to sit or lie down before he is finally seized. The attacks are over in five or ten minutes; leaving behind them a sense of weariness

in the limbs. He never screams, and if at all convulsed, the contractions are limited to one cheek, but so slight as to be scarcely observable. The fits are more frequent in cold weather. They appear at irregular intervals, and chiefly during the day. For more than a year past he has entirely escaped, though before that, for two years, the seizures were very frequent. Some years previously, while living in the West Indies, he was subject to the convulsive form of the disease.

Case 2.—Another gentleman, sixty-one years of age, has had non-convulsive epilepsy, with occasional attacks of the convulsive kind, these twenty years. In this case the attacks generally occur in the night-time, but I have seen them happen while he was speaking to me in the street, or in the act of reading a newspaper. Persons unacquainted with the nature of the malady would suppose that he was merely "absent," or in a "deep brown study," as on these occasions he becomes fixed, and apparently wholly absorbed in what has been said, or he slides down into his chair speechless and motionless. Giddiness and slowness of speech, with loss of verbal memory, generally precede the consummation of these seizures, which are only of a few seconds' duration. The convulsive fits are longer, and leave him weak and stupid the whole of the next day. The slighter attacks pass off without any other effect than temporary dulness or stupor, lasting from half an hour to an hour or more.

Very often, whatever may be the nature of the paroxysm, the warnings, when they exist at all, consist only, as in these cases, in vertigo, confusion of thought, depression of spirits, or irritability of temper. The epileptic aura is still more rare in old age, but I have seen several well-marked instances; and at the very period I am writing a case has occurred in Chelsea Hospital, of a man in his sixty-fifth year, named Doubleday, two years subject to convulsive epilepsy, who, immediately preceding his last paroxysm, had coldness and tingling in the feet, gradually passing up the limbs, with a perfect assurance of the approach of the fit. I witnessed this seizure from the first intimation to the end; and I have seen him on other occasions similarly attacked.

A long succession of minor paroxysms, with more or less coma, extending over a period of ten, twenty, or even thirty hours, occasionally show themselves. Morgagni has incidentally alluded to

the case of a cardinal who suffered sixty fits in twenty-four hours. In an instance of this sort, presenting in an old soldier in Chelsea Hospital, over sixty years of age, the intervals of the brief attacks were attended by spasmodic twitchings of the muscles of the neck and face, consciousness being at the same time quite restored, and the exhausted patient perfectly aware of these involuntary movements.

Prognosis.—With the advance of old age, in the decline of life, the convulsive attacks diminish in severity and frequency, and, as already remarked, are often replaced by the simple, comatose, vertiginous, or non-convulsive, form of the disease. The paroxysms of either form not unfrequently entirely disappear as life advances. Notwithstanding the frequency of co-existing functional and organic disease, and contrary to what might have been expected, the prognosis is upon the whole more favourable when epilepsy shows itself for the first time after fifty or sixty years of age than at middle life, the disease appearing to follow the general law resulting from a progressive diminution of irritability of the nervous and muscular systems in old age. Herpin* reports five cured out of six who commenced to be epileptic between fifty and eighty years; but this is much too favourable an estimate, and, derived from so limited a number, is almost without any value. I have sometimes regarded a person as cured who a year or two afterwards had a succession of fits.

Besides asphyxia, an immediate danger of an epileptic paroxysm in old people is its termination in sanguineous effusion during the violence of the struggle, and accompanying congestion, the altered condition of the arteries predisposing them to rupture. When either form of the disease has existed for some years, and the fits are frequent, it is very often associated with more or less dulness or weakness of intellect and failure of memory. Calmeil, however, states that loss of reason is less common when epilepsy appears for the first time in advanced age. Some old persons fall into a state of dementia as soon as they are seized with the disease; others retain their intellect up to extreme old age. An epileptic in Chelsea Hospital, now in the seventy-fourth year of his age, and who has suffered these nine years, is still in perfect enjoyment of

* British and Foreign Medical Review, 1853.

all his mental faculties. The late illustrious Duke of Wellington, who had been subject to epilepsy for a good number of years, and who was ultimately carried off by it after a fourth violent seizure at the age of eighty-three, preserved his intellectual powers to the last. Cheyne and other writers have also alluded to several cases in old persons where the mental faculties remained unimpaired by the fits. Most old epileptics become apathetic, silent, and taciturn. The irritability of temper that so frequently accompanies the disease in youth and maturity seldom displays itself except as a forerunner of an attack, and generally gives place to moroseness and melancholy. Sometimes a suicidal tendency prevails. In one instance long under my care, the individual, a very old man, attempted to destroy himself twice—once by cutting his throat, and a second time by throwing himself over a bridge on the Thames; and I have repeatedly heard aged epileptics express a hope that death might soon put an end to their suffering. The gait often acquires a peculiar slowness and unsteadiness; the legs drag, as in early paraplegia; and the speech is sometimes thick, showing that the brain or cerebro-spinal axis has become deeply affected. The countenance is then heavy and stupid, and the mind is at the same time weakened.

State of the Cerebral Circulation during the Paroxysm.—The congestion of the brain accompanying a fit of the disease is secondary, and not the cause of the paroxysm. Attacks in old people are frequently, in regard to this point, peculiarly instructive and adapted for observation. In most instances, if carefully watched, the absence of primary determination to the head is rendered apparent by the shrinking and extreme pallor of the countenance; and it is only after the fit is established that the features turn livid or red, if at all, though the carotids and heart may have been pulsating violently. The arterial circulation within the skull would thus, in the first instance, appear to be obstructed either by paralysis of the capillaries, or more probably by spasm. Anæmia predisposes to the disease much more than plethora, and the majority of old people attacked are, though by no means invariably, thin, spare, and pallid. Kussmaul and Tenner* have shown, or rendered it very probable, by their numerous experi-

* On Epileptiform Convulsions, &c., &c., by New Syd. Soc., 1859.

ments and observations on warm-blooded animals, that, although it is not the proximate cause of an epileptic fit, the sudden interruption of the supply of blood to the brain is, if not the earliest, among the earliest phenomena. An anæmic condition of the brain proper seems also to be the view entertained by Dr Brown-Séquard, one of the most recent and original writers on epilepsy, of the state of its circulation during the paroxysm, congestion being limited, he supposes, to the parts at the base of the brain, the medulla oblongata, the pons varolii, the tubercula quadrigemina, &c., while "the brain proper contains less than its natural quantity of blood." However, as Professor Schrœder Vander Kolk* has remarked, and as Andral long before him pointed out, plethora and too strong congestion excite convulsions as well as anæmia.

Anatomical Characters.—All the anatomical lesions to which epilepsy has been attributed, have been met without the occurrence of the disease itself. On the other hand, the most careful inspections, conducted by competent observers, have frequently failed to detect any structural alterations whatever in the brain or spinal marrow, to which the symptoms could be assigned. Schrœder Vander Kolk, above quoted, and who attributes the epileptic convulsions to exalted sensibility of the medulla oblongata, with vascular dilatation and its ulterior results, states that he has found, on microscopic examination, the nervous centre hardened in some cases by albuminous exudation, in others softened by fatty degeneration. If we except these conditions, the same negative results have been obtained in the examination of deceased old epileptics as in the young; with this difference, that lesions of the nervous centres and their investments are then necessarily more frequently present. They are, however, congenital, accidental, or the consequences rather than the causes of the disease. Some of them, when they exist, are sources of irritation, predisposing the individual to returns of the paroxysms on exposure to ordinary causes, such as irregularities in diet, and indulgence in intoxicating liquors, which latter, of all inciting causes, is one the influence of which in the production of epilepsy in old people is the least doubtful.

* On the Spinal Cord and Medulla Oblongata, by New Syd. Soc., p. 228.

Morgagni, with others before him, was disposed to lay some stress on a redundancy of serum in the brain as a cause of the disease, and has referred to three or four cases in old people, in which water was found in great quantity in the ventricles and between the membranes, particularly in the cases of two old women above sixty, whose histories had been furnished to him; but further on he justly observes, "water is often found in far less quantity" (than natural) "in the cranium of epileptic patients." And we now know that in the atrophied brains of the old the ventricles are frequently much distended with serum, where epilepsy has never manifested itself. The severest case of convulsive epilepsy I have ever seen in an old person was dependent on chronic inflammation, with thickening of the dura mater lining the temporal fossa, and superficial ulceration, in the same locality, of the surface of the brain, coverable with the tip of the finger. The paroxysms had first appeared about two years previously. They were of daily occurrence for a fortnight preceding death, and only abated as the patient fell into a typhoid condition.

Epilepsy, without any recognisable alteration of structure in the head, is a common accompaniment and final termination of granular disease of the kidney, several instances of which have come to my knowledge in persons far advanced in life. Other blood-diseases, including gout, have in like manner appeared to occasion it in the aged, without any appreciable alteration being met with in the nervous centres.

Epileptics are frequently carried off by the supervention of acute and chronic diseases in the chest and abdomen. Phthisis is among the most common of these, even in very old age. Apoplexy and palsy put an end to many who have been seized with the disease late in life, or who have acquired it early and survived to old age. The following is an instance of sudden termination of the disease by apoplexy, after it had for some time shown itself in a mild form:—

Case.—A clergyman, fifty-nine years of age, corpulent, and of florid complexion, had for a year or more been subject to attacks of giddiness, with momentary loss of consciousness. He was frequently seized at the dinner table, on which occasions he was supposed to grow sick and faint, and little was thought of the

attacks by himself or family. After having been unusually frequent, he was one morning seized with a violent fit of convulsions, accompanied with foaming at the mouth and great distortion of the features. Under the immediate care of his ordinary medical attendant, he was recovering from this attack as I entered the room, having been urgently sent for, and in a short time he was able to give a clear account of himself. There was numbness of the little finger of the right hand, but no other bad or equivocal symptom. He appeared to be progressing favourably, and was believed to have entirely got over the attack, when another fit occurred in the afternoon of the same day, and he died that evening, comatose, with all the symptoms of cerebral hæmorrhage, never having but imperfectly emerged from the sopor following the violent convulsions of this second attack.

Diagnosis.—Epilepsy, in its severe form, is only likely to be confounded in advanced life with convulsive apoplexy, and softening of the brain. The short duration of the paroxysm, seldom exceeding ten minutes or a quarter of an hour, distinguishes it from the former disease, which is usually associated with or succeeded by paralysis. There is frequently, however, much difficulty in at once determining the diagnosis, more especially in the absence of paralysis, as in simple or congestive apoplexy without effusion. The previous history of the case will then greatly assist the practitioner. In softening of the brain, when convulsions are present, they are more permanent; and an attack, such as at first resembles epilepsy, is shortly discriminated from this disease by the existence, in the interval of the paroxysms, of other phenomena usually absent in simple or genuine epilepsy—viz., numbness, formication, local headache, paralytic weakness of a limb or of certain muscles, abiding malaise, and more or less blunting of the intellectual faculties.

The slighter seizures of the disease, unattended with convulsions, so closely resemble syncope, that they are often with great difficulty distinguished from it. On close examination, however, it will be observed, in these mild attacks, that the individual preserves a certain degree of consciousness, though unable to express himself, and that the circulation, though weak, is still going on steadily. In fainting, the immediate attack usually passes off more quickly than in epilepsy, and the use of the limbs and

senses are more rapidly restored. The features are deadly pale in syncope; in vertiginous epilepsy they assume a peculiar leaden hue, which is often very characteristic. Syncope is relieved by lowering the head, so as to restore the circulation in the brain; raising it prolongs the attack, and unquestionably has, under such circumstances, caused the death of many old people. Epilepsy subsides more speedily, in general, by pursuing an opposite course—by raising the head, and thus encouraging the return of blood from the brain. After syncope, the patient stares round him surprised, and can only relate what he felt or what occurred before he became insensible. On recovering from vertiginous epilepsy, he can frequently relate all the circumstances that took place during the attack, and allude to the steps taken to restore him.

Treatment.—The management of this confessedly obscure disease is still more difficult in advanced life than earlier, from the simple fact of its more frequent complication with structural alterations and important functional disorders, which, if they do not actually occasion it or predispose to it, forbid the use of otherwise appropriate remedies, and reduce the practitioner to the first principles of his art. Nor are we in general able to pursue the course of treatment, consisting mainly in hygiènic measures, which sometimes proves so useful in younger epileptics capable of exercise, early rising, and cold bathing, and in whom an almost total abstinence from animal food and all stimulants is, when judiciously advised, often productive of the happiest results. Where the vigour of the system is on the decline, and we have to contend with debility rather than strength, our means are necessarily more limited and less efficacious.

The curative measures must be modified to suit the circumstances of each individual case. It is therefore the first duty of the attendant to take a comprehensive survey of his patient, to inquire minutely into his habits and constitution, and the state of the various functions, with the view of removing all sources of irritation, if practicable, and improving the general health. If the fits appear to have commenced after the suppression of an habitual discharge, it is almost superfluous to observe that means should be adopted to restore it. When they have followed the cure of a chronic ulcer, or the disappearance of a chronic eruption,

the ulcer should be reopened by blisters or issues, and the eruption imitated by counter-irritation to the parts formerly affected, or to the scalp itself. Have they succeeded gout, or appeared in an individual liable to it, then he should try to produce a fit of this complaint in an extremity, by mustard, pediluvia, &c., and afterwards diligently follow out those dietetic rules which experience has shown to be most conducive to its prevention. When moral influences have been in operation, we should endeavour to calm the mind, and cheerfully reassure the patient. Late sittings in heated rooms, redolent with the deleterious products of gas-light, and filled with the respired air of hundreds, are peculiarly injurious to epileptics. Through a combination of these causes, one person never goes to the opera that he is not obliged to leave it from a threatened attack; another has wisely relinquished the House of Commons rather than experience periodical seizures of imperfect epilepsy. Licentious habits and indulgences must be abandoned, otherwise there is no hope for the epileptic. While excitement is on the one hand injurious, so on the other is exhaustion. The stomach and bowels should receive marked attention. Copious evacuations are hurtful, but daily motions advisable. A light nutritious diet, composed of easily-digested animal and vegetable food, suits best. Stimulants are very generally injurious, but in feeble constitutions, and where aged individuals have long been accustomed to wine or fermented liquors, the abrupt discontinuance of them, except for a limited time, is unsafe or prejudicial, and total abstinence is not advisable. The best effects follow a carefully regulated diet and the proper discipline of the mind and body. I have known many instances where the fits had in the course of a few weeks been reduced from one or two daily to the same number weekly by these simple means, without any medicine whatever.

In plethoric habits, and in persons but moderately addicted to indulgence in intoxicating liquors, complete abstinence from stimulants is sometimes of the greatest benefit, and is well worthy of a persevering trial. A false step is often followed by a succession of paroxysms which had been entirely absent for a year or more. Nothing so surely reinduces the disease, or confirms it, as over-indulgence either in eating or drinking; and without moderation in both, the most appropriate measures are wholly unavailing in

diminishing the frequency or severity of the paroxysms, or preventing their return. It is chiefly by these means, by attention to the general health, and the removal or mitigation of obvious sources of irritation, or the restoration of chronic ulcers and eruptions in the very few instances that can be traced to their disappearance, that we can hope for the amelioration or cure of the disease. Our practice in numerous cases must be empirical. Success as frequently attends the unaided efforts of nature as the most persevering exertions and skilful resources of the most conscientious physician. Spontaneous recoveries are by no means rare; and with a little help from hygiènic measures, and the avoidance of known sources of cerebral disturbance, they would be still more frequent.

Of the many vaunted remedies and so-called specifics for this appalling disease, I know scarcely one that can be at all confided in. They are even less trustworthy in epilepsy, as it usually presents itself to us, in the old, than in early life—very probably owing to the disease being then less frequently dependent on remote causes over which some of them exercise a more or less powerful influence; and I am bound to declare that I myself place little or no reliance in the oxide, sulphate, or valerianate of zinc; the oxide or nitrate of silver; the ammonio-sulphate of copper; indigo, and the like. Nevertheless, a practitioner would be to blame who did not give a fair trial to one or other of these substances in an abiding case of the disease. The salts of zinc may be long persevered in with safety. Lately, the iodide of potassium has become a favourite remedy, and some hopeful results appear to have been obtained from it in full doses in the young and middle-aged. It is irritating and depressing, if administered in like doses in elderly subjects. As yet I have had no experience of it in this disease. Sedatives, particularly digitalis and small doses of belladonna, which are of great benefit in certain cases in young people, are seldom useful in senile epilepsy. The vegetable tonics, in combination with antispasmodics, such as the infusion of valerian and the tincture of castor, may occasionally be exhibited with advantage. In all anæmic subjects,—and after a time at least anæmia is common,—the different preparations of iron, particularly the ammonio-citrate and the citrate of iron and quinine, are indicated. The latter is a very valuable remedy.

Where, as is usually the case when the disease is of long standing, the constitution is impaired, a generous diet, together with one or other of these tonics, and a moderate allowance of bitter ale or good old wine, may be advised with benefit. Under analogous circumstances, in the young, cod liver oil is often highly beneficial, and I have seen it prove equally serviceable in the old who take it kindly, and with whom it generally agrees. Issues and setons do no good in any case, and add greatly to the misery of the patient. The cases are extremely rare in the old where by ligature of a limb, the section of a nerve, or any other surgical proceeding, the fits may be prevented. Sometimes a paroxysm is warded off by the timely administration of a diffusible stimulant, as, for example, half a drachm or a drachm of sulphuric ether, with the same quantity of the tincture of cardamoms in camphor mixture, or a drachm of sal-volatile, with a dessert spoonful of brandy and two or three of water.

CHAPTER VI.

APOPLEXY.

Apoplexy has peculiar claims upon the student of senile pathology, not only from its great frequency in advanced life, but from its momentous character. As almost all we know of it, however, has been mainly derived from observations made upon cases occurring in the aged, there seems less reason for fully dwelling on the subject in this place. Nevertheless, without a tolerably complete account of its medical history, these pages would be very defective, and the treatment recommended for the cure or prevention of the disease, based on that knowledge, might otherwise appear wholly unintelligible.

The distinguishing features, or pathognomonic symptoms, of apoplexy, consist in loss of consciousness, sensation, and voluntary motion. Perhaps the most comprehensive definition we can give of it is, that it is a disease in which the functions of relation are suspended, while those of organic life continue. A fit of apoplexy, it has been often observed, resembles, in many respects, profound sleep. There is the same insensibility to external impressions, the same unconsciousness of everything that is passing around; the action of the heart and respiration go on in both instances, but the individual is shut out from the world, sight, hearing, smell, touch, and taste being abolished for the time. And, again, the limbs are motionless: if lifted, they fall as inert masses, volition in the one case being suspended, and in the other, either from the same cause, but much more frequently from actual lesion of the motor nerves and loss of power over the voluntary muscles, the same result is observed.

Premonitory Symptoms.—Generally, or at least very often, intimately associated with, if not dependent upon, a previous abnormal

condition of the brain itself, its vessels, or some remote organ influencing the brain, apoplexy is not unfrequently preceded for a variable period by symptoms warning us of its approach. In many instances, however, the attack is instantaneous, without any premonitory symptoms whatever; or, if they have existed, they have been so insignificant as to have attracted little or no observation. Nor are we aware of any symptom in particular, or any group of symptoms, which can be positively relied upon as announcing the advent of the disease itself. Nevertheless, a combination of two or more symptoms, indicating a congested state of the vessels of the head, or the directly opposite condition, anæmia, or some organic lesion of the brain itself,—have their value. Among the most important of these may be enumerated vertigo, increased by stooping, throwing the head backwards, or by suddenly turning it round; the various nervous affections of the external senses, tinnitus aurium, transient deafness, obscurity of sight, temporary blindness, flashes of light, double vision, unusual keenness of the sense of smell, or its sudden abolition; but the symptoms, of all others, which most frequently precede the disease, are, faltering or thickness of speech, impaired perception, with a certain amount of drowsiness or stupor, partial loss of verbal memory, the frequent substitution of one word for another, having perhaps no relation whatever to the idea meant to be expressed, and of which imperfection the person himself is often perfectly cognisant the instant the wrong word has escaped him. Then come numbness, coldness, weakness, or a feeling of weight in an extremity, sometimes limited to one or more fingers; formication, with or without cramp, or neuralgic pains in the limbs; frequent attacks of sick-headache, with dissociated action of the pupils, the one being dilated or sluggish in its movements, while the other is natural. These are important symptoms, generally indicating a serious lesion of the brain itself, frequently actual softening of its substance, often ending in hæmorrhage. If to cerebral symptoms of this kind we have superadded, in advanced life, calcareous rigidity of the arteries at the wrist, signs of cardiac disease, valvular imperfections, fatty degeneration of the structure of the heart, associated or otherwise with chronic bronchitis and emphysema of the lungs, occasioning venous obstruction and promoting congestion of the brain, sanguineous apoplexy is imminent, and it is the

duty of the physician to apprise the relatives of the threatened attack, and discreetly to caution the individual himself. If he entirely escape, the physician will, notwithstanding, have done no more than his duty; and having omitted to state his suspicion, he may have prevented the measures which every wise man adopts who is momentarily exposed to so serious a calamity.

Mode of Invasion.—The attack, then, is either preceded, for an indefinite time, by symptoms of functional or organic disease of the brain, or suddenly it bursts forth, in the midst of apparent health, without any warning of its approach. In the former case, it is sometimes very slowly developed. Occasionally, for days or weeks preceding the characteristic symptoms, the person is drowsy, and complains of one or more of the phenomena above alluded to. Often he has an instinctive dread of impending mischief, is nervous, and weeps without sufficient or accountable cause. The apoplectic symptoms may under such circumstances slowly appear, and gradually assume great intensity; but this is much more characteristic of softening of the brain than actual hæmorrhage into its substance, or genuine apoplexy, which in the vast majority of cases attains its maximum intensity very speedily, if not instantaneously. As an instance of the former mode of attack, I may mention the following:—

A billiard marker, upwards of seventy years of age, generally healthy, was observed to have a difficulty in scoring the game. When found fault with, he stated that his sight had suddenly become dim. This dimness increased. In less than an hour, vision was all but gone, and he was then obliged to be led out of the room. Both pupils were greatly dilated. There was neither giddiness nor headache, but the expression was vacant, and there was confusion of thought. On getting to bed, he fell into what appeared to be natural sleep. He was once or twice awoke by his wife in the course of the night; but his sleep became "very heavy," and in the morning he was quite insensible. The apoplectic symptoms continued for some days, and were finally accompanied with hemiplegia. He died in the course of a month, and I was told the remains of a large coagulum were found in the substance of the brain. Not improbably the effusion in this case had been preceded by softening.

Of the usual way in which the disease sets in, Dr Aber-

crombie,* writing from actual clinical observation, has given a faithful description. According to this author, the attack occurs chiefly under three distinct forms. In the first it is *sudden*, the patient falling down in a state of profound coma, deprived of sense and motion. In the second it begins with acute pain in the head; the patient becomes pale, sick, and faint, and *coma gradually* supervenes. The third form is characterised by sudden hemiplegia and loss of speech *without stupor*, passing, however, in some cases, slowly into apoplexy, perhaps after a few hours. The three forms, Dr Abercrombie observes, frequently pass into one another, but they are often quite distinct, naturally arranging themselves into cases which are immediately and primarily apoplectic; cases beginning with a violent attack of headache, and passing gradually into apoplexy; and thirdly, paralytic cases, without coma in the first instance. It will generally be found that the first description of attack is occasioned by effusion of blood into some portion of the cerebral substance; the second, by similar effusion into the cavity of the arachnoid; the third, by softening of a portion of the brain, succeeded by hæmorrhage, to a greater or less extent, into and around the softened spot. But, as will presently be shown, the exceptions to these coincidences are numerous. Simple, uncomplicated softening of the brain, or sudden congestion, may occasion them all, though less frequently; and in exceptional cases of apoplexy, no morbid appearances whatever are observed on *post-mortem* examination.

Symptoms.—The attack itself presents various degrees of intensity. In some cases it is so slight that the patient retains a perfect recollection of all that has happened, and has either never entirely lost consciousness, or has only momentarily been in a state of insensibility. Instances of this description often occur in the following manner:—After a meal, some unusual bodily or mental exertion, a deep moral emotion of grief or of joy, or while exposed to extreme cold or heat, frequently without any obvious assignable cause whatever, the sufferer is seized with giddiness or faintness, sometimes accompanied with general nervous tremor, sickness at stomach, and vomiting, and either falls to the ground, or has time to grasp the nearest object and sits down, unable to

* Diseases of the Brain, third edition, pp. 204, 205.

sustain the weight of his body. He soon recovers from this state of weakness, and no evil effects are left behind. He is supposed to have grown faint, and nothing more is thought of it. On some future occasion, if not on this, after a recurrence of similar symptoms, he is not so fortunate. The giddiness and sickness pass away, but the attack is accompanied, or immediately followed, by hemiplegia, numbness or partial paralysis of a limb, or only by thickness of speech, too clearly revealing its nature, and warning us of present or future danger.

In general, however, the loss of consciousness is complete. The patient is struck down wholly deprived of sense and motion, and lies in this state of insensibility for a period varying from a few minutes to twelve, twenty-four, or forty-eight hours, during which he cannot be roused, or, if roused at all, he moans or mutters a few incoherent words, and then relapses into his previous condition of sopor.

While lying in this state of perfect unconsciousness, the respiration is usually deep and slow in cases of medium severity, and very often stertorous; but stertor is not a necessary accompaniment of any stage or form of the disease, though generally present where there exists profound and persistent coma. The countenance is either pale and shrunk, or florid and swollen. The veins about the neck and temples are then gorged, the features heavy and relaxed. With the continuance of the attack and the impairment of the respiratory function, they assume a dark livid hue, and in most cases the extremities also acquire a similar appearance; but to the last the face may be pallid and exsanguineous. The state of the pulse varies as much as the preceding phenomena; it may be slow, full, firm, and regular, or small, rapid, feeble, and intermittent. Frequently it bears the latter characters on the invasion of the attack, and acquires the former on the patient recovering from the immediate shock, and *vice versa*. The pupils are more generally dilated in ordinary cases. Occasionally only one pupil is dilated or contracted, the opposite one retaining its natural appearance.

In the more intense forms of this dreadful visitation, when fully developed, the breathing is greatly embarrassed, remarkably slow or accelerated, usually stertorous, often superficial, interrupted and irregular, becoming more and more so as the disease advances.

At each expiratory effort a frothy spuma is forcibly puffed from the mouth, with a loud flapping noise; deglutition is wholly abolished; the features are livid, occasionally distorted and drawn to one side; the pupils are usually contracted, the skin is bathed in a clammy perspiration, the extremities are cold and discoloured, and the evacuations are passed involuntarily. The duration of these cases seldom exceeds two or three hours. I have, however, seen several presenting the worst conceivable symptoms run on to eighteen hours before terminating fatally.

Whatever may be the character of the attack as regards its severity or duration, the limbs are generally relaxed and motionless. Sometimes one side is convulsed from the onset. This may be either the palsied or sound side; more generally it is the former. On other occasions there is tetanic contraction of an extremity, frequently of the fore-arm, the biceps tendon of which juts out prominently. Except in the worst cases, it seldom happens that reflex movements cannot be excited by pricking or tickling the palms of the hands or soles of the feet. Nor is sensation in general wholly destroyed when motion appears to be completely lost, the patient even then withdrawing his arm from the lancet. Convulsions frequently disappear for a time, to return at an advanced stage of the disease. They are common accompaniments of secondary inflammation of the substance of the brain or its membranes, consequent to laceration and the irritation of effused blood, and may thus appear for the first time, together with contraction, a week or ten days after the symptoms more immediately constituting the apoplectic fit have vanished.

Convulsive or Epileptic Apoplexy.—This, the convulsive form of apoplexy, of a mixed character, intermediate between epilepsy and apoplexy, and partaking so much of the phenomena of both diseases as sometimes to be discriminated with difficulty, is of frequent occurrence in advanced life.

Much has been written on the pathology of this variety of apoplexy. Morgagni* attributed the convulsions to the irritation of effused blood on the serous membranes, and Cruveilhier† ascribes them to the same source. Others say they depend on the irritation which the effusion produces on the extremities of the

* De Sedibus et Causis Morborum, ep. ii. art. 19.

† Dict. de Med., art. Apoplexie, tome ii. p. 247.

torn medullary fibres of the brain. In the majority of cases, M. Boudet found them coincide with hæmorrhage into one of the ventricles, or the great sac of the arachnoid, thus agreeing with Morgagni and Cruveilhier. Every one who has examined subjects dying of this form of the disease must have had repeated opportunities of verifying this statement; but, on the other hand, it will have frequently occurred to him to have seen cases where the effusion was entirely limited to the medullary substance of the brain itself, and others wherein no effusion whatever existed. As in epilepsy, therefore, convulsions may occur in apoplexy without laceration of the brain, rupture of a blood-vessel, or any other obvious lesion.

When attended by coma and persistent hemiplegia, the results of *post-mortem* examination warrant the conclusion, however, that hæmorrhage into one or other of the ventricles, or into the cavity of the arachnoid, has ensued. I may return to the consideration of epilepsy followed by temporary hemiplegia (epileptic hemiplegia) in treating of the differential diagnosis. In the meantime I may observe, that in these cases the convulsions are more frequently general than partial or limited to one side; that the features are more distorted, the action of the heart more violent, and the tongue more frequently bitten, than in sanguineous apoplexy, while the duration of the fit is also much shorter, seldom exceeding a quarter of an hour. It may be broadly laid down, that convulsions precede coma in epilepsy—they subside when it occurs; in apoplexy they follow, accompany it, and appear later.

Congestive Apoplexy.—If the attack has arisen from a temporary cause, such as sudden congestion of the brain, and is independent of serious pathological changes, the degree and duration of the symptoms may observe a similar character. Excepting a feeling of bodily weakness, with incapacity for mental exertion, the sufferer may be quite restored to his usual state of health in an hour or two, or even sooner. People have thus been known to walk several miles after having been seized in the streets, or while engaged at work in the field. A gravedigger at Chelsea Hospital, sixty-eight years of age, finished his work after an attack of which he subsequently died. He had stopped a few minutes, and then gone on again. More generally, however, even in the most favourable cases occurring in persons advanced in life, recovery is slow.

The system receives a shock from which it rallies imperfectly, and the individual is long disabled, without any very obvious complaint other than increased general debility.

Hæmorrhagic Apoplexy.—In the more severe forms of the disease, accompanied with paralysis of sensation and motion, loss of speech, &c. &c., and which are generally the result of organic lesion, either softening of the brain, or hæmorrhage, or of both, the duration of the fit and its consequences are very various.

After the comatose symptoms have disappeared, a second group of symptoms, not less important or serious, may be anticipated, whenever we have reason to believe, from the nature of the attack, that hæmorrhage has occurred. From the third to the twelfth day, generally about the fourth or fifth, inflammation of the cerebral substance, or of the membranes in contact with the effused blood, is apt to take place, and is evidenced by the usual symptoms of cerebral inflammation. They are generally, however, of a low, irritative type. The pulse is accelerated, frequently small and compressible. The face is flushed, the eyes are suffused, the heat of the scalp is slightly increased, the tongue dry, occasionally brownish, and there is slight headache, with confusion of thought, vertigo, wandering and disturbed sleep, often wakefulness. In milder grades these symptoms may escape observation, but sooner or later, if left to themselves, they assume an aggravated form, and are then frequently associated with violent shooting pains and spasmodic contractions in the paralysed as well as in the non-paralysed limbs; sometimes assuming an epileptic character, the patient is carried off in the midst of a paroxysm from a recurrence of the hæmorrhage, or the supervention of persistent coma. In more satisfactory examples the inflammatory symptoms begin to decline in a few days, still leaving the patient palsied, but out of immediate danger. Very frequently the case now assumes a chronic form. The more alarming symptoms having passed away, the pains in the palsied limbs continue, and are accompanied or succeeded by permanent flexion. The history of these cases belongs to softening of the brain, which is often the primary lesion, the hæmorrhage and its consequences succeeding the disorganisation of the brain, and not preceding it.

Causes—Age most prone to the disease.—The influence of age in predisposing to apoplexy, and the frequency with which it appears

at different periods of life, have of late received much attention. The general result of these investigations confirms the usually accepted opinion, that it chiefly affects persons beyond the meridian of life. Various writers, however, have fallen into error in stating too strongly that the tendency to the disease increases progressively and absolutely with advancing years. Thus Ferrario* calculated from a table of the deaths by apoplexy he constructed from the bills of mortality at Milan, that the liability to the disease increases with age in a geometrical progression, doubling every ten years. Dr Burrows,† from an analysis of 215 cases of apoplexy and hemiplegia, collected from trustworthy sources, and from his own experience, and from an examination of the returns of deaths by apoplexy furnished to the Registrar-General during the year 1842, observes, that the frequency of apoplexy steadily increases from twenty to eighty years of age, the actual number of apoplectic cases increasing during each decennial period upwards from twenty to seventy years of age, while the numbers living gradually diminish. The period of life most subject to apoplexy cannot fairly, however, be inferred from the age at which death by this disease occurs, and Dr Burrows himself alludes to this common error. A more recent writer, Dr Richard Quain,‡ guided by this view of the matter, and referring to the period at which the *first* seizure happens, has incidentally exemplified the accuracy of a remark of Hippocrates, that it occurs most frequently between the age of forty and sixty. Between fifty and sixty the disease appears to reach its acme of frequency, and then again diminishes. "While the relative number of apoplectic cases to the relative number of persons living is one to ten between fifty and sixty, it is one to eighteen between sixty and seventy, and one to sixteen between seventy and eighty" (*Quain*). All know that a *first* attack predisposes to subsequent seizures; and as the mortality increases with age, many of the fatal cases included in the reports of the Registrar-General are second, third, or fourth attacks. These observations do not, however, in the least militate against the generally received opinion of the extreme frequency of the disease at advanced epochs of life. At each of

* British and Foreign Medical Review, vol. x. p. 425.

† On Disorders of the Cerebral Circulation, p. 126.

‡ London Journal of Medicine, vol. i. p. 40.

the decennial periods between forty-five and seventy-five, the deaths occasioned by it in England and Wales in 1855 ran thus: 1662, 2103,—showing a rapidly progressing and absolute increase in the mortality with the advance of age.

Influence of Sex and Temperature.—It has generally been supposed that the disease is much more common in males, and this prevalence has been accounted for by the male sex being more exposed to its presumed determining causes. Of thirty-nine* deaths by apoplexy in the hospitals of London in 1839, thirty-three were males,—an overwhelming majority, even exceeding the results obtained by M. Falret, who found, in analysing a great number of cases with this object in view, that it occurred almost in the proportion of three to one in the male. Dr Quain states, in the paper already quoted, "that the disease appears earlier in life in men than in women, and the liability to the attacks ceases in like order." If we accept the mortuary returns of the Registrar-General† in a question of this sort, and there is no reason for doubting their accuracy, the malady does not prevail more, or at least very little more, in one sex than in the other; and an examination of these returns would, at first sight, rather countenance the opinion that it is met with oftener in the female from the age of fifteen upwards, with the solitary exception of the decennial period, forty-five to fifty-five. But as respects the ratio of deaths per thousand living—the true criterion—the deaths, and therefore the presumed number attacked, nearly coincide in both sexes. To every one million living aged forty-five years and upwards, the proportion dying annually in England and Wales, in the seven years 1848–54, was, males, 1888—females, 1781,‡—a scarcely appreciable difference per cent. per annum, though still preponderating on the male side. All forms of the disease are greatly more frequent in winter than in summer, more especially the congestive and hæmorrhagic varieties.

Pathological and Proximate Causes.—Whence the frequency of apoplexy in the aged? The reply to this question brings us at once to the consideration of the etiology and pathology of the disease; and here let us for one moment advert to the appearances presented

* Third Report Registrar-General, p. 184.

† See Eighteenth Report Registrar-General, pp. 122, 123.

‡ From a MS. return furnished by Dr Farr, Registrar-General's Office.

on *post mortem* examination, though by so doing we necessarily anticipate this portion of its history. In the order of their frequency these are : extravasation of blood into the substance of the brain, or into its cavities (*hæmorrhagic apoplexy*); extravasation of blood beneath or between the membranes of the brain, or into the cavity of the arachnoid (*meningeal apoplexy*) ; congestion of the brain or its membranes (*congestive apoplexy*). The extravasation of blood, or mere congestion, may be accompanied or otherwise with effusion of serum (in the absence of coagula, *serous apoplexy*).

These various conditions indicate *pressure*, and when we meet with them we do not hesitate to ascribe the *coma* and other symptoms of the disease to this cause ; but in certain instances, rare it is true, no morbid appearances whatever are detected, while in other cases, far from unfrequent, the only alteration observed is a more or less limited softening of the substance of the brain, sometimes exclusively of congestion or hæmorrhage. The former of these is the *simple* or *nervous apoplexy* of Abercrombie, the *coup de sang* of Gendrin and other French writers, who, with Abercrombie, ascribe the phenomena of the attack to vascular pressure on the brain ; the latter, when accompanied with effusion of blood, is the *hæmorrhagiperous softening* of Rochoux, and, when dotted from the same cause, the bleeding taking place from several points at once, the *capillary apoplexy* of Cruveilhier. When independent of effusion, congestion, or redness, it is what is generally known as *white softening*.

It may be observed, in passing, that the doctrine which attributes the peculiar phenomena of an attack of apoplexy to pressure as the immediate cause, appears at first sight to entirely fail in explaining those cases of the disease in which no appreciable deviation from the natural condition of the nervous centres, or of their investing membranes, can be detected. The advocates, however, of this doctrine maintain, that even in these cases plethora and congestion, occasioning vascular pressure, may have existed, though the brain may present a bloodless aspect after death, examples of which are not wanting in other organs and tissues. That pressure from whatever source, and that *sudden* vascular pressure, is quite sufficient to occasion coma and all the phenomena of the apoplectic state, is undeniable ; and further, that a turgid or congested condition of the cerebral vessels is an imme-

diate attendant upon a vast majority of apoplectic cases, terminating favourably or otherwise, appears to be equally certain. Such seems to have been Dr Abercrombie's opinion in attributing *simple* apoplexy to a "congestive or hæmorrhagic condition of the brain;" and such is the opinion of almost all practical as well as theoretical writers upon the subject; but the proofs of the existence of pressure in every case are, nevertheless, very defective. It is known as a law in pathology, that the functional disturbance of an organ is accompanied with precisely similar symptoms, whether produced by an excess or deficiency of its normal amount of blood. Apoplexy may thus appear in very opposite states of the system or condition of the brain itself in regard to plethora or anæmia, but the *tangible* cause of the disease is pressure. Moreover, as Andral has justly observed, anæmia and hyperæmia in the nervous centres, as elsewhere, are secondary phenomena, or mere effects of a primary modification of the force, whatever it is, which subjects the cerebral circulation to certain rules, and hyperæmia or anæmia may be wanting, and yet the symptoms will still continue.

These remarks have a practical bearing upon treatment. Those who insist on the efficient cause of apoplectic coma being neither more nor less than pressure exerted on the brain either from sanguineous effusion or congestion, complicated or otherwise, have generally advocated large and repeated bleedings in almost all apoplectic cases. Those, on the other hand, who hesitate to support this view have been less bold, more cautious, discriminating, and, I believe, more successful.

It is entirely out of my design to enlarge upon the physiology of coma. I may perhaps, however, be permitted to observe, that the intensity and duration of this state is, *cæteris paribus*, no measure of the degree of pressure on the brain, but is rather a sign of the *seat* of effusion or cause of pressure, and the symptoms of apoplexy are also in direct relation to the *suddenness* of the compressing cause. The brain may be highly vascular, its membranes minutely injected, and the whole contents of the head gorged with blood without apoplexy appearing. Instead of stupor, we may have, under these circumstances, excitement, delirium, and all the symptoms attendant on cerebral inflammation; so a large but slow accumulation of serum frequently exists without

producing any other effect of an apoplectic nature than blunting of the cerebral functions. In like manner, a considerable effusion of blood may take place in the substance or on the surface of the brain, and yet the loss of consciousness may be transient or slight, because the pressure is diffused over a large extent, or is not specially exerted on the base of the brain. Hæmorrhage in this situation induces the most profound and persistent coma, with general paralysis, and is the cause of many of the most rapidly fatal cases of apoplexy.

The pathological causes above referred to—viz., extravasation of blood, congestion, serous effusion, and cerebral softening, are themselves the secondary effects of other influences which are gradually accumulating, and become of more frequent and certain operation with advancing years. By far the most important of these, and one to which, perhaps, nine-tenths of the cases of hæmorrhagic apoplexy are due, is disease of the cerebral arteries of a calcareous, fibrinous, or fatty nature, predisposing to rupture on bodily exertion or mental emotion. The influence of these changes in inducing the disease had not escaped Morgagni; but it is more especially of late years, when the true nature of the alterations in question have been investigated with care, and in connection with softening of the brain and apoplexy, that the frequent dependence of both diseases on fatty degeneration of the arterial capillaries of the brain has been satisfactorily established. Baillie reckoned that these arteries were "ossified" oftener than sound in persons of sixty years of age; and Bichat has remarked, than in every ten persons of that age this change is present in at least seven of the number. The relative frequency with which they are diseased has already been noticed at page 80 of this work.

Without ignoring venous hæmorrhage as a cause of apoplexy, so constantly are the cerebral arteries in a calcareous or fatty state in persons above fifty-five or sixty, dying of this disease, that we are irresistibly led to the conclusion that this is of all others its most important predisposing cause, the one to which we may unquestionably ascribe the chief frequency of apoplexy in advanced life. As a cause of softening of the brain, this condition of the cerebral arteries will be referred to in its proper place. In connection with apoplexy, it may be observed that, whatever may be the nature of the change in the arterial tunics, whether calcareous,

fibrinous, or fatty, vessels so circumstanced are not only momentarily liable to rupture on an unusual quantity of blood being sent to the head, or by any cause preventing its free return from the brain; but, having lost their elasticity, they encourage congestion and all its consequences. Nor can it now surprise us that a violent muscular effort—mounting on horse-back, lifting a heavy weight, straining at stool, a severe fit of coughing, stooping, and, a very frequent cause of apoplexy in old age, the venereal act—should so very often occasion hæmorrhage within the skull, and be the most obvious exciting cause of the disease. There is no single cause, says Rokitansky, that will account for the frequent repetition of attacks of apoplexy in many individuals, and its simultaneous appearance at several different spots in the brain, but the presence of disease of the vessels. This also partially explains its happening symmetrically in corresponding portions of the brain.

The softening of the substance of the brain surrounding sanguinous effusion has been variously viewed as a primary or secondary lesion—the cause or the consequence of the extravasation. Rochoux* asserts that in nineteen out of twenty cases of apoplexy the softening precedes hæmorrhage. Andral and others think that it sometimes is primary, sometimes secondary. The truth appears to lie here. Although I by no means assent to the sweeping conclusion of Rochoux, there seems reason to believe that in the majority of cases of cerebral hæmorrhage, with laceration or breaking down of the brain, occurring in advanced life, the attack has been preceded for a longer or shorter period by ramollissement.

Next to a diseased condition of the cerebral arteries, and very frequently associated with abnormal changes in the arterial system at large, may be ranked in importance, as causing and predisposing to apoplexy, the organic alterations in the heart incident to persons approaching and exceeding the meridian of life. Of these, the most constant and least injurious is simple hypertrophy, referred to at page 12 as physiological in the old. Rokitansky, however, appears to regard simple hypertrophy, or hypertrophy with moderate dilatation of the left ventricle, as exerting great influence in causing hæmorrhage in the brain. The coincidence of apoplexy with this disease of the heart, he observes, is so con-

* Ranking's Retrospect of the Med. Sciences, vol. i. p. 11.

stant as to afford ground for stating it as a rule.* Rochoux—whose opinion in all relating to apoplexy is deserving of every attention—as well as other equally distinguished pathologists, have doubted and denied the influence of hypertrophy of that organ in the production of this disease. So long as the cerebral arteries remain sound, there seems reason to believe that apoplexy is not a common result of simple or dilated hypertrophy. It is the association with a calcareous or degenerated condition of these vessels, and the absence of any impediment to the sudden and powerful propulsion of blood towards the brain, or the co-existence of venous congestion from emphysema, bronchitis, or other disease of the lungs, that renders the hypertrophy dangerous as regards the risk of apoplexy.

When, however, the organic disease of the heart is of such a nature, as is much more generally the case in old persons, as to occasion venous obstruction, then, in truth, we have an obvious cause of plethora of the brain and its results. Insufficiency of the mitral valve, and, a frequent consequence of this state, hypertrophy of the left ventricle—obstructive and also regurgitant disease of the tricuspid valve, and their consequences, dilatation of the right auricle and ventricle,—are thus predisposing and exciting causes of the disease of undoubted influence. It is chiefly "through the venous system," as has been observed by Dr Watson, "that valvular disease of the heart induces cerebral congestion;" and when, in addition to a patulous state of the mitral valve, we have superadded hypertrophy of the left ventricle, passive congestion of the brain, as of other organs, is a frequent consequence. Cullen was fully aware of the great influence of venous congestion in the production of apoplexy in advanced life. And Dr Latham has particularly adverted to it in his valuable "Lectures on Diseases of the Heart," vol. ii. pp. 336, 337, as causing "apoplectic coma of a dangerous character."

In an able paper by Dr Law on diseases of the brain dependent on diseases of the heart, in the "Dublin Journal of Medical Science," vol. xvii., that gentleman has clearly shown that pseudo-apoplectic attacks are a common result of insufficiency of the aortic valves, several instances of which I might adduce in confirmation of his

* Path. Anat. by Syd. Soc., vol. iii. p. 399.

remarks, as of those of Dr Stokes on this very important matter, in vol. xxx. of the same practical work.

Before quitting this part of the subject, it seems due to Dr Burrows to state that in his work on the "Disorders of the Cerebral Circulation," already referred to, he has ably traced the connection of apoplexy with diseases of the heart, illustrated the pathological relations subsisting between them, and proved their frequent association in the clearest manner statistically, by bringing together in a tabular form the experience of several observers. In 132 cases of apoplexy and sudden hemiplegia, collated from trustworthy sources, 84 of the number, or 63·6 per cent., presented disease of the heart. The inference, says Dr Burrows, from the foregoing calculations is, that in any given number of cases of apoplexy and sudden hemiplegia, no less than *three-fifths* will present unequivocal signs of cardiac disease—either hypertrophy, dilatation, valvular disease, or some combination of these lesions. In thirty-seven cases of disease of the heart co-existing with apoplexy and sudden hemiplegia, fifteen of which are recorded by Andral, and twenty-two taken from Dr Burrows' own case books, hypertrophy with valvular disease existed nineteen times, hypertrophy alone ten times, and valvular disease alone eight times.*

Gout, chronic rheumatism, dyspepsia, and cachexia, frequent accompaniments of advanced age, have all been adduced as causes of the disease. With regard to gout and rheumatism, it may be observed that the habits and circumstances engendering and perpetuating them are of themselves sufficiently intelligible sources of apoplexy. Gout as well as rheumatism have, in their turn, together with the use of spirituous and fermented liquors, been accused, and not unjustly, of promoting the degeneration of the cerebral arteries and the various alterations of the heart to which so much importance is attached in the causation of the disease. Death by apoplexy or convulsions is a frequent termination of albuminuria, and sometimes of jaundice; the retention of urea in the one case and of the bile-elements in the other poisoning the blood, and impairing or destroying the functions of the brain.

The majority of cases of apoplexy occurring in persons beyond

* See Observations on the Connection of Diseases of the Heart with Apoplexy, by Dr Walshe, in the "Lancet," March 1849.

the middle period of life, are observed in broken-down subjects suffering from a variety of diseases, or from a combination of disease; and the short-necked, the corpulent, robust, and plethoric, of temperate habits, are by no means more prone to it than meagre, attenuated, and pallid valetudinarians reduced by chronic catarrh, hæmorrhoids, and a variety of exhausting maladies. The former are perhaps more liable to the congestive form, and have frequent attacks before they are ultimately struck down seriously or irrecoverably; the latter are more prone to cerebral hæmorrhage, and some of the most rapidly fatal cases of apoplexy present themselves in anæmic, reduced, and feeble habits.

Anatomical Appearances.—For the object in view, the appearances discovered on *post mortem* examination have been sufficiently indicated in considering the etiology and pathology of the disease. There it has been pointed out that, in certain exceptional cases, the brain and other contents of the cranium are apparently free from lesion of any kind; that in others, the chief alteration consists in unusual injection or congestion of the brain and membranes, with or without an abnormal accumulation of serum in the ventricles, at the base of the brain, or between the arachnoid and pia mater; or in two or more of these situations conjointly; that in other cases, this increase of the natural quantity of serum is the only change observed; but that, in the aged, with atrophy of the brain, there is a compensatory increased quantity of the cephalo-rachidian fluid, occasionally amounting to ten or twelve ounces or more, frequently, there can be little doubt, erroneously considered the cause of apoplexy; that softening is sometimes the only condition of the brain discovered to which we can attach any importance in assigning a physical cause for the disease; and lastly, and chiefly, that effusion of blood into some part of the brain, or on the surface of the brain, beneath or between the membranes, or in the great cavity of the arachnoid, is the most undoubted and the most frequent anatomical appearance observed in rapidly fatal attacks in advanced life. In forty-nine cases, thirty-one males and eighteen females, related by Morgagni, Lieutaud, Portal, Cheyne, Abercrombie, Bright, and others, occurring in persons between fifty and eighty years of age, in which the *post-mortem* examinations are recorded, no less than thirty-two were cases of hæmorrhage; in four there was effusion of serum simply; four were

cases of congestion with serous effusion; four simply of congestion. The remainder showed softening, "erosion of the brain" (case by Portal), the deposition of pus; and in one case, recorded by Abercrombie, the only morbid appearance consisted in extensive disease of the whole of the arteries of the brain. Thus hæmorrhage was found eight times more frequently than either serous effusion or congestion respectively, these being the next most common condition; and it is to be observed that in the above number any case given by Rochoux, who treats of apoplexy under the head of cerebral hæmorrhage, has been entirely omitted.

In persons above fifty years of age, the most frequently associated lesions are, a diseased state of the cerebral arteries, generally fatty degeneration, valvular disease of the heart, dilatation of the heart, emphysema of the lungs, and other conditions of the respiratory and circulatory organs, encouraging congestion of the brain by impeding the ready descent of blood from the head—diseases and lesions to which reference has already been made.

In cerebral, or in meningeal hæmorrhage, the effusion may be either venous or arterial; but the cases of the former are very rare; and though in the majority the hæmorrhage proceeds from capillary arteries so minute that the rupture from which it has ensued cannot be made out, in others large vessels give way, and a corresponding facility exists of discovering the orifice from which the bleeding resulted.

The corpora striata themselves, or the immediately contiguous cerebral structure, and, next, the thalami nervorum opticorum, are the usual seat of cerebral hæmorrhage. In 392 cases of this lesion that Andral found recorded in the works of different authors, 202 occupied simultaneously the corpora striata and optic thalami, sixty-one the corpora striata alone, thirty-five the optic thalami alone, twenty-seven the portion of the hemispheres above the centrum ovale of Vieussens, sixteen the lateral lobes of the cerebellum, ten the portions of the brain anterior to the corpora striata, nine the corpus callossum, eight the spinal marrow, seven the posterior lobes of the brain, five the middle lobes, three the peduncles of the brain, one the crus of the cerebellum, one the corpora olivaria, one the pituitary body. In forty-one cases observed by Rochoux, twenty-four occupied the corpora striata, two the optic thalami, one the corpus striatum and thalamus, one was

situated below the corpus striatum. The remainder were situated almost indifferently in other portions of the brain, five in the centre of the hemispheres, two at the posterior part of the ventricles, two at the anterior and internal portions of the hemispheres, three at the posterior and internal, one in the middle lobe.

Hæmorrhage into the substance of the tuber anulare is extremely rare. It does not appear to have been observed in any of the above cases cited from Andral and Rochoux. Two cases have occurred in Chelsea Hospital during the last twenty years. In both there were convulsions, and death ensued in one case in two hours, in the other in less than three. Gendrin observes, that, contrary to the general opinion, the corpora striata usually escape. "They are often detached," he says, "pushed upwards, and form prominent bodies in the midst of the effusion." This I have myself observed in several cases, that on first glance were reckoned as hæmorrhage in the substance of the corpus striatum. Dr Bright has also remarked, that the hæmorrhage is more frequently situated a little to the outside of this body. Cruveilhier's experience is agreeably to the generally received opinion; and he further adds, that the corpora striata are most frequently lacerated in violent concussion of the brain.

The largest effusions take place in this situation in the immediate vicinity of the corpora striata. Here the brain is often ploughed up to such an extent that one can hardly resist the impression, that softening of its structure had previously existed, and yet vast effusions, with great destruction of the brain, frequently occur without previous warnings. In most instances, however, of extensive hæmorrhage, the attack has been preceded by cerebral symptoms of various duration, degree, and kind; and several of the most remarkable cases, in which the effusion has been so considerable as to have broken down the septum lucidum, and destroyed the greater portion of both lateral ventricles, I have encountered in aged bedridden subjects, long presenting some of the symptoms of softening of the brain, leaving no doubt on my mind that this was the primary lesion. Extensive effusions occasionally find their way from the centre of the brain to the periphery, and spreading over a large surface, faithfully represent, on first view, true meningeal apoplexy.

It is not my intention to describe the process which nature

follows in removing sanguineous effusion in the brain, the changes which the clot of blood undergoes, the various stages of absorption and reparation, nor the appearances presented on the operation being perfected. Suffice it to say, that from the second to the third week, the more fluid portions of the coagulum have nearly disappeared, leaving a brownish fibrine, gradually assuming a yellowish ochery tinge, in the centre of which, or standing alone in its stead, we often find a hard blackish core, the last remains of the coagulum. The reparative process is greatly influenced by the extent of the effusion, the constitutional powers of the patient, and the pre-existing condition of the brain. The time required for the absorption of the clot is equally various. Sometimes very large effusions are removed in two years. After a lapse of two years I have found the consolidated remains of coagula, consisting in hard yellowish granules, very much resembling mustard seed.

From an early period, perhaps, as Gendrin alleges, before the work of absorption commences, the clot is surrounded by an organised cyst, which subsequently, after the removal of the coagulum, either contracts, leaving a cicatrix, or remains empty, or is more or less filled by a serous fluid. Cysts and cicatrices of this description are frequently observed in persons who have recovered from attacks of apoplexy. Three or four are thus occasionally seen, each indicative of the previous attacks. Cruveilhier states that he has found as many as fifteen in one individual. I once met with an empty cyst in the substance of the brain nearly the size of a walnut, in the case of a general officer, who had had an attack of apoplexy twenty years before, and who for the last three or four years of his life was insane. It is well known that second and third attacks occur after still longer intervals.

Diagnosis.—Apoplexy is usually considered a disease of so well marked a character, as to be easily distinguished from all other allied disorders. This is true of its more obvious or intense forms, which can seldom be confounded by ordinary attention with similar affections; but from certain varieties of epilepsy, and from syncope, strange as the assertion may appear, it is by no means always so readily discriminated as has been represented. Nor can the coma of ordinary apoplexy be discerned from the coma occasioned by narcotic poisons, opium for example, or spirituous liquors. It is only by inquiring into the origin and history of suspected cases

that we draw the distinction, and have recourse to the proper measures, and not from any peculiarity in the cerebral phenomena themselves, which are in both examples precisely alike.

The efficient cause of apoplexy and epilepsy appears in many cases to be similar, if not identical. An overloaded or congested condition of the cerebral and meningeal vessels seems capable of producing the one or the other. The diseases are often associated; and the coma or sopor following the epileptic seizure, in the severe form of this disease, is truly apoplectic, while in the less severe cases of epilepsy, those in which there is merely partial or complete loss of consciousness without convulsions, the vertiginous epilepsy, or *petit mal* of French authors, the attack is so precisely similar to certain forms of apoplexy, recognising perhaps the same condition of the brain, that it is only by attentively watching its *progress* that the differential diagnosis can be established. Loss of consciousness, vomiting, pallor, or lividity of the countenance, frequently accompany both diseases, and both are as generally preceded by giddiness, singing in the ears, and other premonitory symptoms not specially appertaining to either the one or the other.

But in this form of epileptic seizure the patient is usually soon enabled to give an account of his sensations, and it is often found that when motionless, and apparently unconscious, he retained sufficient intelligence to know what was being done for his restoration. This is much more rare in apoplexy. If we ascertain that similar attacks have happened before, that they have sometimes been preceded by a scream, that the patient has occasionally been convulsed, that the tongue has at any time been bitten, the inference is, that the fit is epileptic; but neither the pulse, the pupils, the respiration, nor the condition of any function, points out the distinction between this species of epilepsy and those cases of apoplexy characterised by temporary or only partial loss of consciousness, and faintness without associated or consecutive palsy.

Epileptic apoplexy, or epileptic hemiplegia, is sometimes with still greater difficulty distinguishable from apoplexy. Indeed, it may be questioned whether some of the cases recorded, even by credible writers, of that disease, were not cases of temporary palsy from local cerebral congestion of an apoplectic nature. In the

chapter on epilepsy, allusion has already been made to the diagnosis of convulsive epilepsy from convulsive apoplexy, and the broad lineaments distinguishing the one from the other briefly stated. Time forms an important element in the diagnosis of these diseases. The duration of a paroxysm of epilepsy usually does not exceed ten minutes or a quarter of an hour. Apoplectic seizures are seldom limited to this; and even in the slightest attacks, without paralysis, the shock to the system is considerable, the restoration to health slow, and the refreshing sleep of the epileptic wanting.

Apoplexy ushered in by pallor of the countenance, failure of the circulation, coldness of the surface, in short, by syncope, is exceedingly liable to be mistaken for ordinary attacks of this nature, and an erroneous diagnosis may and has not unfrequently resulted. The importance of distinguishing the one from the other can hardly be over-estimated, though fortunately, as regards immediate treatment during the existence of the stage of collapse, and while as yet it is next to impossible to determine the true nature of the attack, the error is of little consequence, as these cases of apoplexy are then best and safest treated as syncope. Here, again, as in epilepsy, the duration of the fit assists us in arriving at a correct conclusion. If protracted, notwithstanding the usual means,—and we have reason to believe in the integrity of the heart and great vessels,—while the age of the individual and other considerations suggest the possibility of apoplexy, the diagnosis should be given with reservation. Paralysis of an extremity, hemiplegia, or considerable distortion of the features, the drooping of an eyelid, accompanying syncope, or an approach to syncope, generally, though not invariably, announce in elderly subjects a serious lesion of the brain or nervous centres, and generally authorise a declaration of the apoplectic character of the attack. The entire absence of these symptoms, and a comparative brief duration of unconsciousness, do not warrant an opposite opinion. Instances similar to the following are frequently met with, and ought to warn us to be guarded in pronouncing with too much confidence the real nature of the seizure in aged and infirm individuals.

An emaciated, feeble man, about seventy years of age, an inpensioner of Chelsea Hospital, fainted in church, and was forthwith removed to the open air, where he speedily rallied, and was soon

able, with a little assistance, to walk to his ward in the establishment. In three or four hours he had so perfectly recovered, that he seemed then to be in his usual state of health. About this time he again fainted. He was now bathed in a cold perspiration, almost pulseless, and feebly retching. His features were calm and placid; there was no paralysis. In a very few hours more he was dead. A large clot of blood was found in the right hemisphere, and beneath the arachnoid, on the same side, without any obvious communication with the lacerated cavity, a thin patch, several inches in breadth, of almost liquid blood lay spread over the surface of the brain.

In aged persons, vomiting connected with syncope should be regarded with suspicion, more particularly if cephalic symptoms had previously existed. Piorry, who has pointed out the difficulty of distinguishing apoplexy from syncope in many cases, and acknowledged that he himself has committed the mistake, chiefly relies on position in determining the diagnosis. "In syncope," he observes, "the horizontal position will ameliorate the symptoms, and *vice versa*. In cerebral congestion the vertical position will relieve, while the horizontal will aggravate the symptoms."*

Differential or Special Diagnosis.—The symptoms indicating the various forms of apoplexy, founded upon a knowledge of the pathological causes of the disease, have been carefully drawn up by some writers without reference to actual observation. According to such writers, it would seem that each species of apoplexy, whether arising from congestion, hæmorrhage, effusion of serum, softening of the brain, or, lastly, from some unknown modification of its nervous influence, has its special characteristics, by which it may be easily recognised during life; and the prognosis and treatment appropriate to each form have been laid down with corresponding precision. The distinctive symptoms are, however, not always met with in practice. Neither the age nor sex of the individual, habits of life, or constitution, the mode of invasion of the attack, nor its progress, warrant a *positive* opinion of the exact condition of the brain. Cerebral hæmorrhage is, however, in a great preponderance of cases, the immediate cause of the disease in advanced life; and where there exists sudden and profound

* Brit. and For. Med. Chir. Rev., vol. xx. p. 234.

coma, with stertorous breathing, involuntary evacuations, and general paralysis, or persistent hemiplegia, there is almost uniformly more or less extravasation of blood, either into the brain, in one or more of its ventricles, or in contact with the membranes enveloping it. The only other affection with which a case of this kind is most likely to be confounded is cerebral softening. And the symptoms are sometimes so perfectly alike, that in rapidly fatal cases the distinction cannot be established during life.

If the fit pass off without paralysis of any kind, and especially if, at the same time, the loss of consciousness has been incomplete or transient, the legitimate inference is, that no effusion has taken place, and we presume that the symptoms have originated in temporary congestion of the brain, or in some unknown modification of its nervous influence. But the converse does not always hold good. There may still exist a clot of extravasated blood in some part of the cerebral substance, frequently, under these circumstances, near the periphery of the brain; or it may be in a ventricle; or, still more probably, between the membranes or in the cavity of the arachnoid,—to be yet removed, or to become the source of a subsequent attack of a more serious nature, or of secondary inflammation, and consequent disorganisation of the contiguous structures. The differential diagnosis of these two forms of apoplexy—viz., hæmorrhagic and congestive—chiefly rests, then, on the existence or non-existence of associated paralysis. Sudden apoplexy with persistent hemiplegia are, I repeat, the characteristic signs of sanguineous effusion. If these occur in a person previously in health, we may almost with certainty infer that hæmorrhage has taken place within the skull, or that softening of the brain has ensued. The diagnosis is therefore now all but limited to hæmorrhage or softening, and, as before mentioned, both are frequently combined, and consequent to each other.

When the attack has been preceded by a train of premonitory symptoms, more especially localised headache, numbness, coldness and partial paralysis, thickness of speech and loss of memory, or general weakening of the intellectual faculties, the case is very probably of a secondary nature,—viz., partial inflammation, occasioning red softening, or limited death of the brain from inanition, causing white softening; but there is no certainty of the existence of either of these states.

Serous Apoplexy.—Is there such a disease as serous apoplexy; and if so, how are we to distinguish it from hæmorrhagic or sanguineous apoplexy? The diagnosis of these forms of apoplexy was considered of great importance by the ancients, because their treatment was wholly based on it. Though not altogether neglected by recent writers, this question has in a great degree lost its consequence, as any practice grounded upon it is now generally regarded as erroneous and unphilosophical. I believe I am stating the all but generally received opinion of the profession, when I assert that, though serous effusion is sometimes the only phenomenon observed to account for the apoplectic symptoms, this effusion is very rarely a *sudden* event; and when *sudden,* that it has generally been preceded by congestion of the brain sufficient of itself to account for the fit. There is no reason why the brain should differ in this respect from other organs. Now, sudden serous effusion is exceedingly rare, except where there are obvious causes of venous engorgement, and obstruction of recent occurrence, or inflammation of the membranes. We do not deny the possibility of such a thing, but, as observed by Rokitansky,* "the diagnosis of serous apoplexy is as uncertain on the dead body as on the dying patient." One of the best marked cases is that referred to by Andral,† of a man fifty years of age, the subject of anasarca and ascites from disease of the heart, whose sudden seizure by apoplexy coincided with the reabsorption of the fluid previously accumulated in the peritoneum and cellular tissue of the limbs, and in whom no appreciable lesion existed in the brain, but a considerable collection of colourless serum in the lateral ventricles, as well as in the third, which had distended them prodigiously.

There exists, however, in elderly subjects, as observed in a preceding chapter, a tendency to gradual accumulation of serum within the cranium, a species of chronic hydrocephalus with which it behoves the practitioner to be acquainted, commencing imperceptibly, and progressing slowly, without pain or fever of any kind, and ending in hebetude, weakening of the corporeal and mental faculties, and drowsiness, or stupor, without paralysis. These symptoms are perhaps as much due to the coincident atrophy of the brain, which is almost always present. Individuals

* Path. An. by Syd. Soc., vol. iii. p. 338.

† Clin. Med. by Dr Spillan, p. 220.

thus affected are met with in every hospital allotted to the aged: they are found vegetating, often much emaciated, lying in bed, and exhibiting many of the symptoms attributed to cerebral softening. They often die suddenly and unexpectedly, sometimes apparently from congestion, at other times obviously from hæmorrhage, to both of which old people labouring under atrophy of the brain are, according to Rokitansky, peculiarly prone. Occasionally, however, nothing but serous accumulations are met with—accumulations which have long existed, and to which death can in no way be ascribed.

Prognosis.—At whatever epoch of life it occurs, apoplexy is one of the most serious diseases to which we are liable, whether as regards immediate danger or its consequences in entailing paralysis, and weakening the intellectual faculties. A first attack is too often the forerunner of a second, though men, the victims of persistent apoplectic palsy, sometimes, and not unfrequently, escape afterwards, and die at very advanced ages, of some other disease unconnected with it.

From a remote period, the older the individual the greater has the danger been considered; and justly so, since they are more subject to the severest forms of the disease, and less able to contend with its results. Mr Copeman, in his work on Apoplexy, however, states, from an analysis of 197 cases, collated from various sources, that the greatest mortality occurs between the ages of thirty and sixty, and diminishes considerably between sixty and eighty, and upwards; from which, he observes, the danger does not appear to increase with advance of years beyond a certain period. By a table he has constructed, it appears that in persons between fifty and sixty years of age, the proportion of recoveries to deaths was 1 to $7\frac{1}{2}$; and between sixty and seventy years of age, but 1 to $1\frac{1}{3}$, or about one-half. These results differ very materially from those obtained by Ferrario,* who shows that at Milan the annual mortality per cent. by apoplexy is but ·028 at twenty and under thirty years of age; it is ·322 between fifty and sixty; ·643 between sixty and seventy; 1·321 between seventy and eighty; and 1·706 between eighty and ninety—steadily increasing with the advance of life. If anything were wanting to

* Brit. and For. Med. Chir. Rev., vol. x. p. 426.

prove the accuracy of the generally received opinion, the returns of the Registrar-General are sufficiently convincing. Out of 1,000,000 living at the age of fifteen and under sixty, only 332 die annually of apoplexy in the metropolitan districts; whereas at the age of sixty and upwards no less than 3828 are carried off by it out of the same number living.*

The prognosis must in a great measure be regulated by the accuracy of the special diagnosis. In hæmorrhagic apoplexy, for several days too much caution cannot be exercised, however promising the case may appear. A return of the effusion from a fit of coughing, sneezing, or muscular exertion, has been known suddenly to carry off the patient, while seemingly doing well; and up to a certain period, from the fifth to the tenth or twelfth day, the accession of inflammatory symptoms may place life in great peril. Then, paralysis from apoplectic effusion, after a certain age, is seldom removed. Although life may be preserved for the present, the mind is often permanently enfeebled, and the patient ever afterwards unfitted for his ordinary vocations.

The most alarming symptoms of a fit of apoplexy are profound and persistent coma, with relaxation of the sphincters, and imperfect or irregular respiration. If to these be added a fluttering pulse, the peculiar flapping noise in expiration occasioned by paralysis of the buccal muscles, the escape of frothy spuma from the mouth, and copious perspiration, death is speedily at hand. Contraction of the pupils is a very unfavourable symptom.

Convulsions have a most alarming appearance, and Dr Cheyne† regarded them as indicating the greatest danger. They are not, however, conclusive of laceration or effusion, and they often occur, we have already observed, in cases in which there are grounds for believing that the apoplexy has arisen from temporary causes. We have seen several elderly persons perfectly recover after an attack of this form of the disease. One man had, in the same number of years, as many as four seizures of this kind, and afterwards died from another disease. Portal, it is well known, was indeed of opinion, from experiments he had performed upon animals, and from clinical observation, that convulsions were rather favourable than otherwise, "as announcing a diminution of pressure upon

* Fourth Annual Report of the Registrar-General, p. 320.

† On Apoplexy, p. 13.

the brain." But this view must be received with reservation; for though they are less fatal than alarming, convulsions generally portend danger, at whatever period they occur. If they have not appeared until symptoms of inflammation of the brain or its membranes have ensued, we may anticipate the worst at a period more or less distant. They are then frequently the prelude of rapidly approaching dissolution.

Attacks of the congestive form of the disease, unattended by paralysis, are the least dangerous. Persons beyond fifty years of age have been known perfectly to recover, after as many as five, six, or more seizures. A repetition of attacks generally, however, under the most favourable circumstances, ends in weakening of the intellectual faculties. It has already been observed, that apoplexy from uræmic poisoning is generally fatal, the finale of *albuminuria* or *ischuria renalis*. When occurring in jaundice, it is equally dangerous. The convulsions from uræmic poisoning often cease, and sometimes recur again and again before proving fatal. Not so apoplexy.

Treatment.—There are few diseases the general treatment of which so little varied from a remote period, until comparatively recently, as the one under consideration. Two opposite opinions mainly divided the profession, the chief question in dispute being the necessity or propriety of venesection. One set, the minority, regarding apoplexy as a disease of nervous debility, an affection in which the vital energies are greatly depressed, altogether condemned depletory measures, or were extremely cautious in advising them; the other, the more influential and numerous, viewing it as a result of vascular turgescence, and attributing the accompanying collapse to oppression of the brain from this cause, chiefly trusted to blood-letting. Some even advised it in all cases indiscriminately, as the only effectual remedy, the one to which all others were but secondary and subservient. A few of the older school still adhere to these opinions, and cling to a routine rule of practice. The number is diminishing all over the world, but less slowly in Italy, where bleeding is still carried to excess.

A more enlightened pathology has in later years been promulgated, and with it a safer and sounder practice has been introduced. Exclusive views of the nature of the disease are no longer entertained. Coma and convulsions are known to arise from

directly opposite conditions of the cerebral circulation, from an excess or deficiency of blood in the brain; and numerous cases have been recorded in which excessive hæmorrhage has been immediately followed by apoplexy in its worst forms. For instance, Andral mentions the case of a female who, very much exhausted by great and constant hæmorrhage from a cancerous uterus, died from cerebral hæmorrhage; and M. Laurent has recorded two cases of the same form of apoplexy, which occurred in females reduced to a state of anæmia by profuse flooding after delivery. Two examples of an analogous description, presenting in the wives of officers in Chelsea Hospital, occurred to myself. In one, the system was reduced by repeated attacks of menorrhagia, followed, after its cessation, by periodical epistaxis. The other was comparatively healthy, but attenuated and anæmic to a great degree. Indeed, no fact seems more conclusively established, than that extreme weakness from deficiency or depravity of the blood is one of the most powerful predisposing causes of cerebral congestion and hæmorrhage. Hence it follows, that individual cases must be treated according to their peculiar characteristics. In this, as in all other diseases, we ought to be guided by the scientific principles of pathology, the results of accurate clinical observation, and the accumulation of facts ascertained by *post-mortem* inspection,—neither blindly following one system nor another, but adapting our practice to existing circumstances and the actual state of knowledge on the subject.

The writings of Portal in France, and of Abercrombie in this country, philosophical and practical productions, largely imbued with the true spirit of medical investigation,—these, in our day, mainly propagated the necessity for venesection in apoplexy, and impressed the older members of the profession with the benefits of this remedy. To Portal and Abercrombie, though by no means the first to enlighten us, are we chiefly indebted for dispelling the fallacy of trusting to symptoms in discriminating "sanguineous" from "serous apoplexy;" and as in the former blood-letting was considered as essential as it was conceived to be hazardous in the latter variety of the disease, the importance of removing this error was formerly much appreciated. These distinguished men, however, pushed their views beyond legitimate bounds. They approved, and strongly advocated, venesection in sanguineous apoplexy. While they clearly showed that the weak, the aged, and

infirm were its frequent victims, and that neither paleness of the countenance nor feebleness of the pulse was peculiar to either species of the disease, but that all these attributes frequently accompanied sanguineous effusion in its most hopeless states, they all but laid it down as a principle, that venesection ought not to be omitted in any case, however old or debilitated the individual, though they did not exactly go the length of Dr Cheyne,* who believed it to be "a good rule to have every patient, who was not plainly dying, blooded." Thus they emboldened the timid, and arrived at the conclusion that the treatment of the disease ought not to be influenced by any preconceived notions founded on the "hypothetical" distinctions of sanguineous and serous apoplexy; that, to quote Dr Abercrombie, "there are no symptoms which characterise a distinct class of apoplectic affections requiring any important distinction in the treatment; or, in other words, a class which in their nature do not admit of blood-letting."

But, if these authors too strongly recommended this measure, and did much harm by the influence of their authority, they undoubtedly deserve the thanks of the profession for showing that advanced age, with its usual accompaniments, is no just reason for entirely eschewing venesection. Nyman and Morgagni had indeed done this long before: the former, who insisted on the utility of blood-letting in old apoplectic subjects, by relating the case of a female seventy-two years of age whom he cured by large bleedings; and the latter by the case of a nun eighty years of age, related to him, who "was once and again restored by blood-letting. The gentlemen who were opposed to it," he observes, "considered *the age only*. The event vindicated the resolution." Then there is the often quoted case from Lancisi, referred to also by Morgagni, of a merchant of "great age," whose symptoms of impending apoplexy were much alleviated by a loss of blood from the nose to the quantity of eleven pounds, and entirely cured, after fifteen days, by a return of this hæmorrhage to the quantity of four pounds. Hufeland abstracted from a man seventy-two years of age, of pale, meagre constitution, who had a fit of apoplexy, and lay speechless and unconscious, pallid, but with a full hard pulse, first one pound of blood; and this being of no use, and the

* On Apoplexy, p. 64.

vein yielding no more, immediately fourteen ounces from the opposite arm; "and it was not until twenty-six ounces of blood were thus lost, that speech, consciousness, and ability to swallow returned, and the attack of apoplexy passed by happily.* Similar cases are mentioned by Portal, Abercrombie, and others, in which, under the most unpromising circumstances of advanced age and general debility, copious blood-letting was perfectly successful.

Assured of the value of this remedy, and of its imperative necessity in certain cases, we never hesitate to employ it, whatever may be the age of the individual, when the indications for it are sufficiently evident. We have repeatedly seen persons bled who have reached seventy-five years of age and upwards, with obvious benefit to the apoplectic symptoms; and we are fully convinced the mere circumstance of old age ought not to forbid blood-letting when the symptoms warrant it. Attempts have been made to prove, by statistical data, that blood-letting increases the mortality of the disease; that in an equal number of cases treated in this way and treated without blood-letting, the recoveries are more numerous in the latter than in the former; but the fallacy of applying the numerical method to such a purpose is obvious in this perhaps more than in any other disease, since, as a general rule, the more severe, and therefore the more dangerous cases, have been, and are, the most likely to be submitted to this mode of treatment.

But we must not be misunderstood. Blood-letting is indeed a two-edged weapon in this as in other diseases. Judiciously employed, it has saved the life and expedited the recovery of individuals of the most advanced age. Attenuated octogenarians have frequently been rescued by it; on the other hand, it has sent many of less mature age, persons in the prime of life with vigorous constitutions, to the grave, and occasioned the very symptoms which it was intended to prevent. The unwise, the indiscriminate recourse to venesection in apoplexy, and its allied disorders, cannot be too severely reprobated; and it were not saying too much to assert, that in the hands of the ignorant, the hasty and inconsiderate, the lancet is more likely to prove injurious, if not fatal, than if the disease were left entirely to the unaided efforts of nature.

The indications for blood-letting in apoplexy are mainly derived

* The Three Cardinal Means of the Art of Healing. New York, 1842, p. 12.

from the state of the circulation and the condition of the respiration and respiratory function. "To admit of this remedy, it is necessary that the great functions of life be performed with a certain degree of energy." (*Gendrin.*) The pulse at the wrist is often deceptive, and we ought to examine it in the neck, but above all at the heart itself. If the heart's action be vigorous, its sounds normal, and the heat of the skin preserved, we have good reason for believing blood-letting advisable, though not indispensable. If, in addition to vigorous contraction of the heart, the features are congested, and the veins about the head and neck prominent, we have a further reason for recommending it; and if to these signs and symptoms are added slow and deep respiratory movements, with stertorous breathing, blood-letting ought not to be deferred. Under these circumstances we have seen individuals far advanced in life gradually recover consciousness as the blood was flowing from the arm. A turgid state of the capillaries about the head, with increased heat of the scalp, are among the best indications for blood-letting; and even when the pulse at the wrist or the action of the heart is weak and languid, local bleeding by cupping will then be serviceable.

In performing venesection, in all cases of apoplexy occurring in advanced life, the head and shoulders should be raised while the blood is flowing. If the pulse become fuller, stronger, or more regular, during the operation, which it frequently does in the cases alluded to, we have direct evidence of the utility of the measure. The bleeding may then be allowed to proceed till an impression appears to be made on the attack, or until the pulse begins to flag. That instant, whatever may be the quantity abstracted, the vein should be closed. Large bleedings are very rarely if ever admissible, and are often positively dangerous. In no case should a vein be opened a second time unless the signs of congestion and all the circumstances authorising further loss of blood are well marked. The main object should be to diminish the force and tension of the circulation, and no more. Ten or twelve ounces taken away at the onset of the attack will generally do this; but with a strong, full pulse, sixteen or even twenty ounces will sometimes be required. The frightful quantity of sixty ounces was no uncommon bleeding, even in attenuated subjects, less than thirty years ago, and advocated by men of reputation, large

practice, and so-called experience in their profession. Few could survive such wholesale bloodshed, and the marvel is how any ever did.

Blood-letting is most safe and beneficial in the purely congestive form of the disease, in which there is usually great and deceptive tolerance of the remedy. If had recourse to early, it frequently prevents effusion; but when, from the nature of the attack, as, for instance, the presence of complete hemiplegia, there is reason to believe that hæmorrhage has already taken place, bleeding is less likely to be serviceable, and the necessity for employing it is then greatly diminished. The mischief being accomplished, Nature at once commences the work of preservation. A coagulum is speedily formed, further effusion is arrested, and unless the symptoms of congestion and compression are urgent, and the condition of the circulation attests the fact that there is danger of a recurrence of the hæmorrhage, bleeding cannot be practised with advantage.

Blood-letting is prejudicial in anæmic subjects, and, generally speaking, wherever there are signs of aortic valvular disease. It is contra-indicated in all cases commencing with syncope, while as yet the balance is between life and death, and the action of the heart is weak and languid. The too hasty use of the lancet has often, in these circumstances, extinguished the efforts of Nature. An opposite treatment is then frequently indispensable; stimulants, ammonia, and brandy, being required to sustain the flickering vitality. In every case the operation should be delayed till reaction is fairly established. Coldness of the surface, feebleness, irregularity, intermission, and smallness of the pulse, especially if accompanied with superficial and imperfect or accelerated respiration, discountenance it. In the more advanced stages of the attack, with a rapid, small, compressible pulse, and general perspiration, bleeding in any form is dangerous, and almost sure to hasten a fatal issue. Nervous tremor or rigors is a strong objection to it, even though the pulse feel firm under the finger. Fatal syncope, paralysis, and violent convulsions, are common results of the injudicious recourse to, or the improper perseverance in, general or even local blood-letting.

Purgatives.—Whatever may be the diversity of opinion as to the value of local or general bleeding in apoplexy, a singular unanimity prevails regarding the advantages of cathartics in the

disease. The most remarkable beneficial effects frequently follow the use of these remedies, and cases are constantly occurring where no impression appears to be made on the symptoms until the bowels have acted, and been freely moved by purgatives or injections.

Case 1. A very striking instance of this kind fell under my observation in Chelsea Hospital in 1847. A thin, spare man, seventy-two years of age, was admitted under treatment with the usual symptoms of apoplexy without paralysis. His breathing was stertorous; he was unconscious, but could be roused, though to no purpose. He was cupped once, had leeches to the temples twice, and cold was applied to the head—all ineffectually. He continued in a state of deep stupor for forty-eight hours. Purgatives, croton oil, and calomel had been given, and stimulating injections thrown into the rectum, without any result. At length, suddenly, very abundant offensive evacuations were passed involuntarily. From that moment the general torpor disappeared, consciousness returned, and all immediate danger subsided. It was long, however, before he recovered ordinary health. At the beginning, our impression of what would be the issue was most unfavourable. This is only one of several similar cases, some of them hemiplegic, which have come under our notice.

Free purging is of essential service in that form of apoplectic coma or insensibility arising from the poisonous influence of "pent up" bile, in which the motions are sometimes as black as pitch, and of an exceedingly offensive odour. One of the most remarkable cases, illustrative of the benefits of full alvine evacuations in this form of cerebral insensibility, is recorded in the "Medico-Chirurg. Rev.," vol. viii. p. 455, as follows :—

Case 2.—"A gentleman, who had long shown symptoms of what would have been termed 'Ramollissement du Cerveau,' fell down in a fit of apoplexy at the age of sixty-eight, and not the slightest impression was made by cupping, leeching, blisters, enemas, and all the means which three physicians could suggest. One left the patient for dead, after taking four ounces of blood from the head; and he was *in articulo mortis*, after forty-eight hours of general paralysis, total insensibility, stertorous breathing, glassy eyes, and dead-rattles in the throat! The physician took his leave at twelve o'clock at night, requesting to be informed in

the morning at what hour the patient died. No message having been sent, the physician called in the morning, and found, to his no small surprise, the patient at breakfast, quite sensible, and with the full power of all his muscles! The patient, soon after this, disgorged some pints of fetid bile, and had no return of apoplectic or paralytic symptoms."

Purgatives are also of great benefit in relieving the brain in apoplectic, renal, or uræmic coma, or the approach to it. Their salutary effects in such cases are perhaps partly due to their influence in removing biliary congestion, so frequently associated with renal disease. In a case of albuminuria I occasionally saw with Dr Bright and Dr Prout in the autumn of 1848, occurring in a gentleman sixty-two years of age, and who was repeatedly threatened with apoplexy from this cause, and at length fell a victim to it, the greatest relief to the head-symptoms was observed to take place on those days on which vitiated biliary motions were obtained by colocynth and calomel. Like bleeding, purging may be carried too far. Throughout the attack an open state of the bowels should be maintained; but after they have in the beginning been freely moved, active aperients should give place to the mildest that will procure easy, feculent evacuations. Collapse is now and then induced by a perseverance in drastic purgatives, not exhibited with the view of procuring profuse evacuations, but accidentally, as it were,—a first, a second, and even a third dose being given before the desired effect is obtained, when a violent purging ensues from the accumulated amount of irritating medicine in the canal. However desirable it may be to procure immediate action of the bowels, it is well to remember that for the present, in a fit of apoplexy, a certain amount of insensibility or torpor exists there as elsewhere. Having passed on to the back of the tongue, in cases where the ability to swallow is lost, a drop or two of croton oil, with five grains of calomel rubbed up with fresh butter, a common enema should then be administered, which in ordinary cases will succeed in emptying the rectum and lower portion of the intestines; and if not, one of a more stimulating nature, composed of castor oil and turpentine in gruel, with or without Epsom salts, may be employed. Time should be given for the action of the purgative administered by the mouth, say five or six hours, when it may be repeated if necessary, while in

the meantime another enema may be thrown up, provided the rectum has not been thoroughly evacuated by the preceding one. With every care, it sometimes becomes necessary to check or moderate a diarrhœa supervening on the imperative administration of active purgatives. For this purpose small doses of Dover's Powder are generally sufficient, and may, under such circumstances, be prescribed without any apprehension of injurious consequences to the brain. The caution herein given is of more importance than may at first appear.

Cold applied to the head is of primary importance in the treatment of apoplexy. Cruveilhier entertains the highest opinion of the benefits of ice thus used, observing that no better means can be employed in comatose cases. He mentions that this application snatched from death one of his patients, who had been bled ineffectually five or six times, uselessly subjected to emetics, covered with sinapisms and blisters, and who was plunged into a state of coma with stertor. He further adds, "From experience in a very great number of cases, I know of no better means in apoplexy."*

Position.—The quantity of blood in the brain is much under the influence of position. And in old age, where the physical laws begin to preponderate, this is particularly remarkable. Great difficulty generally exists in procuring full benefit from this step. The head and shoulders are raised, and means taken to maintain them in this position; but the head soon droops, the chin descends on the chest, the veins of the neck are thus compressed, and the free return of blood from the brain impeded. It requires the constant care of a good nurse to prevent this, and avert the evil consequences more likely to ensue than if the head were left in the horizontal posture.

Emetics.—The exhibition of emetics in apoplexy has very deservedly fallen into disrepute. I will venture to assert, that no one who has seen much of the disease, and watched the effects of the distressing spontaneous vomiting that often accompanies it, would for a moment hesitate to raise his voice against the practice. How often has he not stood by, in momentary dread of the result, when, during the spontaneous vomiting so often accompanying the

* Dict. de Méd., art. Apoplexie, p. 259.

attack, he has at each shock felt the impulse and observed the livid hue of the neck, face, and scalp, turgid with the rush of blood, the veins prominent and the eyes injected. Vomiting not only propels the blood copiously and forcibly towards the head, but impedes its return. "It is not then surprising that many apoplectics," says Portal, "have perished during the action of vomiting."

Blistering—Counter Irritation.—During the paroxysm, blisters are of little or no value. They are serviceable, however, in the subsequent stages, in subduing inflammation, should it arise, and accelerating absorption. The nape of the neck or back of the ears should be selected for their application, whereby cold to the scalp may be continued.

Sinapisms are more appropriate in the beginning, acting expeditiously derivatively; and for this purpose they may be placed on the nape of the neck, as well as on the stomach and calves of the legs. In cases where the vital energies are greatly weakened, the circulation feeble, and reaction unestablished, they act beneficially in stimulating the nervous system, and restoring vascular action.

Recapitulation, and General Outline of the Treatment.—"Whenever a physician is called to a person in a state of apoplexy," says the learned Burserius (and his advice has often been copied without acknowledgment), "his first care ought to be to place the patient in a light, cool apartment, raising the body pretty high in the bed, and laying the head bare, but carefully covering the feet, and letting them hang down, having previously loosened the clothes about the neck, breast, belly, &c. He ought, in the meantime, to deliberate with himself, as far as possible, of what temperament, age, and habit the patient is, and how he used formerly to live; as also what causes preceded the complaint, and what ones excited it; and lastly, what the state of his strength formerly was, and now is; and, in consequence of weighing all these things, having ascertained the species and degree of violence of the complaint, he ought, without loss of time, to employ the treatment adapted to it."*

Thus carefully inquiring into the state of the great functions of

* The Institutes of the Practice of Medicine, translated by Dr Brown, vol. iv. pp. 131, 132.

life, observing the condition of the respiration and circulation, and having ascertained that the vital powers have sufficiently recovered the shock, and that the indications for blood-letting are strongly pronounced, we ought not to hesitate to open a vein, regardless of the age of our patient. The beneficial effects of the emission of blood will be greatly aided by keeping the head and shoulders raised, and unnecessary and dangerous bleeding prevented. The pulse is the chief guide to this practice; and when it is full, or firm and regular, though the outward and visible signs of plethora be absent, or indifferently developed, moderate blood-letting will generally be advantageous, and, when present, it is the all-imperative measure. On the other hand, if the vital powers are greatly exhausted, the pulse feeble, the skin cold, and the respiration superficial and irregular, it will then be necessary to rally the deficient vital energies, to sustain life, and prevent fatal sinking, by the internal and external use of stimuli. To preserve vital power is ever an important indication; and in all attacks, where the patient can swallow, strong beef-tea, milk, and farinaceous food should be liberally given. It may even be advisable to add small quantities of wine or brandy.

In not a few cases of genuine apoplexy, judicious bleeding and purging constitute the chief remedies; and the first question the practitioner has to decide, upon being called to an apoplectic person, is the very important one of blood-letting. Setting aside all preconceived notions of the precise nature of the disease, assured that the symptoms may arise from directly opposite states of the cerebral circulation, as well as from a variety of remote causes, he will be guided entirely by existing circumstances, and adopting a sound and rational method of treatment, he will find it necessary to let blood in one case; in another, to administer stimulants, and avoid everything calculated to weaken the already exhausted energies; while in a third both plans will simultaneously be required, stimulants being necessary to retain life, at the same time that we are endeavouring to free the over-loaded brain by local blood-letting. Again, the discriminating practitioner will occasionally find it necessary to perform venesection in the very case in which, immediately before, stimulants were imperatively demanded.

The remedies necessary during a fit of apoplexy are thus few

and simple—their judicious employment constitutes the only difficulty. Purgatives and enemata may be administered in all cases with safety, nor can there be any valid objections to applying cold to the scalp. Where faintness exists, and the visible signs of congestion are absent, the recumbent posture may be assumed for a time; but in general the head and shoulders should be raised, and kept in this position throughout the attack.

We are in the habit of prescribing three or four-grain doses of blue pill night and morning from the commencement of apoplexy with paralysis, in all cases of suspected cerebral hæmorrhage, as a sorbefacient and prophylactic, in anticipation of subsequent inflammatory action. When the character of the attack admits of it, when the pulse is steady or of good strength, this pill is conjoined with James's Powder, and occasionally, at bed-time, with extract of henbane. Repose of mind and body is of inestimable service in every form of the disease; and where sleep is wanting, or there exists nervous irritability, the milder narcotics, extract of lettuce, henbane, &c., are indicated. When sleep cannot be procured by means of these, the muriate or acetate of morphia ought to be exhibited. Care should be taken, in giving blue pill or calomel, not to continue it an instant longer after its specific effects begin to be observed. Sudden, severe salivation is liable to appear in apoplectic cases, when calomel hangs about the mouth; and in old men, a spongy ulcerated condition of the gums promotes this lodgment. Dr Bright has already cautioned us on this point.

Consecutive inflammation of the brain or membranes requires antiphlogistic measures suitable to the nature of the symptoms. As already observed, these symptoms are often of a low, irritative, asthenic character, commencing insidiously with slight headache, restlessness, and muttering delirium. The pulse is seldom such as to demand venesection. Local bleeding by leeches is preferable, and their frequent repetition more beneficial than their application in large numbers. The mouth should be gently touched by means of the blue pill, the head kept cool by iced-water cloths, a blister applied to the nape of the neck, and such other antiphlogistic remedies employed as the nature and urgency of the symptoms suggest. The strength must be supported by nutriment, and, if need be, wine. Retention of urine is common in these cases. The

abdomen should be examined from time to time, whatever may be the report of the attendants, and the bladder relieved if necessary.

With the symptoms of cerebral inflammation, and generally indicative of acute softening of the brain, spasmodic convulsions and neuralgic pains are occasionally observed. If, unmitigated by frequent leeching and a perseverance in antiphlogistic measures, they continue to assume a violent form, opium is the remedy upon which we may depend for their relief. For this purpose the liquor opii sedativus, or the muriate or acetate of morphia, may be ordered in ordinary doses without apprehension, antiphlogistic measures being at the same time pursued, if necessary.

The associated states of apoplexy require special attention, though at the moment of seizure there is scarcely any difference in the treatment, the chief guide to immediate measures being the condition of the vital functions. In all cases, whatever may be the remote and exciting causes, the great question during the fit still relates to blood-letting, local or general.

Gouty Coma or Apoplexy, and Renal Coma or Apoplexy.—If the attack appears to be connected with gout, or has occurred in a person known to be subject to that disease, we endeavour to elicit it by warm pediluvia, containing mustard and salt; and together with the means already suggested, we perhaps have recourse to colchicum. Has the fit appeared during suppression of urine, then we endeavour to excite the action of the kidneys by stimulating diuretics. Powdered cantharides, given in grain-doses three or four times during the day, with camphor and creasote, are appropriate medicines; while by other means, turpentine epithems to the loins, for example, we aim at the same object. Apoplexy connected with albuminuria and the circulation of urea in the blood, is generally fatal; it is best met by purgatives, leeches to the head, and blisters behind the ears or to the nape of the neck.

Cardiac Coma.—The connection of apoplexy, and its allied disorders, with organic disease of the orifices and walls of the heart, demands serious attention to the precise nature of the cardiac lesion. The pseudo-apoplectic symptoms, frequently dependent on permanent patency of the aortic valves, or on a weakened state of the left ventricle, from attenuation or fatty degeneration, and consequent deficient supply of blood to the brain, are benefited by the internal exhibition of stimulants, requiring much the same

treatment as ordinary faintness, and in reality appertaining more to this affection than to apoplexy. When the comatose symptoms are occasioned by congestion of the brain, from dilatation of the right auriculo-ventricular orifices permitting regurgitation, and obstructing the free return of blood from the head, local blood-letting becomes necessary. The insufficiency of the tricuspid valve in these cases is very generally accompanied with disease of the left side of the heart, very frequently with hypertrophy of both sides. The brain is thus placed between two pathological conditions, eminently disposing to accumulation of blood in the head—an impediment existing to its ready descent, while at the same time it is propelled with unusual energy towards the brain. The reader will find this form of apoplectic coma ably considered by Dr Latham, in the second volume of his work on Diseases of the Heart, to which I must refer for further information.

Preventive Treatment.—It is mainly by strict attention to the principles of hygiène that the apoplectic can expect to escape a return of the disease, or any improvement in its sequences, and there are grounds for much encouragement. By care, even very old and infirm sufferers make surprising recoveries, and continue well for years and years afterwards. I might adduce several instances from my own experience, but I will only allude to two, one of which occurred in a man seventy-six years of age, of broken-down habits, who, in the space of two years, had two serious apoplectic fits, accompanied with hemiplegia and loss of speech, and who perfectly recovered from both, and died several years afterwards from pneumonia. In the other case, presenting in a man, when first taken ill, sixty-eight years of age, after three similar though not equally severe attacks, occurring in the course of five years, the same side being affected on two occasions, and the other on the third, perfect recovery seems to have taken place, several years having elapsed since the last seizure. He was more than two years getting over the last attack, his leg first, then his arm, and lastly his speech, recovering lost power. He now looks hale and hearty. Heberden has referred to similar cases, in one of which two paralytic paroxysms in an old asthmatic man left no traces behind them, and he continued well for ten years.

Recovery is frequently expedited by a judicious use of vegetable tonics. In ordinary states, a too rigid system of abstinence ought

not to be enforced, even when the individual is of a plethoric habit of body. As some apoplectic persons are benefited by the administration of tonics, so there are others in whom the recurrence of the disease is best prevented by a sufficient supply of wholesome nourishment. Weakness, from impaired assimilation or other causes, predisposes to the disease as much, if not more than strength, and is not so easily managed. There are certain cases where the moderate use of wine may be permitted with advantage. The apoplectic affections occasioned by permanent patency of the aortic valves, or a weakened state of the heart from flaccidity, attenuation, or fatty degeneration, are benefited by it.

Issues and setons, as preventive measures, are very properly losing ground. We have no confidence in them whatever in advanced life; and they can only be serviceable, if they ever are so, when the disease is occasioned by *concentric* causes at earlier periods. We were once acquainted with two elderly gentlemen, now no more, who for many, many years patiently submitted to the inconvenience of a seton in the neck, under the firm conviction that life was preserved by it. Finding the seton had been there so long, we did not recommend its withdrawal. To suppress the permanent drain might have been hazardous.

Frequent cupping is objectionable. Unfortunately it often gives temporary relief in cases of giddiness, where the repeated loss of blood is injurious. The practice creates a necessity for its repetition, and is a remnant of the exploded notion that vertigo and apoplexy are but other names for fulness of blood in the head. We seldom now-a-days fall in with such a case as the one referred to by Heberden in commendation of local blood-letting for this symptom, and as a preventive of apoplexy, in which a woman, threatened by this disease, commenced cupping when sixty-eight years of age, and continued it constantly every six weeks until she died, at the age of eighty-five. It sometimes requires considerable resolution, firmness, and courage to resist the importunities of patients and friends in this matter; and the practitioner may be placed in the awkward position of having declined the operation where apoplexy has ensued, and where, on a former or former occasions, the measure had apparently warded off a threatened attack, but which, in the present instance, would rather, in all probability, have expedited than retarded it.

CHAPTER VII.

MENINGEAL APOPLEXY.

Forms—Anatomical Characters.—There are two forms of hæmorrhage within the skull almost peculiar to the aged. In the first, blood is poured into the ventricles of the brain; in the second, into the great cavity of the arachnoid (*intra-arachnoid apoplexy*), or beneath this membrane in the space between it and the pia mater (*sub-arachnoid apoplexy*). Occasionally penetrating the pia mater, the effusion lies in immediate contact with the brain itself. The hæmorrhage, in these different situations, is sometimes venous, sometimes arterial. Very generally it comes from the latter source, and from arteries so small and delicate that the ruptured point or points elude detection. In the sub-arachnoid space the effusion is mixed with the cephalo-rachidian fluid, is of a sero-sanguinolent character, and is never enveloped in a pseudo-membrane, such as is invariably present in intra-arachnoid hæmorrhage after the fifth day. The arachnoid and pia mater frequently, however, present ecchymosed patches, the result of imbibition, after entanglement of the extravasation, some of which no doubt indicate the precise locality of the effusion.

The cavity of the arachnoid is the most common site of the hæmorrhage. Contrary to what is observed in sub-arachnoid apoplexy, the preceding variety, here the largest effusions take place on the convexity of the brain, though occasionally they are met with at its base. The extravasated blood, as above remarked, is speedily invested in a false membrane, which is formed by the coagulation of the fibrine of the blood, and so closely resembles the arachnoid as only to be distinguished from it by careful examination. In copious effusion, after the fifth or sixth day, the coagulation has very much the appearance, on first sight, of the placenta.

Frequency.—Some idea may be formed of the frequency of meningeal apoplexy from the fact, that M. Ernest Boudet met with six cases among the aged at the Salpêtrière in seven months, and M. N. G. de Mussy saw eight in one year in the same institution. In a *population* of 539 old men in Chelsea Hospital, averaging about seventy years of age, two or three cases are usually met with yearly. Raising the number of inmates to a thousand, would give about five per annum.

Premonitory Symptoms.—Among the premonitory symptoms of true meningeal apoplexy, those of obstructed circulation in the head, or of determination to the brain, appear the most constant. In many instances the attack is for a long period preceded by vertigo, occasional flushing of the face, irritability of temper, and sometimes by great mental excitement. In a case occurring in a vigorous old man eighty-four years of age, I attended with Mr Whitmore of Chelsea in 1846, in which there was every reason to believe that meningeal hæmorrhage ensued, the excitement was so violent at times that it required force to restrain the patient; and it was not till twelve or sixteen ounces of blood were taken from the arm that he became tranquil, and that the flushing of the face disappeared. As in cerebral hæmorrhage, so in this, the attack not unfrequently occurs suddenly and unexpectedly, in the midst of sound health.

The indications of the actual occurrence of the effusion vary according to its extent, rapidity, and situation. It is sometimes announced by violent pain in the head. Coma of the most intense character accompanies extravasation about the cerebellum and origin of the spinal marrow; it is less profound when the extravasation is limited to the upper surface of the brain, and may merely assume the form of lethargy. The hæmorrhage often takes place in bedridden old people, and in persons formerly attacked by apoplexy, leaving the brain and its functions damaged. It is obvious that the symptoms in these cases must be greatly modified, and not unfrequently, under such circumstances, the attack entirely escapes observation. Want of space compels me to withhold several examples of this kind, and others in which repeated extravasations were only marked by recurring fits of drowsiness, each leaving behind it more or less weakening of the intellectual powers, and increasing general debility.

Symptoms in Ventricular Hæmorrhage.—In sanguineous effusion into the ventricles as a primary lesion, without softening or laceration of the substance of the brain, the symptoms chiefly consist in stupor or coma, sometimes with and sometimes without local paralysis. Occasionally it is accompanied with convulsions. When it occurs without rupture of the brain, it is not necessarily fatal. A man, mentioned by Riobé, and quoted by Abercrombie, had an attack of apoplexy which left him affected with palsy of the left side. He improved very gradually, and was entirely recovered at the end of eighteen months, when he died of pneumonia. In the right lateral ventricle there was a small quantity of coagulated blood, and the membrane lining the ventricle was of a yellowish colour, and much thickened. On the other hand, Dr Bright relates a case of this description, which was fatal in twenty minutes. The extravasation was confined to the ventricles, and amounted to about three ounces. In an in-pensioner of Chelsea Hospital, seventy years of age, in whom a hard, dry coagulum, fawn-coloured externally, and black internally, somewhat larger than a garden pea, was found attached to the plexus choroides, death happened in ten or twelve days after the accession of stupor. The man had previously been much reduced by scurvy, in which, no doubt, the limited effusion had originated, otherwise, from the appearance of the coagulum, he would very probably have recovered.

Secondly, in Sub-arachnoid Hæmorrhage.—M. Prus, of whose "Mémoire sur les deux Maladies connues sous le nom d'Apoplexie méningée," published in the eleventh volume of the "Memoirs of the Royal Academy of Medicine," we make free use, informs us that when the hæmorrhage takes place beneath the arachnoid, hemiplegia is a rare occurrence. In twelve cases in which it proceeded from ruptured arteries, two only were attended with this symptom; in no instance was rupture of the veins or sinuses productive of paralysis; but "sudden and complete annihilation of power generally takes place when the effusion is extensive, so that local paralysis may remain unperceived." Recoveries after small effusions are perhaps not unfrequent, but sub-arachnoid apoplexy is highly dangerous, and may prove fatal immediately on the occurrence of the hæmorrhage, or in a period seldom exceeding eight days.

Thirdly, in the *intra-arachnoid variety,* paralysis is as common as it is rare in the other form, M. Prus having observed paralysis,

at least of motion, in six out of eight cases. Paralysis of sensation is less constant, but both may be complete. Along with paralysis, contracture is also frequent, M. E. Boudet having noticed it in fourteen cases out of twenty-seven. In some cases, as in one related by Morgagni, there are violent convulsions, generally of the opposite side to the one paralysed. They presented themselves in about a third of the cases analysed by M. Boudet. Here, as in sub-arachnoid apoplexy, it is often difficult to ascertain the precise period of the hæmorrhage, the character of the symptoms being greatly influenced, as we have already said, by the amount, seat, and rapidity or slowness with which the effusion takes place. In one instance coming under my observation, in a man fifty-five years of age, the actual occurrence of the hæmorrhage was announced by slight faintness only; and it seems that sudden loss of consciousness is less common, both in this and the preceding form of hæmorrhage, than in hæmorrhage into the substance of the brain itself. Intra-arachnoid apoplexy is very frequently, however, productive of the most marked symptoms. In many cases the individual is suddenly seized with violent pain in some part of the head, and, uttering a loud scream, falls down, deprived of consciousness, paralysed on one side and convulsed on the other. If the hæmorrhage is not very considerable, the loss of consciousness may be transient. Occasionally in aged females, and sometimes in males also, the immediate advent of the attack is announced by hysterical phenomena, weeping, and a sense of suffocation from spasm of the gullet, recurring also from time to time on any temporary suspension of the apoplectic symptoms, and fatal coma may suddenly ensue while the patient is supposed to be merely hysterical. This, however, is no uncommon event in cerebral hæmorrhage. The pain in the head generally continues after consciousness has been restored, but often it entirely disappears, or assumes a periodic form—a character not peculiar to this symptom alone, but, with some modification, applicable to all the phenomena attributable to pressure on the brain.

The intermission or remission in the phenomena of compression, including paralysis itself, is a very remarkable attribute when present, and is more particularly diagnostic of intra-arachnoid apoplexy, though occasionally met with in the sub-arachnoid variety of the disease, and perhaps also when the effusion exists

in the ventricles. These cases can hardly be distinguished during life from certain examples of cerebral softening, characterised by a similar variation in the accompanying symptoms. One of the most remarkable and instructive examples of meningeal apoplexy assuming this peculiarity was communicated to Dr Abercrombie by Dr Barlow of Bath, and is recorded in the admirably practical work of that distinguished pathologist on the Diseases of the Brain. In this case, "a gentleman, about sixty-three years of age, after an attack of apoplexy, on the 2d May 1822, appeared to be free from complaint on the following morning. About two o'clock, however, there was a return of the attack. On the 4th he was still comatose, and continued so till ten o'clock at night, when consciousness returned, but only for a very short time. On the 5th he had an interval of recollection, which lasted three hours; and he was again sensible for about a quarter of an hour in the evening. He had a similar interval for about an hour and a half on the 6th, but on the 7th he was comatose nearly the whole day. On the 8th there was a slight return of consciousness in the morning; and towards the evening he was sensible for several hours. During these changes the bowels had been fully opened, the pulse had continued about 72, and no paralysis of any kind had been observed. On the 9th he was still lethargic, with some stupor; but after topical bleeding and the operation of a purgative, he was much relieved, passed a good night, and on the morning of the 10th he was quite sensible. On the 11th and 12th he was lethargic, but capable of answering questions when he was roused; and this state continued on the 13th. On the afternoon of that day there was an increase of stupor, with difficulty of swallowing. He was again partially relieved by treatment. He became gradually more comatose, and died early on the 16th.

"At the inspection, a copious extravasation of blood was found extended over the surface of the brain; it was closely adherent to the dura mater, and could be peeled off like a membrane. The substance of the brain was healthy. There was no effusion in the ventricles."

That this intermission or remission of the symptoms is due to successive hæmorrhages, or a partial cessation and renewal of the extravasation, is frequently demonstrated in the intra-arachnoid variety of apoplexy, by the various appearances presented by the

coagula where the symptoms have been thus characterised, some being dark, and others tawny or rust-coloured. For the reasons already specified these changes are not so obvious, if at all perceived, in the sub-arachnoid form of the disease; but that the intermission sometimes occurring in the symptoms in these cases is attributable to the same circumstance, there can hardly be any doubt. Mr Prescott Hewett observes, in a paper on extravasation of blood into the cavity of the arachnoid well worth attentive perusal, and which will be found in the 28th volume of the Med. Chir. Trans., 1845, observes,—"This intermission of the symptoms also occurs in those cases where the extravasated blood has been completely surrounded by a perfectly organised cyst; and the symptoms both of coma and paralysis vary considerably. This is easily explained," he continues, "by the organisation of the cyst, which, by pouring out a fresh quantity of blood or serum into its cavity, may produce symptoms of compression, which will vary according to the more or less rapid absorption of the fluid." We have thus known an instance of intra-arachnoid apoplexy maintain an intermittent form for seven months, when the disease at length terminated fatally, through prostration and sloughing of the nates.

Secondary Inflammation.—Duration of the Disease.—In the course of a period varying from a day or two to four or five days, a train of symptoms not unfrequently appears, indicating inflammation of the membranes due to the irritation of the effused blood. They are generally of a low typhoid character, and are often accompanied with tetanic rigidity or convulsions. These symptoms have also been observed to decline on certain days, like the accompanying palsy or stupor. Coma usually sets in early, once the membranes become inflamed; and death happens between the eighth and twelfth day from the occurrence of the hæmorrhage. In other cases, the inflammatory symptoms partially or entirely subside, and the patient either recovers, or sinks, at a more advanced period, with greatly impaired faculties. In one case presenting in an in-pensioner of Chelsea Hospital, seventy-one years of age, death did not happen till seven months after the occurrence of the effusion, when the remains of a coagulum, assuming a membranous appearance, was found occupying the whole of the upper surface of both hemispheres. In another case, also occurring in a septuagenarian, in which the

remains of a large extravasation were met with in the cavity of the arachnoid, death ensued after several months, during which period we perceived only gradual failure of the powers of life, attended by giddiness, and weakness of the upper and lower extremities, without distinct paralysis. At what time the hæmorrhage happened was unknown, as it was not announced by any marked symptoms. Extensive effusions, however, especially when seated at the base of the brain, occasion death as rapidly as when the substance of the brain itself is broken up. Occasionally, it is almost as sudden as if the person were struck with a thunderbolt. In some of these examples, for a few seconds or minutes before the final event, the patient complains of sickness, giddiness, and faintness, with or without headache. These symptoms are no doubt owing to the congestion preceding the actual occurrence of the hæmorrhage, though sometimes they may be the consequence of its slow appearance, drop by drop, as it were, when suddenly there succeeds such a gush of blood as to deprive the patient of consciousness. Thus, a servant woman in Chelsea Hospital, aged twenty-four, apparently in good health, was seized with sickness and faintness on the 17th November 1853, immediately after parting with her sister, with whom she had been conversing cheerfully. She had not proceeded many yards when these symptoms appeared, and not more than five minutes altogether could have elapsed before she sought refuge in a friend's house, on entering which she complained, sat down, and falling forwards off the chair on to the floor, she died almost instantaneously, breathing loudly for "a second or two." On removing the skull-cap next morning, the meninges were found highly vascular. At the base of the brain, in the cavity of the arachnoid, large clots of blood lay between the lobes of the cerebellum, completely enveloping the pons Varolii, and extending also, as far as could be seen, into the spinal canal. The substance of the brain itself was firm, and of a pearly lustre, without any bloody points. The membranes were also free from disease of any kind. All the other organs were healthy.

Among hospital patients, this and the preceding variety of the disease not unfrequently first come under observation, with the symptoms of asthenic fever, and, in the absence of paralysis of a member, are extremely apt to be classed with primary or so-called

idiopathic, acute, or sub-acute meningitis. When accompanied with paralysis, contracture, or convulsions, they are equally liable to be considered examples of inflammatory softening of the brain. Even on *post-mortem* examination, old encysted extravasations of blood within the cavity of the arachnoid have been confounded with the products of inflammation of that membrane. This mistake is more likely to happen when the secondary arachnoiditis, as is sometimes the case, has ended in the deposition of lymph and purulent matter.

Treatment.—The treatment of meningeal apoplexy must be conducted in a precisely similar way to that of cerebral apoplexy. Immediate danger past, there still remains the great risk of inflammation of the membranes, to subdue which local bleeding is more efficacious than opening a vein. Where it is not specially contra-indicated, mercury should be given, so as gently to affect the mouth, taking the greatest care not to exceed this. Counter irritation to the nape of the neck will also be of service. Sedatives, henbane, and morphia, are frequently required to allay irritation, but less frequently than in cerebral attacks.

In the more advanced stages, accompanied or otherwise with paralysis, and generally characterised by varying lethargy, periodic fits of stupor, and more or less weakness of the intellectual faculties—the strength requires to be supported by tonics, nourishing food, and the judicious use of stimuli. Benefit will be derived from counter-irritation behind the ears, and occasional purgatives. These sufferers are usually confined to bed; and what with increasing debility and want of nervous power, the utmost care is required to prevent injury to the hips and parts over the sacrum.

CHAPTER VIII.

ENCEPHALOMALACIA, NECRENCEPHALUS, RAMOLLISSEMENT CÉRÉBRAL, OR SOFTENING OF THE BRAIN.

Frequency.—This common, interesting, and remarkable disease is, in one phase at least, almost peculiar to persons advanced in life. After forty up to seventy-five, if not later, the predisposition to it appears to increase, not relatively but absolutely; and though comparatively fewer cases have been recorded beyond that age, there seems reason to believe that the number of deaths it occasions is much higher at eighty and eighty-five than is generally supposed. The disease is chiefly met with in large numbers in the hospitals of the old, and it is principally from data furnished by them that its frequency in advanced age has been ascertained.

In forty-five cases coming under my observation in Chelsea Hospital, all verified by *post-mortem* examination, three occurred between the ages of fifty-four and sixty, five at sixty and under sixty-five, seven at sixty-five and under seventy, eighteen at seventy and under seventy-five, four at seventy-five and under eighty, seven at eighty and under eighty-five, and one at eighty-five and upwards. The majority of the in-pensioners are above sixty years of age, and the mean age of the whole is about seventy and a fraction. These results strictly accord with those obtained by Andral, who found that the age which gives the highest number is the period of life included between the sixty-fifth and seventy-fifth years. With three exceptions, in thirteen cases recorded by Fuchs, all occurred in persons above seventy, four of whom exceeded eighty, and one reached eighty-seven. Of fifty-five cases observed by Durand-Fardel at the Salpêtrière, forty-two presented in persons from sixty to eighty-seven. Seven of Rostan's cases were between eighty and eighty-seven years of age, eight

between seventy and seventy-eight, and four only between sixty and sixty-nine.

The absolute increase of the disease with age, up to sixty-five at least, is very clearly shown by a supplementary table, in the Eighteenth Annual Report of the Registrar-General, pp. 144, 145, giving the causes of death in England in the year 1855. By that table it appears that while the deaths from softening of the brain were 59 at twenty-five and under thirty-five years of age, they were, in the succeeding decennial periods respectively, 94, 136, 178, 158, 51, and 5 at eighty-five and upwards. The same table shows that at every decennial epoch of life, from twenty-five onwards, the majority attacked are males. The increase is almost in the proportion of two to one between the ages of forty-five and seventy-five. Embracing all ages, the disease was fatal, in the year 1855, to 471 males, and to little more than half that number of females,—viz., 270. The number living of this sex exceeds that of the other. This result is contrary to what has been observed at the Salpêtrière and Bicêtre—the former, allotted to females, furnishing a larger relative proportion than the latter, occupied by males.

Literary History.—It is singular that a disease possessing such striking anatomical features, and productive of so many important consequences, should have, up to a comparatively recent period, almost entirely escaped observation. The older pathologists were undoubtedly acquainted with its physical characters, but appear to have confounded the disorganisation it occasions with abscess or sphacelus. Bayle in 1677, Bonetus in 1700, and Morgagni in 1761, have alluded to it. The latter, who may well be called the father of pathological anatomy, has clearly portrayed it in connection with apoplexy and palsy. In a woman fifty-nine years of age, who died of apoplexy after some days, and in whom, with loss of speech, there was paralysis of the right side, sensation and motion being abolished, while at the same time the limbs were contracted from convulsions, he found "every part of the brain natural and sound, with the exception of the medullary substance on the external side of the left thalamus, which was *very soft* and *liquefied*, and mixed with a certain bloody fluid of a colour almost effete."* In another most interesting and characteristic case,† still more to

* De Sedib. et Causis Morb., epist. v. sect. 6.

† Morgagni, *loc. cit.*, epist. xi. sect. 2.

the point, of a man forty years of age, who, "without any previous symptom of his head, was suddenly seized with a hemiplegia, so that the whole of the right side of his body remained immovable, accompanied with stammering of speech, but without loss of consciousness, and which terminated fatally on the beginning of the fourth day,"—Morgagni says, "On the left side of the brain a little matter was observed which had the appearance of a jelly; and on the same side, under the pia mater, the substance of the brain seemed to be a little eroded in two places, which was more manifest in the ventricle of the same side; for the corpus striatum was found to be entirely separated from the remainder of the cerebrum through an erosion." Our own countryman, Baillie,* in 1797, and, according to this eminent anatomist, Dr John Hunter, in the Gulstonian Lectures delivered at the College of Physicians in 1796, described this condition of the brain, without seemingly having been aware that it had been noticed by preceding or contemporary writers. The latter physician "had met with it in cases of *fatuity, where the persons were advanced in life,* and also combined with effusions of blood in apoplexy." Subsequently, Abercrombie and Cheyne contributed much to the history of the disease; but it is to French pathologists of a later date that we are mainly indebted for our knowledge of softening of the brain, more especially to Récamier and Rochoux, but above all to Rostan, whose philosophical work, entitled "Recherches sur une Maladie, encore peu connue, qui a reçu le nom de Ramolissement du Cerveau," originally published in 1820, was assuredly the first attempt at a connected and complete history of this affection. That work, though written upwards of forty years ago, possesses nearly all that is valuable in regard to the symptoms and pathology of the disease; and Rostan's name is as indissolubly connected with ramolissement of the brain as that of our own Bright is associated with granular disease of the kidney. Since the appearance of Rostan's work, many British and foreign pathologists, struck with the importance and peculiarity of the disease, have still further investigated it, among whom are especially deserving of mention, Lallemand, Andral, Dechambre, Cruveillhier, Bouillaud, Carswell, Sims, Copland, Bennett, Kirkes, Barlow, Rowland, Fuchs, Rokitansky, and Durand-Fardel. The

* Morbid Anat. of the Human Body. London, 1797.

enlarged prize essay of this last author, published in 1843, and extending to 526 closely printed 8vo pages, is a very complete monograph on the disease; but, for practical purposes, inconveniently elaborate, and embarrassingly prolific in minute details, often unavoidably repeated.

Essential Nature and Different Forms of Softening.—Notwithstanding the labours of so many distinguished pathologists, opinions are still divided as to the exact nature of the disease. Some maintain that it is always connected with localised inflammation of the brain, and set down all other varieties as cadaveric; others, that it is a species of gangrene, arising, as in other structures, either from excessive action or from inanition; while a third party regard it as a disease *sui generis*, a molecular change, a disorganisation proceeding from an unknown modification of the nutrition of the part, or a chemico-pathological process, variously interpreted. The truth appears to be, that each and all of these views are more or less correct; that any one of the causes set forth may, singly or conjointly, occasion it; and that different varieties of the disease may have different origins. The chemico-pathological theory is, however, at best a mere hypothesis; for without denying the possibility of chemical action going on in a living part through some modification of the nervous and nutritive function, by which its original structure is ultimately changed, disorganised, and reduced to a state of pulp, through new combinations of its elementary constituents, the subject has not yet received sufficient elucidation to remove the theory out of the field of conjecture, and we seem quite in a position to explain the occurrence of the chief forms of softening of the brain from tolerably well ascertained anatomical and pathological facts, without recourse to speculative assumption. At the same time, it must be observed that Rokitansky—one of the very foremost authorities in a question of this kind—has partly adopted the chemical theory in conjecturing that the liberation of phosphoric acid, and one or more of the fatty acids, may be important phenomena in the production of what is called yellow softening—a conjecture, he observes, supported by the very decided acid reaction of the fluid contained in the softened spot.

The invariable origin of the disease in circumscribed inflammation or congestion, has been ably advocated by Lallemand, Bouil-

land, Durand-Fardel, and other eminent pathologists, chiefly of the French school. No one denies that it very frequently depends upon inflammation: analogy supports this view, examination proves it, and softening is perhaps still more commonly a consequence of localised inflammation when situated in the brain than in any other texture; but that the disease is at other times unconnected either with inflammation or congestion, appears to be as certain and as completely ascertained as any fact in pathology. The distinction is not, however, always easily made out, even by the most careful examination of the affected structure; and more particularly is there frequently great difficulty in determining the existence of non-inflammatory softening—in other words, softening from anæmia or inanition. The mere absence of redness is no proof of the disease being of this nature. Indeed, Rochoux and, if I mistake not, Rokitansky assert that inflammation never produces redness of the medullary, and seldom of the cortical portion of the brain. Nor, on the other hand, is the presence of redness a sure sign of preceding inflammatory action or congestion, notwithstanding that it has sometimes been considered a sufficient ground of diagnosis. In the former case, in what is generally called white softening, Gluge and Bennett have demonstrated, by microscopic examination, the only true way, the almost constant existence of the undoubted products of inflammation, such as pus globules, and exudation corpuscles, and granules mixed with the softened mass, where the inflammatory nature of the disease is least expected; while, in the latter case, the redness supposed to be vascular or inflammatory, is often found to be occasioned by the admixture of pure blood or bloody serum, without any trace of the products of inflammation.

The proofs that the disease may arise independently of inflammation rest on strong grounds. In repeated instances, pale softening, with hemiplegia of the opposite side, has followed ligature of the carotid artery; and the arrest of the arterial circulation in the head, from other sources, has occasioned it. Thus, Dr Todd has related, in the 27th volume of the Med. Chir. Trans., 1844, a case of dissecting aneurism of the aorta, in which, from plugging up of the right carotid, and stoppage of the circulation in this vessel, paralysis of the left side ensued. On dissection, all the parts above the fissure of Sylvius, supplied with blood by the middle

cerebral artery, exhibited numerous patches of softening, implicating the white as well as the gray matter. The right side of the brain was also paler than natural, and, says Dr Todd, there was not a particle of evidence derivable from the anatomical condition of the parts to prove the existence of inflammation. Dr Hasse, of Zurich, has also recorded two cases of this kind of softening, which were found to depend upon the obliteration by coagula of the main branches of the intercranial portions of the carotid artery, brief notices of which may be found in Ranking's Retrospect of the Med. Sciences, vol. iii., 1846, p. 177. Dr Kirkes, in the 35th volume of the Med. Chir. Trans., 1852, and Professor Virchow, of Berlin, who was the first to direct attention to the subject, have moreover shown, that obstruction in the cerebral arteries, from the lodgment of detached fibrinous deposits from the interior of the heart, is also capable of producing the disease. Several cases of the same description, arising from fibrinous vegetations, or detached emboli being carried away in the circulation and finally blocking the cerebral arteries, have been referred to, as occurring at the Middlesex Hospital, by Mr Sibley, in a paper in the 44th volume of the Trans. of that Society, 1861, although his observations thereon support the view that the softening is the consequence of a low form of inflammation, such as has long been known to be a common result of partial obstruction of the circulation in a locality. Other cases are being frequently recorded in the different medical journals. Indeed, no fact seems now better established than that emboli from inflamed veins and other sources are in that way a frequent cause of the disease.

Rostan, Abercrombie, and Carswell, in ascribing white softening to arterial obstruction and death of the part, compare it to senile gangrene of the extremities, with which, however, it has little or no similarity. Carswell lays great stress on ossification and fibrinous growths in the arterial capillaries as causing this obstruction—conditions which Fuchs and Durand-Fardel consider as possessing little or no influence in the promotion of the disease. Lallemand, like Durand-Fardel an advocate of its inflammatory nature, regards it as softening with suppuration,—a state the existence of which the latter denies. In the opinion of Durand-Fardel, white softening is but a chronic stage of red softening, "the redness disappearing with the progress and duration of the

affection, and ultimately leaving the part colourless." As, however, he admits the occurrence of primitive white softening, the notion that this variety of the disease is always purely and simply chronic red softening seems contradictory.

There is another form of softening of the brain to which we have hardly alluded—viz. yellow softening. Generally described with white softening, and the colour regarded as the result of changes in transuded blood, the infiltration of purulent matter, or, thirdly, the putrefaction of the disorganised cerebral substance, Rokitansky has elevated it into a distinct species, and pointed out several varieties. He says* especial care must be taken not to commit the common error of confounding the colour of yellow softening with the rusty, yeast, or ochre-yellow tints of the cerebral substance in cases of apoplexy and inflammation, which undoubtedly depend on the colouring matter of the blood. The colour in yellow softening entirely differs from these; and, indeed, cannot arise solely from the colouring matter of the blood, for the fluid contains far too small a quantity of blood corpuscles, as well as of the amorphous pigment, to account for it. The cerebral substance, he observes, appears converted into a very moist tremulous pulp, of the yellow colour of straw or sulphur; when cut across, it rises considerably above the level of the section, and it presents to the naked eye no trace of natural cerebral structure. There is neither vascularity nor redness in or around the seat of the disease, though sometimes small extravasations give a dotted or streaked appearance of redness to the part. It is more frequently secondary or symptomatic than a primitive disease. It accompanies inflammation, hæmorrhage, and adventitious products of the most different kinds in the brain. According to our author, it appears to be always and rapidly fatal, whether primary or secondary, especially when it occurs in the latter form. He considers its nature as still problematical, contends that it is independent of inflammation, and is under the impression that it is founded, as we have formerly observed, in a chemico-pathological process. Wedl† differs from him in regarding it as an exudative or inflammatory process, in which fat globules (granular corpuscles) are found with detached fragments of the cerebral substance.

* Path. Anat. by Syden. Soc., vol. iii. p. 423.

† Pathol. Histology, by Syden. Soc., p. 278.

It is just possible that in the cases examined by this histologist, some of the products of inflammation may have escaped from the halo of inflammation which occasionally surrounds the disorganisation. The discrepant accounts which microscopists give of white softening are very probably owing to the same cause.

Site, Extent, Degree, &c.—The different forms of softening affect similar localities indiscriminately. They are much more common in the cerebrum than cerebellum or pons Varolii. Durand-Fardel insists that the gray matter of the convolutions and adjacent medullary substance, both generally participating in the disease, are most frequently attacked. My own experience coincides with that of Rokitansky, who regards the parts most frequently struck with cerebral hæmorrhage, viz. the corpora striata, optic thalami, and contiguous structures, as the most common seat of softening—we would say nearly in the proportion of two to one. And if Rochoux's dictum be accepted, that nearly every case of sanguineous effusion is preceded by softening, the explanation is satisfactory, though, from the diminutive extent of these parts, it would not be at all surprising were the periphery of the encephalon more constantly implicated than the different bodies lying in the lateral ventricles.

The extent of the softening varies from that of a spot coverable with the tip of the finger to the size of a hen's egg or more. Sometimes nearly a whole hemisphere is destroyed. We have seen two instances of this in Chelsea Hospital. Sir Benjamin Brodie* and others have met similar cases. Sometimes different parts of the brain are simultaneously affected, more especially when the nutrient arteries are extensively involved in calcareous and fatty degeneration. In inflammatory softening, as many as twenty spots, in various stages of development, colour, and consistency, have been found. (*Romberg.*)

The degree of softness differs as much as the extent and colour of the disorganisation. Occasionally it is scarcely perceptible to the eye or touch. At other times the affected structure is diffluent, of the consistence of pap or of cream, and can be washed away by a gentle stream of water, leaving shreds of nervous substance and capillaries in the process of change. In recent ex-

* Lectures on Paralysis, Lancet, 1843–44

amples the part is humid, and rises a little above the surface when exposed. When more advanced it is depressed and flattened, from the absorption of the different exudations and softened cerebral substance.

The limits of the disease are sometimes well defined. In red softening, the contiguous portion of the brain is either visibly injected, or presents a much greater number of blood-points than natural, while the affected structure itself is also injected, or infiltrated with blood or bloody serum. Dots of effused blood are frequently present, constituting the "capillary apoplexy" of Cruveilhier and the "sanguineous infiltration" of Rochoux.

Remote Causes.—A chief source of the different opinions entertained of the intimate nature of softening of the brain, is the great obscurity in which its etiology is involved. If we set aside the pathological conditions already referred to, and very often accompanying it, viz., a diseased state of the cerebral arteries, promoting anæmia by arresting or impeding the circulation, and an undoubted source of the disease, identical in its immediate effects, obstruction of these vessels by the impaction of emboli carried from different parts, from which they have been washed away into the current of the blood, we really know little or nothing of its predisposing or exciting causes. Those who attribute it to inflammation seek for the acknowledged sources of this process, but they are equally at a loss to account for its spontaneous origin, or to assign a reason for its circumscribed development. Excessive indulgence in spirituous liquors is one of the alleged causes which appears to be the least doubtful; yet the disease not unfrequently occurs in the most temperate. The depressing passions, bereavements, losses in business, and disappointed hopes, are supposed to promote or induce it, and so too is severe study or continuous mental labour; but, relatively speaking, persons of literary habits, and gentlemen of the learned professions, otherwise in the enjoyment of health, with youth or middle age on their side, do not seem to be peculiarly liable to softening of the brain. In advanced life, however, the injurious effects of undue exertion of the mind in causing it, as well as sanguineous apoplexy, is incontestable, if not universally acknowledged. Hypertrophy, and especially valvular disease of the heart, have been regarded as exerting a great influence in promoting it. Dr Law has shown, in the

paper alluded to in the last chapter, that white softening is an occasional consequence of insufficiency of the aortic aperture; and hereafter it will very probably be ascertained, that a flabby or fatty condition of that organ is more frequently than supposed connected with this variety of the disease, as it is one of the other accompaniments of that change in the cerebral arteries. On the whole, however, the influence of disease of the heart—a question which has been statistically examined by Rostan, Lallemand, Andral, and others—in causing softening of the brain appears to be inconsiderable.

Symptoms.—Like most diseases of the brain, softening is far from uniform in its mode of attack or progress. Its pathognomonic or more characteristic symptoms may be thus briefly enumerated: —recent paralysis of one side, more or less complete, with thickness of speech and some impairment of the intellect, frequently occurring suddenly, without loss of consciousness or with only temporary insensibility, followed, in many instances, by low fever, neuralgic pains in the affected limbs, cramps, and painful contraction, particularly of the wrist, elbow, or knee-joint, very generally, but not invariably, terminating fatally, in periods varying from a day or two to as many weeks, months, or even years. It thus pursues an acute or chronic course, and accordingly two forms of the disease are recognised, the *acute* and *chronic*.

Acute Softening.—The attack in this form is either sudden or gradual. Occasionally it is preceded for some days, weeks, or months, by vertigo, headache, drowsiness, obscurity of sight, or muscæ volitantes, weakness of the intellectual faculties, and general malaise. To these symptoms, differing in no wise from those usually assigned to approaching cerebral hæmorrhage, and common to almost every disease of the brain, are frequently added the still more characteristic phenomena of numbness, creeping sensations, as if animals were crawling over the skin, tingling, with a feeling of weakness, weight, or aching in one or both limbs of one side, a difficulty of regulating their movements, and various anomalous states of the sense of touch, objects feeling rough, smooth, or soft, when they possess opposite qualities, or conveying the false idea that they are larger or smaller. These phenomena are variously grouped. Regarded as premonitory symptoms of the disease, they are more frequently absent than present; and

the latter especially—those indicating perversion of the sense of touch and feeling, and diminution of motor power—may be justly considered, when taken in connection with vertigo, confusion, and headache, as announcing the actual existence of the disease itself in its initiatory stage.

When it commences gradually in this manner, the symptoms either slowly increase from day to day, or they are subject to sudden exacerbations, remain stationary for a while, and then perchance appear to improve; the feeling of heaviness or weakness in the limb or limbs diminishing, the numbness abating, or the pricking sensation disappearing, and the headache or giddiness becoming less troublesome. Generally, however, an obvious and steady increase in the weakness of the side affected takes place; objects are grasped less firmly, and are often dropped inadvertently. There is difficulty in carrying through the minuter operations of the toilette. Buttoning a shirt or waistcoat, or handling a penknife, is a laborious and unsuccessful undertaking; or, the leg trembles under the weight of the body, the toes now and then catch the ground, and sooner or later decided paralysis suddenly ensues, of sensation and motion, or of motion only. Under these circumstances the disease sometimes assumes a chronic form, but frequently typhoid symptoms appear, with stupor, and soon carry off the patient; or he dies through the speedy supervension of some inflammatory affection of the respiratory organs.

More generally, the disease sets in suddenly, without any precursory symptoms whatever, or, if there have been any warnings, they have been so unimportant as to have entirely escaped observation, and are only remembered, if at all, when subsequently sought for by the physician. Thus, in 127 cases collected from his own notes and from other sources, M. Durand-Fardel found the invasion of softening of the brain was abrupt, or "apoplectiform," seventy-nine times; in the remaining fifty-eight, it was of a different kind.

In this, the more common and more rapid mode of attack, the patient, while walking in his usual state of health, often when sitting down in conversation, is suddenly seized with paralysis of one side, and retains his mental faculties,—or, in the same abrupt manner, he entirely loses them, falls to the ground comatose, and to all appearance profoundly struck with apoplexy—his face is

pale or flushed, his respiration calm or stertorous. From this state of coma, he shortly recovers with loss of sensation and motion, or more frequently with the loss of motion only of the side, and some distortion of the features. The speech is at the same time usually more or less affected; not unfrequently it is utterly abolished. By degrees he collects himself, and is able to give an account of his sensations, or, if deprived of speech, he yet seems perfectly to comprehend, though slowly, all that is said to him, and is then painfully alive to his condition. Headache is not necessarily present, nor is vertigo; both are sometimes entirely wanting in exceedingly well-marked examples of the disease, but vertigo is a pretty constant symptom. Whatever may be the locality of the softening, the forehead is usually the seat of headache when it exists. Occasionally it is distinctly referred to the side opposite to the one paralyzed, and is then a diagnostic symptom of great value; it is usually dull and diffused in deep-seated softening, and acute and limited in superficial, more particularly when the meninges participate in the disease. The pulse is often unaffected; sometimes it is slower than natural. In many cases, the pupils are somewhat contracted; but as this is a physiological condition in not a few old persons, the symptom is in them of less importance than in the adult.

Towards the following morning there is perhaps a partial restoration of power over the palsied limbs, and speech may be so far regained that the patient answers in monosyllables; but these signs of amendment are too often illusory. Next day, or in a day or two, an obvious increase in the paralysis is observed. The patient himself is commonly perfectly aware of this, and is still more distressed at his inability to express himself—an inability sometimes not so much due to palsy of the tongue, the motions of which may be to all appearance unimpaired, but to more or less loss of verbal memory. There is now often superadded some difficulty of swallowing, temporary in its character, returning and going, at variable intervals, but at length becoming, like the paralysis of the limbs, permanent, and greatly afflicting the patient, by the coughing and rejection of the food which every attempt to swallow produces. The bowels are confined, and retention of urine is common. With these symptoms he is liable to frequent fits of stupor, during which the respiration is at times

embarrassed from accumulation of mucous in the throat and bronchi, or, it may be, from temporary paralytic weakness of the respiratory muscles. In the interval of these seizures, from which the patient sometimes awakens suddenly with the intellect clear or but little clouded, there also seems occasionally a slight increase of power over the paralyzed limbs. But these intervals shorten. Amid great prostration, a lethargic or comatose condition ensues; the paralysis becomes more and more complete; the limbs lie lifeless, free from pain—or painful, and subject to violent neuralgic shocks in the course of the principal nerves. They are either entirely relaxed, occasionally convulsed, or more or less contracted, in which case the least effort to straighten them causes excessive pain in the joints, and throws the flexor muscles into forcible resistance the moment extension is attempted. A very slight rigidity of the biceps, or of the hamstrings, is thus at once converted into a violent, spasmodic, unyielding tension. The pains are severest during the night, and generally prevent sleep. Sometimes they are brought on by a fit of yawning or coughing; and the same actions occasionally, as well as mental emotion, produce painful spasmodic jerkings in the palsied limbs, through sudden influx of blood into the vessels of the adjacent irritated brain-substance, or nervous excitement. At this stage no nourishment is taken; the tongue is dry; the lips and teeth are covered with dark sordes; the pulse is small, feeble, and frequent; the eyes are suffused, and exude a thick, glary mucous, which accumulates about the inner canthus and glues the lids together; the skin is generally of natural heat. In this typhoid condition, utterly helpless, lying on his back, unable to turn, and passing his evacuations involuntarily, the patient rapidly sinks, the parts about the nates having previously sloughed if life has been sufficiently prolonged.

The vacillation in the soporose and paralytic symptoms is a remarkable feature in these cases, assimilating them, in this respect, to certain attacks of meningeal apoplexy, characterised by the intermittent nature of the phenomena, and to which, in other particulars, they not unfrequently bear a very close resemblance—so close that the two diseases can hardly, in many instances, be discriminated from each other.

In other attacks, which possess still more the character of genuine cerebral apoplexy, and from which they are scarcely if at all

to be distinguished during life, the patient dies in a few days without having in any degree recovered speech or power over the paralyzed extremities, which then usually remain entirely relaxed to the last, though they may exhibit reflex movements on being pricked or tickled. Generally, in these cases, there is extensive destruction of the corpus striatum or optic thalamus of the opposite side, frequently complicated with sanguineous effusion. Sometimes, even in the most serious attacks, the patient appears to have transient gleams of consciousness, and very shortly before death a remarkable clearing up of the mind is occasionally observed, as in some maladies in which the brain is but secondarily affected. This passing consciousness, and the variation in the paralytic symptoms noticed above, are very peculiar and important characteristics of cerebral softening, not to be lost sight of in diagnosing the disease.

Such is an outline of the symptoms and progress of acute softening, as it presents itself to us at the bedside, irrespective of all theory of its intimate nature. Three stages of the disease are thus occasionally observed: first, the *premonitory;* secondly, the *paralytic;* and thirdly, the *febrile.* But these stages are far from being always recognisable, and they often merge into each other in such a way as not to be separable. Nor do we really derive any practical advantage in the treatment of the disease by this arbitrary division, often less true to nature than convenient to the writer. Thus, premonitory symptoms, as already remarked, are in numerous cases, if not in the majority, entirely wanting, and the disease occurs again and again without any febrile movement whatever. Moreover, in several examples the order here enumerated is reversed, the first symptoms being those of inflammatory action within the head, with constitutional disturbance, followed, sooner or later, by the more characteristic phenomena of cerebral disorganisation.

This is the form of the disease designated *inflammatory* or *red* softening. It is the result of partial encephalitis, generally attacking the cerebral structure alone, but occasionally implicating the membranes also. After fifty or sixty years of age, it is less frequent than the non-inflammatory variety of the disease, and is only to be distinguished from it, in the majority of cases, after death, by microscopic examination. Its existence, however, may

be safely announced when sudden paralysis, with pain and early rigidity of the disabled limbs have been preceded by more or less febrile action, with localized headache, delirium, and confusion of thought. The fever accompanying it is almost always of a low, nervous, or typhoid type, particularly when the disease attacks the central portions of the brain. Indeed inflammatory softening in these circumstances has not unfrequently been confounded with typhoid fever. It is to a variety of this form of the disease, attacking, for the most part, persons long out of health, that Durand-Fardel has applied the term "ataxic," and which is characterised by delirium, persistent loquacity, and sleeplessness, with or without palsy, contracture or convulsions, followed, after a time, by somnolency and coma. Generally, in cases of this kind, the disease will be found on the surface of the brain, limited in extent, and more or less involving the membranes.

Duration.—It is obvious that any calculation of the duration of a disease, frequently obscure both in its origin and progress, can only be approximative in the generality of cases. In several examples falling under our observation, death has happened within twenty-four hours after admission into the infirmary; when subsequent inquiries left no room for doubt, that though the patient had not been on the sick-list, he had for some time previously been suffering from the disease. Without such information, the attack would have been considered rapid. However, there seems ample reason to believe, that when fatal it usually pursues a rapid course. In fifty-nine cases collected by Durand-Fardel, twenty-seven of which were his own, sixteen M. Rostan's, and the same number M. Andral's, death occurred within the first forty-eight hours in eleven cases; before the fifth day in twenty-six cases; before the ninth day in forty-three cases; from the ninth to the twentieth day in seven cases; and from the twentieth to the thirtieth day in nine cases. This is the limit assigned by him to acute softening.

Chronic Softening.—Although variously regarded, the generality of British writers consider this form of the disease as chronic *ab initio,* and not an advanced stage of the acute form. Such is my opinion, without, however, denying its occasional origin in acute inflammation, unattended with febrile reaction, gradually passing into a chronic state. As a sequela of the acute disease, chronic

softening occurs without any obvious improvement in the paralytic symptoms, and with only, at most, some abatement in the neuralgic pains, cramps, or convulsive jerkings, affecting the palsied limbs. A stationary condition succeeds. Instead of typhoid symptoms appearing, the general health gradually gives way, without any febrile disturbance, and the patient slowly sinks through exhaustion and decline of the nutritive function, after falling into a state of coma for some days before death; but still more frequently he is carried off by a sudden recurrence of the apoplectic symptoms which may have ushered in the original attack; by sanguineous effusion in the softened part, or in some other portion of the brain on the same or opposite side; the supervention of congestive pneumonia, or diarrhœa; or, lastly, and very frequently, by the occurrence of sloughs on the sacrum and hips.

When it does not follow the acute disease, chronic softening commences very gradually, if not imperceptibly. For weeks or months it is accompanied by numerous vague and indeterminate phenomena referrible to the head; such as partial loss of memory, incapacity for mental exertion, depression of spirits, fretfulness, fits of abstraction, effeminate weeping—symptoms, in short, analogous to those which still more rarely precede acute softening. General debility, with or without diminution of power over any part in particular, usually accompanies these or like symptoms. The speech is often early affected; it is either habitually slower than usual, or at times hesitating and indistinct. This is a portentous symptom, though far from peculiar to softening; and is still more characteristic when associated with indications of commencing paralysis elsewhere. Very often the countenance becomes pale, dull, and heavy. Even in the most obscure cases the altered condition of the patient is not unfrequently noticed by others, though it may have escaped himself, and he continues to transact business in a toilsome, languid, and irresolute way, long after it is obvious to his acquaintance that he is unequal to the task. His general character also changes. He becomes irritable and easily excited, or morose, listless, and indifferent. Familiar objects are scanned as novel, or are confounded with others to which they bear little or no relation. Absurd mistakes are committed at table, and the names of viands and friends strangely misplaced. These general indications of cerebral dis-

eases continue slowly to advance, till the loss of power over one or more limbs is all but complete, and the individual, equally feeble in mind and body, is reduced to a state of torpor and childish helplessness. It is more particularly to cases of this description that the term "creeping palsy" has been applied, an extremity, or a portion of it, being at first attacked, and the paralysis subsequently slowly seizing the remainder of the limb, and gradually engaging the corresponding extremity, or affecting in like manner some other part of the body, till at length nearly the whole frame becomes paralyzed more or less completely. In some examples of this kind, the corpus callosum, the fornix, or a great part of the medullary substance of both hemispheres, has been found melted down into a soft mass of the consistence of cream or custard, as in a typical case recorded by Cheyne in the 4th volume of the Dublin Hospital Reports. Slow and steady as the progress of the disease sometimes thus proves, advancing towards the end without any variation in the character of the symptoms, in other instances, after it has reached a certain stage, the patient experiences a succession of minor paralytic seizures, at times so slight as to elude observation, though leaving behind them additional weakness. Generally these attacks are marked by an increase of drowsiness, headache, or vertigo, ultimately terminating in fatal coma.

The intellect is much more generally impaired than in the acute disease. Cephalalgia occurs in about half the number affected, and is more common, though not necessarily persistent—so is vertigo ; but both these symptoms are entirely absent in not a few cases. Permanent contraction is also more frequent. Occasionally it is followed by deformity of the joints, which remains after death. In not a few patients the contraction of the palsied extremity is intermittent, partially yielding at times, or entirely disappearing for a day or two or longer, to return with greater energy and resistance ; while, as in the acute form of the disease, there is also occasionally observed a notable variation in the state of the mental faculties. In the absence of febrile excitement, and in uncomplicated cases, the pulse remains natural. The appetite long continues good or fair. The bowels are usually confined. Emaciation takes place, but a few individuals preserve a considerable amount of embonpoint. Much of the patient's life is passed away

in a torpid somnolent state, occasionally interrupted by shooting pains in the paralyzed limbs, the cutaneous sensation of which is sometimes greatly exalted, but much more commonly blunted.

Latent Softening.—In not a few cases, softening of the brain exists without any of its usual symptoms, and is only discovered on *post-mortem* examination—the patient dying from some other disease, unconnected with the altered condition of the brain. It is usually white or yellow softening that presents itself in these remarkable cases; and it is surprising the extent to which the brain may be affected without any symptoms manifesting themselves. These persons are cut off before the thread is snapped that would have ultimately severed or impaired the connection between mind and matter, and produced the ordinary phenomena in respect to intelligence, volition, and sensation; just as there is reason to believe that in some of the so-called acute attacks the disorganisation existed for a considerable period antecedent to the catastrophe announcing it. Very frequently, when softening is unexpectedly met, the person has long laboured under some chronic organic disease elsewhere, or his mind has been for some time enfeebled, so that he has been unable to give anything like a distinct account of himself. Symptoms may have thus been present, but masked, concealed, or modified by circumstances.

Diagnosis.—Acute softening, occurring abruptly, with loss of consciousness, stertorous breathing, speechlessness, and hemiplegia, so exactly resembles, in every essential symptom, sanguineous apoplexy, that it cannot be discriminated from it, till at a more advanced period of the attack; nor is it always possible, even then, with the most attentive consideration, to form a correct or positive diagnosis. In not a few examples, terminating within the first eight or ten days, the history of either disease is precisely alike. A person previously, to all appearance, in good health, is suddenly deprived of sense and motion, and on recovering consciousness, is found to have lost the use of one side. His speech is thick, his mind more or less confused. In a few days febrile symptoms appear, with headache, somnolence, and nocturnal delirium; and in some days more the patient dies comatose, without having, from first to last, recovered any power over the palsied limbs. Is this a case of cerebral hæmorrhage, succeeded by inflammation around the clot—or is it simply one of softening of

the brain, without effusion of blood? Who can tell? The probabilities are greatly in favour of the supposition that effusion has taken place—that the case is one of sanguineous apoplexy; or of a mixed nature, for these symptoms are most frequently produced by escape of blood into the brain, and subsequent irritation of the broken-up cerebral tissue; but all are occasionally met where nothing but softening is found. The diagnosis in this case is therefore uncertain. It is merely problematical; and the opinion that we are dealing with cerebral hæmorrhage instead of softening is not founded on any peculiarity in the mode of attack, or subsequent history of the disease, but on the issue of numbers —the greater frequency of hæmorrhage than softening as a cause of sudden loss of consciousness with hemiplegia. What that proportion is, still requires to be ascertained.

Are we assisted in this inquiry by the former history of the patient, his state of previous health, and the existence or non-existence of premonitory symptoms? The answer, we fear, is in the negative, but somewhat qualified. Both diseases frequently occur in debilitated constitutions, and both are occasionally preceded by functional disturbance of the brain, common to either disease. In this respect there is therefore nothing peculiar to hæmorrhage or softening. Rostan and others say that softening is more frequently preceded by precursory symptoms than hæmorrhage; but others are inclined to believe, and among them Durand-Fardel, in an opposite opinion. The facts are about equally balanced. Our own impression is, that premonitory symptoms occur in a greater number of instances of softening than in simple hæmorrhage. When, therefore, they have existed, we are disposed to regard the attack as more probably a result of softening, but only, here again, numerically more probable, for the premonitory symptoms of both diseases, when they occur, are often perfectly analogous. If there is any exception, it is in the instance of marked signs of cerebral congestion, which unquestionably more rarely precede softening than hæmorrhage at the period of life we are considering; and also in the instance of partial paralysis, which is more indicative of softening than irregular circulation in the brain.

In less violent seizures, but still of an apoplectic character, we derive some aid from a consideration of the more important and

principal symptoms attending these diseases. Thus, the symptoms announcing sanguineous apoplexy attain their maximum intensity, in the great majority of cases, at once. The paralysis resulting therefrom is almost uniformly at its height from the very commencement of the attack, and in favourable cases gradually declines; whereas, in softening, it not unfrequently pursues an opposite course, and gradually becomes more and more complete. When this progressive development of the symptoms from bad to worse has been preceded by headache, numbness, or tingling in the fingers or toes, the probability is great that the case is one of softening, and not of hæmorrhage. In the latter disease, the paralysis is also, in general, more complete and more persistent than in the former; consequently, when by-and-by, through a strong effort of the will, certain movements can be performed, or when the paralysis varies, there being ameliorations in its degree, softening may rather be suspected than sanguineous effusion. And this is much more likely the true nature of the disease, when, in addition to this variation, there is also observed a corresponding alternation in the other symptoms. Intra-arachnoid extravasation much more frequently pursues this course than true cerebral hæmorrhage, and softening must frequently be confounded with this form of meningeal apoplexy; but then, intra-arachnoid apoplexy is often ushered in by agonising headache, and is less frequently accompanied with paralysis, especially of the organs of speech, than softening. Of the two diseases at advanced periods of life, common as meningeal apoplexy then is, softening is still more frequent.

The conservation of the intellectual faculties in sudden hemiplegia has, from the period at which softening of the brain was first studied as a special disease, been very generally regarded as a characteristic distinguishing it from sanguineous apoplexy. In the great majority of cases, in at least three-fourths of the number, deprivation of sense occurs in cerebral hæmorrhage, so that in sudden attacks of hemiplegia wherein the individual retains his senses, or has instantly recovered them, the inference is rather in favour of softening than sanguineous effusion. Other considerations must then weigh for or against the supposition. If the paralysis be almost complete, without consciousness having been lost, it may be fairly concluded that it is due to softening, as effusion of

blood, sufficient to have produced this amount of palsy, very rarely occurs without symptoms of compression. When consciousness is retained this effusion is generally either very limited in extent, insufficient to compress the brain, or is situated on the surface remote from the parts more immediately connected with sensation and motion.

Do contracture, the retention or exaltation of sensation, or the existence or absence of convulsions, settle the question or assist in its solution? All, with perhaps one exception, are more or less common to either disease, and convulsive apoplexy is peculiarly frequent in advanced life. Rigidity of the flexor muscle and contracture have been regarded as most important signs of softening; but Durand-Fardel, unquestionably the great authority in all statistical inquiries concerning this disease, found that in forty-seven cases of acute softening with paralysis, some seen by himself, others collected from the writings of Rostan and Andral, thirteen cases only, or about a fourth, were attended with contracture; whereas in twenty-nine cases of cerebral hæmorrhage, observed by himself, the symptom was noted in nineteen, or in two-thirds of the number. Contracture or rigidity is, therefore, not to be depended upon, and is rather more indicative of cerebral hæmorrhage than of cerebral softening. He has also remarked that acute extensive softening is productive of relaxation rather than contraction.

M. Récamier has remarked that the retention of sensation with loss of motion appertains rather to softening than hæmorrhage; but subsequent observations sufficiently show that no great reliance can be placed in the distinction, since it is impaired or altogether abolished in about equal proportion in both cases. Exalted sensibility, particularly of the cutaneous surface of the palsied limbs, appears only to be met with in softening, and when observed it is a valuable symptom in the question of diagnosis between that disease and hæmorrhage; but that symptom chiefly accompanies the more advanced stages of the disease, or those cases in which the attack has been gradually developed, and not the apoplectic variety—cases in which there is generally not much difficulty in forming a correct diagnosis.

It follows from these remarks that, while in sudden attacks abruptly ushered in with apoplectic symptoms and following a rapid course, it is frequently very difficult, if not quite impossible,

to distinguish the disease from genuine sanguineous apoplexy, by the presence or absence of precursory phenomena, or by any peculiarity in the accompanying symptoms—the existence or non-existence of contracture or convulsions,—there are, on the other hand, numerous cases of acute softening which can scarcely be mistaken for cerebral hæmorrhage, though simulating it. In such a combination of symptoms as the following, and I do not group them artificially, but as I have repeatedly observed them—the probabilities are that the case is one of acute softening and not sanguineous apoplexy :—

After several days' suffering from headache, giddiness, drowsiness, dulness of comprehension, tingling or numbness in the toes or fingers, followed by sudden hemiplegia without loss of consciousness.—I repeat, the probabilities are that the symptoms are due to softening instead of hæmorrhage. If to these symptoms succeed pains in the palsied limbs and diminution or exaltation of the cutaneous sensation, while the symptoms maintain a variable rather than a fixed character, whether the palsied limbs are contracted or relaxed, or alternately contracted, the chances are still greater that the case is one of softening ; and the diagnosis may be considered as established should the paralytic symptoms, and with them, the associated stupor, preserve this vacillating, impulsive peculiarity, there being periods of amelioration followed by increasing coma and increasing palsy.

Chronic softening may be mistaken for tumors in the brain ; but these are much more frequently accompanied by intense headache of a persistent kind, and instead of being diffused or frontal, it is generally limited to one particular spot, from which it radiates as from a centre, or it affects one side of the head only. The paralysis from tumors in the encephalon is frequently partial. Speech and intelligence are also longer in becoming affected, while epileptic convulsions, independently of paralysis, occur more frequently than in primary softening.

Prognosis.—An opinion has already been expressed of the extreme danger of this disease. At one time Rostan regarded it as only possibly within reach of treatment, but he has lately pronounced it as inevitably fatal. Such an unqualified expression of a former unfavourable opinion, after many years' further experience, is at least strongly indicative of its fatal tendency in the

very great majority of cases. The researches and observations of other distinguished pathologists have, however, clearly shown that it is capable of cure to a greater extent than has been generally supposed. I must refer the reader, who is desirous of satisfying himself with proofs of this, to the essay of M. Dechambre, "Sur la Curab. de Ramollissement du Cerveau," in the Arch. Gén. de Méd., 19 Mai 1848, and to the elaborate work of M. Durand-Fardel—so often quoted. In both he will find valuable and conclusive details, as furnished by the history of the patients and the appearances on *post-mortem* examination. These last chiefly consist in atrophy of the affected portion of the brain; indurations of a fibrous or cartilaginous nature; white cicatrices; cavities lined, or otherwise, containing a milky or lime-like fluid, or quite empty and contracted. These very closely resemble apoplectic cysts. Rokitansky* observes that the diagnosis between them is often very difficult, and sometimes cannot be made without referring to the early symptoms of the disease. "The apoplectic cyst," he says, "generally has its well known rusty-brown or yellowish lining; but it loses in the course of time nearly all its colouring matter. The cavity left after inflammation (inflammatory softening) usually has no such lining."

Treatment.—1. *Acute Softening.*—In sudden attacks of the disease, at the onset, while it is yet doubtful whether the symptoms are due to cerebral hæmorrhage or softening, the practitioner will do well to exercise extreme caution in predicting the issue and adopting his line of practice. In both he will be assisted by the antecedents of the case; and a careful inquiry into the actual condition of the patient will determine him to adopt or reject active measures of treatment.

The day has gone by when the lancet was the ever-ready instrument for all attacks of an apoplectic nature, and men were bled into convulsions or deprived of the little remnant of life still left by the shock sustained through laceration of the brain from rupture of a blood-vessel, or from the sudden breaking up of its substance commencing in a slower process. Still, this is the remedy that generally suggests itself in these cases; and such is the popular belief in its efficacy, fortunately now waning, that it requires no ordinary firmness, on the part of the practitioner, to

* Rok. *loc. cit.*, vol. iii. pp. 412 and 413.

resist its employment, when he may be accused of gross neglect. On the other hand, should he yield to the entreaties of friends, or his own conviction, there are not a few who would charge him with rashness and incompetency—so difficult is it to avoid unjust censure, where the precise cirumstances are unknown except to himself, and where the preservation of life seems to depend on promptness of action.

The partisans of the inflammatory origin of the disease, or of its uniform connection with congestion of the brain, recommend depletion, modified, it is true, to suit the requirements of each individual case. With this understanding there is perhaps not much danger, for it very rarely happens, even in young and vigorous habits, that the symptoms are of a character to induce a careful observer to push this line of practice beyond due limits. Where there are signs of determination to the head, heat of the scalp, suffusion of the eyes, redness of the face, with or without inordinate action of the carotids, &c., cupping, or bleeding by means of leeches to the temples or back of the ears, if not venesection, is indicated. Such cases are more likely to be benefited by the cautious repetition of this treatment than by general bloodletting, which, to say the least of it, can very seldom be required in softening of the brain occurring in persons turned fifty.

Frequently the first effect of the breaking down of the brain, announced by coma and sudden hemiplegia in the acute form of the disease, is that of shock ; and it is only at a subsequent period, varying from a few minutes to an hour or two, that the state of the pulse may seem to warrant bleeding ; but even then, before having recourse to this measure, at a time when it may seem safe and proper, the practitioner ought still carefully to examine the state of the heart, the state of the arteries at the wrist, and the condition of the corneæ ; for it is by such an examination, assisted by the previous history of the sufferer, that he will best satisfy himself of the condition of the cerebral arteries, or gain the readiest clue to the most probable nature of the cerebral affection. If the heart's action and sounds are feeble, or if signs of valvular insufficiency are present, it may not unjustly be inferred that the softening is anæmic, atrophic, a consequence of partial inanition and not of partial encephalitis. This supposition is further supported if the radial arteries are rigid ; and if the *arcus senilis* is

fully developed, we have a still further confirmation of the opinion that the softening is of that nature, dependent upon obstruction or failure of the circulation in the part affected, and not upon inflammatory action. To bleed under such circumstances would be worse than useless, and could only be justified by the strongest assurances of associated venous or arterial congestion.

Thus disposing of the question of bleeding in sudden and severe seizures, resembling sanguineous apoplexy, the bowels should be opened by an enema of castor oil and turpentine. In less urgent cases, where there has not been loss of consciousness, or where consciousness is restored and the power of swallowing is retained, a purgative consisting of colocynth and calomel, with or without a proportionate quantity of croton oil, may be substituted. Perfect rest in the recumbent posture must be enjoined. The head should be slightly elevated, and all encumbrances removed from the neck, while the scalp should be kept moderately cool by rags dipped in vinegar and water. These are prudent steps, guarding against reaction or the possible complication of the disease with congestion or hæmorrhage and its consequences.

The future management of the case must entirely depend upon the circumstances which it may present. If febrile symptoms appear it may be necessary to apply leeches to the head. The liquor am. acet. ought at the same time to be given, with an excess of ammonia should the pulse indicate weakness. A low, typhoid condition is to be apprehended, and active remedies are generally to be eschewed. The catheter is sometimes required, retention of urine being apt to occur. An open state of the bowels should in all cases be maintained, but purging avoided. Appropriate nourishment in small and oft-repeated quantities must be allowed, even where congestion or inflammation is present. In healthy subjects, free from gouty or renal disease, a cautious administration of mercury is unobjectionable, if not really beneficial. For long, we have been in the habit of prescribing three or four grains of blue pill and two of James' Powder every evening for ten days or a fortnight, at the beginning, carefully watching its effects, and never permitting the mouth to become more than touched. If sanguineous effusion has actually happened, it encourages absorption, and may very probably ward off or moderate surrounding inflammation caused by the irritation of the clot—an irritation

which, there seems reason to believe, may even be occasioned by simple softening itself, acting as a foreign substance on the contiguous brain-tissue. Dr Stokes, who regards softening of the brain in the vast majority of cases in young and middle life as dependent upon local inflammation, and is an advocate for antiphlogistic treatment in adults and children at least, mentions the case of "an old lady, who had pain in the right side of the head, with contraction of the finger of the left hand, and alternate flexions and contractions of the fore-arm, accompanied by slight lesion of the intellectual faculties. She was leeched three or four times, blistered and purged without any decided relief." Calomel was then given, and "according as the mouth became affected, the pain and contraction of the fingers, as well as the motions of the fore-arm, diminished considerably, and as soon as full ptyalism was established, all her symptoms disappeared." This case, adds Dr Stokes, is particularly interesting, inasmuch as it shows that the ordinary treatment by leeching, counter-irritation, and purging, failed in giving relief, so that we are justified in attributing some value to the use of mercury.*

Opiates are of inestimable value in allaying the distressing pains in the palsied limbs, procuring sleep, and moderating the tetanic rigidity of the flexor muscles, occasionally accompanying these examples of the disease. The muriate of morphia is the preparation from which most benefit is derived; it may be given in doses varying from the sixth to a quarter of a grain at bed-time. Sometimes it is requisite to increase the dose, though rarely, to half a grain or more, and to repeat it more frequently. A great objection to the remedy is the confinement of the bowels it inevitably occasions. This may be partly prevented by combining it with the compound extract of colocynth, and fractional doses of croton oil.

II. *Chronic Softening.*—In protracted cases, and in the chronic form of the disease, accompanied with general debility, palor of the countenance, and other signs of failing vital power, all depressing measures must be carefully avoided. Tonics, quinine, the various preparations of iron, particularly the sulphate and the ammonia-citrate, are then advisable. A wholesome, nutritious diet should be recommended, with a graduated allowance of wine, porter,

* Stokes' Clinical Lectures, American Edition, p. 285.

or ale. The bowels must be regulated by mild but efficient medicine. Constipation is a frequent accompaniment, and fecal accumulations are extremely apt to form without diurnal evacuations are procured. Where fresh attacks are threatened, the bowels should receive immediate attention, and be freely opened by the compound extract of colocynth, with a few grains of calomel. Headache and stupor are generally relieved by full feculent evacuations. Occasionally, for these symptoms, it may be requisite to apply a few leeches to the mastoid processes, or near the site of pain, when it is defined, and a blister to the nape of the neck may also be advisable; but these measures are only to be employed conditionally, and should be regarded rather in the light of preventive than of curative treatment.

Of the utility of iodine and phosphorus in chronic softening of the brain I cannot speak with any satisfaction. As an alterative and sorbefacient, iodine may indeed be serviceable; but I cannot say that I have ever observed any good effects from it. Phosphorus has equally disappointed me. Except as a laxative, I know of no benefit accruing from the use of sulphur. It is, indeed, mainly by attention to the general health, and alleviating particular symptoms, by regulating the diet, and attending to the bowels and various secretions, that we may best hope to effect a cure, or postpone the fatal event, and not by any specific remedy.

When sloughing is threatened, the usual precautions must be adopted to guard against pressure. It is surprising how much may be accomplished by the water bed, or by water cushions, and good nursing, in preventing this distressing occurrence. Bronchial and pneumonic complications must receive every consideration. Dry cupping, or warm turpentine epithems, are useful in both affections, but are particularly valuable in congestive pneumonia, which is also benefited by frequently changing the position of the patient.

The paralysis and rigidity succeeding softening of the brain is occasionally relieved, like the paralysis from cerebral hæmorrhage, by galvanism. Strychnine appears to be falling into disuse. Here, again, it is chiefly by attention to the general health, by residence in pure air, and by exercising as much as possible the palsied limbs, without undue fatigue, that the individual may hope to regain their use.

CHAPTER IX.

PARALYSIS—HEMIPLEGIA AND PARAPLEGIA.

THE most common forms of paralysis to which the aged are liable, viz., hemiplegia and paraplegia, are very generally consequent to apoplexy, softening, or atrophy, of the nervous centres, in the one case of the brain itself, and in the other of the spinal marrow. The cases in which paraplegia arises from disease of the brain without associated lesion of the cord are comparatively rare. This form of palsy is, however, not unfrequently connected with acute or chronic inflammation of the investments of the spinal marrow, and disease of the vertebræ or component parts of the spine. Sometimes it depends upon chronic disorganisation, benign or malignant, of the kidneys, and various acute or chronic diseases of the bladder and intestines, or of the uterus, the cord and its membranes, as well as the brain itself, remaining to all appearance normal, and the paralysis of the limbs arising through a morbid impression or sympathy with these diseased organs, more or less suspensive of the functions of the spinal marrow. While admitting the existence of reflex paraplegia from these and other sources, Romberg* appears inclined to doubt the reality of some of the cases of this affection solely attributed to co-existing diseases of the urinary organs, and cautions us not to receive with implicit faith statements of the entire absence of lesions in the brain and spinal cord in paraplegia resulting from renal disease, unless the cord and its envelopes have been examined by a professed anatomist, especially as cases may be quoted of this kind in which, notwithstanding the healthy condition of the spinal cord, a morbid alteration was found in the vertebræ, or even in the ligaments of the spinal

* On Diseases of the Nervous System, by the Syden. Soc., vol. ii. p. 384.

column. Of the reality, however, of sympathetic paraplegia from a morbid condition of the organs mentioned there is no longer any doubt. The replacement of a prolapsed uterus has immediately been followed by the removal of the paralysis, and the extirpation of piles which have been accompanied with descent of the rectum has also had this happy result.

Hemiplegia occasionally arises in a similar manner from disease of the membranes of the brain and contiguous structures, or from sympathy with disorder of the uterine function (hysterical hemiplegia), or in connection with epilepsy (epileptic hemiplegia); but in the vast majority of cases in advanced life it is consequent to disease of the brain itself. Sudden hemiplegia more frequently proceeds from sanguineous effusion within the skull, or cerebral softening, than from any other cause.

Hemiplegia and paraplegia are consequently but symptoms, the outward, and, so to speak, visible signs generally of important pathological changes affecting the nervous centres. The history of both is usually but the history of cerebral hæmorrhage or softening, or of spinal hæmorrhage or softening; but paraplegia is much more frequently connected with disease of the surrounding structures of the cord, the bones, cartilages, ligaments, intervertebral substance, and meninges, than hemiplegia is of the less complicated structures enveloping and protecting the brain. While paraplegia is not unfrequently occasioned by excentric, spontaneous hemiplegia is almost always dependent upon concentric causes. Moreover, paraplegia is oftener a chronic malady, *ab initio*, than hemiplegia, from the circumstance of its more frequent origin in progressive atrophy of the cord, or in disease of the adjacent and connected structures. Spinal hæmorrhage is infinitely more rare than cerebral hæmorrhage; but owing to senile modifications in the vascular system of the cord, sanguineous congestion, particularly venous congestion, is still more common than in the brain, and is induced by similar pathological causes interrupting the return of blood to the heart, such as dilatation of its right cavities, and structural disease of the lungs and abdominal viscera. While congestion of the brain, from venous plethora, is, to a certain extent, prevented by gravitation, in the spine, it is greatly encouraged by the same cause, by the obstacles afforded to the *ascent* of the blood through vital and mechanical impediments to its pro-

gress. Ollivier,* in pointing out the condition of the vascular system of the spine and spinal marrow in individuals advanced in years, says, "We are struck with the great number of dilatations which we find in the different points of its extent. This results from numerous causes. Some depend on the peculiar distribution and arrangement of the spinal vessels, particularly of the veins which are entirely destitute of valves; and though their anastomoses are considerable and frequent, it is easy to see that the circulation in them goes on slowly, and with difficulty, and that it may often experience greater or less obstruction. I have frequently found in aged persons," he adds, "fibrinous clots, the presence of which, resulting from the prolonged stagnation of the blood in these vessels, proved the slowness of the course of this fluid." The varying state of the congestion may explain differences in the degree of weakness which elderly paraplegic persons frequently observe in their infirmity. It is also not improbable that here, as elsewhere, the paralysis or weakness of the limbs is occasionally induced by modifications in the arterial circulation of the cord, or parts more immediately concerned, owing to senile calcification or impaired tonicity of the conducting tubes,—a form of paralysis which has been described and exemplified by Rostan, Abercrombie, Graves, Stokes, and Romberg, as produced by arteritis and arterial obstruction, and of which I have seen more than one example in sexagenarians.

In the great majority of cases, it must be admitted, we cannot satisfy ourselves of the precise pathological nature of the disease. It is principally by way of exclusion that we arrive, if at all, at an approximative differential diagnosis, and conjecture the existence of chronic alterations in the membranes of the cord or chronic softening of its structure; for in most instances the paraplegia has commenced slowly, almost imperceptibly, and has advanced with equally tardy steps. We thus find it extending over a period of fifteen or twenty years, or more. In the absence of cephalic symptoms, tenderness in the spine, or fixed pain in the lumbar or some other region, twitchings in the palsied limbs, or neuralgic pains, we may suspect partial atrophy of the cord or venous congestion, and perhaps an excessive amount of the spinal fluid. The

* Andral's Clinique Medicale, by Spillau, p. 121.

symptoms of irritation, twitchings, neuralgic pains, &c., generally announce chronic softening of the cord, chronic inflammation of the investing membranes, or disease of the parts composing the spinal column. In obscure attacks we must look to the kidneys, the uterus, and other abdominal organs. In not a few instances even a *post-mortem* examination does not settle the question. The disease is common in old gouty and rheumatic habits, and is then no doubt frequently due to the morbid elements of these affections falling either upon the spinal marrow itself or on its investments, and producing a subacate or chronic inflammation of a specific nature. As in the brain, so in the spinal marrow, we may thus have acute or chronic arthritic or rheumatic softening, with its immediate effects, paralysis, &c. Exposure to cold is one of the least doubtful exciting causes of the disease.*

In connection with apoplexy and softening of the brain, I have already disposed of hemiplegia, from these its most fruitful sources. It may here be observed that it is suddenness and persistence, with or without premonitory disturbance of the functions of the brain, that mainly characterise apoplectic hemiplegia. Nor is there in general, after a day or two, or even at an earlier period, much difficulty in distinguishing this form of the disease from that dependent upon tumors in the brain, or other causes. The mode of attack, the antecedents, and the subsequent history, are usually quite intelligible. If the case has been one of simple hæmorrhage into the brain, the local symptoms of brain-disease have very often disappeared after an interval of three or six months, while the paralysis itself has either remained stationary, or has made some progress towards recovery, speech being still more or less affected. At a later period, in confirmed cases, the palsied limbs, particularly the fingers and elbow joints, gradually become more or less wasted, and permanently flexed. If it has originated in softening of the brain, the symptoms of brain-disease are generally still present, the intellect is usually more impaired, the expression dull, and the other phenomena characterising this affection are observed, while the paralysis itself gradually grows more and more complete, or is subject to variations, though still

* The whole subject of paraplegia has recently been ably handled by Dr Brown Séquard, in a series of lectures published in the "Lancet," 1860. They are suggestive and rich in original matter.

progressively advancing. In this respect it differs from that produced by hæmorrhage, which is generally at its height from the beginning, and diminishes in intensity. The paralysis of softening is also more frequently accompanied with symptoms of irritation of the nervous centres than that produced by sanguineous effusion, without preceding or consequent disorganisation of the brain. Neuralgic pains in the palsied limbs are consequently more common, but not peculiar to this kind of hemiplegia. Cramp and convulsions more frequently characterise it, as also painful tetanic rigidity, often followed for a time by perfect relaxation, and then, as in the other variety, permanent contraction. But the diagnosis mainly rests on the nature of the accompanying head-symptoms :—In hemiplegia from sanguineous effusion they are at length passive; in hemiplegia from cerebral softening they are generally progressive. The differential diagnosis is seldom difficult in advanced cases; in the early stage, when first "struck," it is often impracticable. We must, however, refer the reader to what we have said on this question in treating of apoplexy and cerebral softening.

According to the returns of the Registrar-General, the mortality from paralysis in advanced life even exceeds that from apoplexy, and is at once accounted for by considering it the advanced stage of one and the same disease, or of the still more fatal disease, cerebral softening. When apoplexy terminates during the fit, it is so returned; but after the apoplectic symptoms have disappeared, and when the patient dies a lingering death with paralysis, it may be long afterwards, this is the term adopted. It is also a ready phrase for many obscure diseases of the brain incident to the old, ultimately ending fatally, through gradual suspension of the cerebral functions. In the seven years 1848–54, while the deaths from apoplexy in England and Wales amounted to 14,181 between the ages of sixty-five and seventy-five, they were from paralysis, at the same age, 17,515; and at seventy-five and under eighty-five, while apoplexy caused 8290 deaths, paralysis caused no fewer than 12,768. At all periods of advanced life paralysis seems to be more fatal to females than males, though not in a very marked degree, considering the greater number of females living.

Hemiplegia, of a less serious character than the form or forms we have been considering, is far from unfrequent among the aged.

Of this kind are the hysterical and epileptic varieties. Hysterical hemiplegia is more commonly met with about the middle period of life, or soon after the cessation of the menses. Romberg has recorded a case occurring in a lady of sixty-four years of age; and I have repeatedly prescribed for another in her fifty-fifth year. Cases of epileptic hemiplegia are more frequent. They are not uncommon in persons above fifty. The return of the paralytic affection, with the epileptic paroxysm, and its disappearance in a few minutes, or in a day or two, characterises it, and the treatment is subservient to the primary disease. Bleeding in any form is rarely required. Indeed, as in a typical and most interesting case, recorded by the late Dr R. B. Todd in his "Clinical Lectures on Paralysis and Disease of the Brain," an opposite course is often necessary, since, in not a few attacks, there is much prostration, exhaustion, and faintness, with occasional retching.

We also meet, in elderly subjects, with temporary attacks of hemiplegia, apparently originating, as in epileptic cases, in local congestion of the brain, without effusion or rupture. If rupture of a vessel has taken place in the cases here alluded to, the hæmorrhage must have been very limited, as in a few weeks, or in a month or two, the paralysis has disappeared without any untoward symptom, and the patient has quite regained his usual state of health.

There seems reason to believe that hemiplegia is also a not unfrequent consequence of localised anæmia of some portion of the brain, from the sudden blocking up of certain capillaries, through loosening of the fibrinous or calcareous deposits on their internal coat, or the detachment of fibrinous concretions from the interior of the heart, and from emboli carried from diseased structures, as inflamed veins or arteries, a subject already referred to in speaking of softening of the brain. The obstruction in these cases, it would appear, is sufficient to impair the function of the part, but insufficient to disorganise its structure. The current, but partially cut off, is sooner or later restored by the removal of the impediment, or the normal amount of blood in the part is regained through the activity of the collateral circulation, precisely as in analogous cases of temporary hemiplegia following ligature of the carotid.

In both these kinds of temporary paralysis or hemiplegia there is seldom complete loss of consciousness on the occurrence of the

attack. Vertigo, with more or less faintness, usually announces them; but there is no suspension of the mental faculties. They are at this stage not to be distinguished from the slighter attacks of apoplexy, attended or unattended with sanguineous effusion. The absence of coma, and the almost invariable presence of vertigo, entitle them to the appellation of *vertiginous* palsy, or hemiplegia, and they might thus be contra-distinguished from *apoplectic* hemiplegia or *epileptic* hemiplegia,—the paralytic affection in these latter attacks being preceded or accompanied with loss of consciousness, of variable duration, more marked in the former than in the latter affection, which is, moreover, when productive of palsy, attended by convulsions.

All these forms of temporary hemiplegia often occur again and again in the same person. As often as three or four times is not uncommon. This does not appear very remarkable in the hysterical or epileptic variety, as the paralysis accompanies a periodical disease. Nor does it now seem so unaccountable in other cases, when we remember the frequency of a morbid condition of the cerebral arteries in advanced life, and the influence of obstructed or irregular circulation on the functions of individual parts of the brain. There is one circumstance peculiarly deserving of notice in these attacks of hemiplegia, viz.—that a second or third seizure very often affects the side opposite to the one last attacked. We observe the same thing in unquestionable sanguineous apoplexy, and Bizot has enabled us to explain it by the discovery of the symmetrical arrangement of disease in the blood-vessels of the brain—the arteries on one side being rarely affected without the corresponding ones also being similarly altered; so that local congestion, hæmorrhage, softening, or anæmia,—the more immediate pathological causes of cerebral paralysis,—are liable to affect the opposite parts of the brain at different times. Thus we not unfrequently discover, in recent cases of softening or hæmorrhage, implicating the corpus striatum or thalamus of one side, atrophy, induration, or cicatrization of one or other of these bodies on the opposite side, the effect of a former attack of softening or hæmorrhage, with consequent persistent palsy,—I say persistent palsy, as that is usual in cases leaving unequivocal evidence of former disease, though we know that the paralysis both of sanguineous effusion and softening may be perfectly recovered from.

These slight or temporary attacks of paralysis affect motion

chiefly. Sensation is often perfectly retained where the power of moving the limb is all but abolished. As in the more severe seizures, the paralysis is usually more complete in the upper than lower extremities. However slight the attack, if it can at all be traced to the brain, it is a warning which ought not to be despised. Many escape entirely afterwards, and die from disease unconnected with that organ; but many are carried off suddenly, in the midst of apparent health, from a return of a more serious character of hæmorrhage, or softening, or both. The interval has extended over twenty years in more than one instance, to my knowledge; but in others a few days or weeks only have elapsed. Of attacks of partial paralysis, there is none so alarmingly portentous as those affecting speech, or the organs of deglutition. However free the patient may be from headache or vertigo, attacks of this kind are very generally sooner or later followed by unequivocal sanguineous apoplexy or cerebral softening.

Treatment.—As respects the treatment of these cases, the practitioner must be entirely guided by the condition of the general health, the stage or degree of the disease, and the state of the cerebral circulation. Sometimes the indications are obvious; but frequently it is only after a patient scrutiny, and an attentive consideration of the whole circumstances, that appropriate measures can be advised. In full habits, with the external signs of determination to the head, moderate antiphlogistic treatment is required in the first instance. Cupping should generally replace venesection. A brisk purgative ought never to be omitted on the occurrence of the attack. Perfect quietude must be enjoined, and abstinence from stimulents strongly inculcated. The diet ought to be light, and, for some time, fish may be substituted for animal food. By attention to diet, and the exhibition of digitalis, the necessity for a return to local depletion may generally be avoided. Care must at the same time be taken not to lower the system too much by a rigid adherence to dietetic rules and regimen. The subsequent treatment, if the palsy continues, comprises blisters to the nape of the neck, the cautious administration of the bichloride of mercury, moderate exercise of the palsied limbs, and the measures already recommended under the head of apoplexy and cerebral softening.

In debilitated and broken-down habits, with the general or local signs of anæmia, and all cases accompanied with indications

of fatty degeneration of the heart and blood-vessels, lowering treatment is inadmissible. A nutritious but non-stimulating regimen should be advised, together with vegetable or mineral tonics, quinine, gentian, the preparations of iron or zinc, out-door passive or moderate walking exercise, and rigid attention to the state of the alvine function.

It is in reference to these cases of paralysis occurring in old people, "from mere debility of the nervous centres, from local congestion, without inflammation, softening, tension, rupture of a vessel, or other organic injury, and which appears sometimes on one side and afterwards on the other," that Dr Billing, in his "Principles of Medicine," observes, "they recover under gentle and judicious attention to the constitution, by careful non-stimulating support and tonics, including a cautious administration of mercury. I have treated many old persons," says he, "in this way, adding digitalis when there has been a strong, hard pulse, and have effected their recovery from paralysis, which had existed, first of one side and afterwards of the other, and had depended upon mere temporary local congestion;" which was proved, he adds, "when they eventually died from some other cause, as no organic disease of the brain was discoverable."

The treatment of paraplegia should be conducted on similar principles, and must vary with the duration of the disease and the character of the symptoms. In recent cases, accompanied by pain in the loins, and indications of inflammation of the spinal cord and its membrane, and in rheumatic and gouty habits, it may be found necessary to employ cupping and counter irritation, with alterative doses of the bichloride of mercury, or the iodide of potassium; but for one instance requiring active measures, the practitioner will meet twenty more likely to be injured by them if persevered in. As a pretty general rule, an invigorating and sustaining plan of treatment should be pursued, even early, where there are no signs of local vascular excitement. There can be no harm in using stimulating embrocations, but the more severe irritants, setons and issues, generally prove more hurtful than beneficial even in the young, and ought to be entirely set aside in paraplegia occurring in advanced age. Where the symptoms appear to proceed from a morbid condition of the brain instead of the spinal marrow, all local treatment must of course be directed to that quarter. The giddiness, drowsiness, and defective mental

energy usually accompanying paraplegia from this source, is with the disease itself, best mitigated by attention to diet, and the occasional exhibition of cathartic medicines. In cases arising from disease of the kidneys, bowels, or uterine organs, which are much more rare than those resulting from lesions of the spinal marrow itself or its immediate connections, attention must be directed to the primary affection and appropriate measures recommended according to its peculiar nature.

Benefit is occasionally derived from the exhibition of nux vomica, or its active principles, strichnia and brucia, in the advanced stages of the primary forms of the disease. These alkaloids appear to have more influence in paraplegia than in hemiplegia, or other kinds of paralysis; but, upon the whole, their efficacy is in the vast majority of cases at least doubtful, and without extreme caution they often prove injurious. The arnica montana and rhus toxicondendron, both of which at one time enjoyed considerable reputation in this and other forms of paralysis, are fast falling into disuse. From the tincture of cantharadis, administered in doses of ten or fifteen drops three times daily, I have seen some good results, and this remedy is deserving of trial. The ergot of rye is another drug which has been praised in paraplegia, and is said to have succeeded when all other means had failed. Electricity and electro-puncture appear in a few cases to have been serviceable. Faradisation, lately introduced, seems to give good promise. With the view of exciting motor power, stimulating applications to the palsied limbs themselves have been recommended; and benefit has been imputed to the daily use of the flesh-brush, to pediluvia containing mustard, &c., and to rubbing the limbs with warm brine. In chronic cases, apparently unconnected with structural lesions, the cold douche to the loins and extremities, in repeated instances, appears to do good. Patients themselves often feel invigorated by it, and solicit its repetition. On the other hand, tepid baths occasionally prove more useful, especially the tepid mineral baths of Wildbad and Gastein, which have a reputation in Germany, for paralysis from mere nervous debility, exceeding that attached to our own mineral baths of this class at Bath and Buxton. It may be proper and incumbent to have recourse to these and like measures, but the too busy interference of the practitioner is detrimental, and the prospect of recovery so remote and uncertain,

that the main consideration is to avoid everything that is likely to weaken the system or injure the health.

There are certain symptoms almost always met with at one period or another in the progress of paraplegia requiring constant care, the consideration of which has purposely, for the sake of brevity, been deferred till now, with the advantage of noticing their nature and treatment together. These symptoms are, 1. Pain and spasms in the palsied limbs from spinal irritation; 2. Constipation; 3. Alkalescence of the urine and its immediate effects; 4. Retention of urine or its opposite, incontinence; 5. Sloughing and ulceration of the nates and covering of the sacrum.

1. *Spasms and pains in the palsied limbs* may generally be relieved by moderate doses of opium, or the muriate of morphia, or the application of a full-sized belladonna plaster to the loins. Dry cupping is occasionally of great service. In more recent cases it may even be necessary to employ the scarificator; for these symptoms are then frequently the result of inflammatory irritation of the spinal marrow or its investments.

2. *Constipation.*—From an early period, while as yet the paralysis has made but little progress, and the individual is still enabled to move about with the assistance of a stick, this symptom very frequently appears, and with the advance of the paralysis in the limbs it increases, so that at length much difficulty is experienced in obtaining the exoneration of the bowels. In certain examples, however, and I have two in view at present, both occurring in aged general officers, constipation is absent, or the bowels are so easily relieved that practically it may be considered not to exist. The evacuations are also not unfrequently dark and offensive, from morbid secretions and the prolonged retention of residuary matters in the intestines. Still later in the disease, when the paralysis is complete, the power of the sphincters abolished, and the motions escape involuntarily, fecal accumulations occur in the cæeum, colon, and sigmoid flexure, which are apt to be overlooked. The attendants are deceived by occasional accidental evacuations and periodical attacks of irritative diarrhœa produced by the lodgment of these masses, and inappropriate remedies are prescribed which only aggravate the attacks, or procure but temporary alleviation.

The compound rhubarb pill, the compound aloetic pill, or the compound colocynth pill, administered every night, generally

obviates the constipation accompanying the early stage of the disease. Later, when the motions are dark and offensive, an occasional dose of calomel should be conjoined, and a few grains of blue pill administered once or twice a week, should they still preserve an unnatural appearance. When the bowels are very inactive, croton oil conjoined with the compound extract of colocynth usually answers well, and may be repeated night after night in moderate doses, following them up now and then, if necessary, in the morning with the compound gentian mixture, with or without two or three drachms of the compound decoction of aloes. Romberg, speaking of the treatment of tabes dorsalis, says, "The best remedy for the obstinate costiveness attending it is to be found in cold water enemata." These should be substituted, if effectual, for purgative medicines, and occasionally alternated with them. Galvanism is also deserving trial. As above hinted, when the motions are passed involuntarily, it may be still necessary to administer purgatives occasionally; and if a diarrhœa occurs, fecal accumulations should be carefully sought for and their expulsion effected.

3. *Alkalescence of the Urine, &c.*—Like constipation this is a frequent and early symptom, seldom absent in advanced cases. There appears reason to believe that the urine is sometimes secreted in an alkaline state, but more generally the change takes place in the bladder itself, the residual urine left by the impaired contractability of the bladder becoming decomposed, and speedily contaminating the secretion as it drops from the ureters. Dr Graves states, "that in paraplegia unconnected with disease of the spinal cord or its investments, though the urine is turbid, scanty, and voided oftener than usual, he never saw it in any case decidedly ammoniacal, even in the advanced stage, and when the patient was completely bed-ridden." The mischief does not end in the alteration of the urine; for the lining membrane of the bladder, irritated by the acrid contents, becomes inflamed, and secretes immense quantities of purulent matter. These important complications add greatly to the inconvenience of the patient, and require the constant care of the practitioner. Benefit is sometimes obtained by the usual remedies administered in simple chronic catarrh of the bladder and in the phosphatic diathesis, for instance, the decoction of pareira brava, or the decoction of buchu with or without nitric, or nitro-muriatic acid and henbane, or the

liquor opii sedativus. But it is usually necessary to empty the bladder effectually with the catheter once in the twenty-four hours at least, and as the disease is protracted, the patient should be taught to do this for himself.

4. *Retention and Incontinence of Urine.*—In some cases the sphincter vesicæ loses its power early, and there is from the first dribbling of urine, with partial retention. The same results are observed here as in the examples above alluded to, the urine becoming alkaline, and the mucous coat inflamed or irritated; but the enuresis seems to have the effect of retarding this evil in a few cases. Generally, however, the bladder is irritable, and it is necessary to use the catheter daily in order to empty it thoroughly. It is only in cases of this kind that the proper treatment is likely to be omitted. An intelligent practitioner will not be deceived by the statement of the patient or his attendants, that because there appears to be no impediment, and the quantity of urine collected seems natural, there is none retained. Nor ought mere manual examination satisfy him. The catheter only can do that, and its introduction will frequently remove an amount of urine, thick and offensive, which was but little expected to exist. There is no distension in these cases, no prominence in the abdomen, still the bladder is never perfectly emptied. The relief afforded by the occasional introduction of the instrument is great, and some sufferers recruit surprisingly who were fast losing ground by disturbed and sleepless nights, through frequent efforts to make water, and who, because they had neither pain nor apparent difficulty in doing so, hardly complained but of this infirmity.

Retention is less common than enuresis. Sometimes early in the disease there is retention, succeeded at a later stage by dribbling and partial retention. In obscure cases the cold water douche to the loins is occasionally beneficial in removing or ameliorating both states; so are cold water injections.

5. *Ulceration and Sloughing* in the advanced stages of the disease are only to be prevented or mitigated by great attention to cleanliness, and frequent change of position, together with the use of the water-bed. Equal parts of castor oil and balsam of copaiba is a good dressing in these sad cases. The strength must be supported by generous diet and wine. Rest should be procured by opiates. When the unfortunate patient is reduced to this plight death is a happy release, and generally it is not very far distant.

CHAPTER X.

TREMOR SENILIS.—PARALYSIS AGITANS.

Few men approach sixty without losing much muscular vigour. The lengthened walks of former years are no longer attempted, or, if attempted, they are accompanied with difficulty and enduring fatigue. A little muscular exertion is now often succeeded by a sense of pain or weariness in the limbs unknown to younger men, and, if persisted in, by tremor and weakness, with uncertainty of the movements performed. The walk becomes unsteady and staggering; the arm if employed jerks; its motions are eccentric, perverted, and feeble. For some time after the exertion has ceased, the tremors and diminished power continue, and in not a few cases palsy of a limb or of certain muscles follows undue muscular efforts.

This form of paralysis, arising through sheer exhaustion of nervous power, is far from uncommon in advanced life, though it cannot always be traced to over-exertion. We observe it, as alluded to in the preceding chapter, attacking one side of the body or the lower limbs; but more frequently it is partial, and is often limited to an arm or leg, or to certain muscles. It declines with improvement in the general health, or eventually becomes more and more complete with the advance of life and decay of the vital energies generally.

Among the most obvious signs of declining nervous power and muscular energy more immediately connected with advancing life, tremors are the most constant. These are not necessarily associated with general debility, but where they are persistent the muscles engaged are usually weakened and wasted. The head and extremities are the parts chiefly affected. The tremors often attack the hands first and then extend to the head or lower limbs,

but no regularity is observed in the order, and for a long term of years the affection is not unfrequently confined to the part or parts in which it originally appeared. By a strong mental effort the tremulous movements can occasionally be temporarily checked. They are most marked when the individual is at rest, or when volition is not specially directed to the parts engaged. However, the reverse of this is sometimes observed. Any excitement usually aggravates them.

Paralysis Agitans, or *Shaking Palsy*, is, in the early stage at least, but an exaggerated degree of senile tremor.

Age.—This peculiar affection emphatically belongs to advanced life. True, it is met with in manhood and middle age, but the vast majority of cases occur in persons above fifty. In five cases recorded by Parkinson,* all were over fifty, and the average age was upwards of sixty. Out of a large number of instances presenting among the inmates of Chelsea Hospital, not one occurred below fifty-five years of age, and the majority were between sixty-five and seventy. The first signs generally show themselves under sixty years of age, and the distinction is important, as many sufferers attain great age, the affection appearing not unfrequently to have little or no influence in abridging life. In not a few examples it has existed for upwards of thirty years, and an in-pensioner of Chelsea Hospital, now in his 107th year, and who has been under my observation since 1847, has been thus affected since he was sixty years of age.

Sex-Habits.—Senile tremor, it is alleged, is more common in the female than male. The affection we are considering is unquestionably almost wholly confined to males. All Mr Parkinson's cases presented in men. I have myself seen only three or four instances in women, all of whom, with one exception, were in workhouses. The temperate seem equally liable to it as the intemperate. Two cases lately under my observation occurred in men of the most sober habits. The centenarian above alluded to seems ever to have been exemplary in this respect. I have known, however, one or two instances in which the affection was attributed by the patients themselves to former irregularities; but the tremor of drunkards, like tremor from mercury or febrile diseases, is wholly

* An Essay on the Shaking Palsy, London, 1817.

different to paralysis agitans. These tremors, arising from specific causes, occur at all ages; and though paralysis agitans is occasionally complicated with, and sometimes appears to follow upon tremor potutorum, it has distinctive characters in advanced cases, by which it is at once discriminated from it or other tremors produced by poisons, mercury, tobacco, arsenic, lead, &c.

History.—The pathognomonic symptoms of paralysis agitans are, involuntary tremors, amounting in the advanced stages to violent shakings, with diminished power of the parts affected, an inclination or bending of the body forwards, and an unavoidable running pace in attempting to walk. These tremors are usually increased by mental emotion, and continue whether the affected limbs are employed or at rest. They are occasionally restrained by supporting the parts, but frequently the agitation is greatly increased by any attempt of this kind, more especially if tried by another person. It generally begins, as is well illustrated by one of Mr Parkinson's cases, in a slight degree, and gradually increases to such a height as to shake the room, when, by a sudden and somewhat violent change of posture, it may be stopped, but only for a brief period, when it returns in the same limb, or affects some other. The peculiar shuffling, running pace, so strikingly characteristic of the advanced stage of the affection, and attracting, by its singularity, the attention of passers by, is assumed to prevent falling, a greater muscular effort being required in running than walking. All riders know that a stumbling horse is safest when kept alive and up to his work by the bit and spur.

In this uncontrollable pace the individual is thrown forward on his toes, his head is strongly bent, and his whole attitude is that of a runner. Once in motion he has a difficulty in stopping, and has recourse to various expedients to save himself from coming down. One having carefully balanced himself, suddenly shoots forward, and with the aid of a stick in each hand, checks a fall. Another, whom I used frequently to see in the streets of Chelsea, shuffled quickly close to a wall or railing, and then bore up against it with his shoulder. Those who have an attendant desire him to keep in front, going backwards, so as to be received in his arms when they are about to fall the moment they halt. In certain cases there is a disposition to walk backwards; and people thus affected may be seen tottering in this unnatural direction towards

a wall or seat for support, with the head still bent on the chest, to counteract the inclination to fall backwards. Some curious instances of this sort are met with. One is mentioned by Dr Graves,* of a gentleman who, when about to walk, was obliged to have himself balanced and set off by some other person, just like a piece of machinery. When once set agoing, and on a smooth road, he went on very well for a considerable time, but if interrupted by a hill, or by the unevenness of the ground, he was compelled to run backwards in a right line until stopped by some one; and so little control of his motions had he at this time, that if a pond or precipice lay behind him, he could not prevent himself from tumbling over it. Romberg refers to similar cases.

Until an advanced period, when no longer able to stand, there appears to be a great desire to walk in the open air. The exertion is fatiguing, and productive of copious perspiration. Some even perspire freely when sitting, the involuntary agitation having the ordinary effect of violent muscular exertion. In slight cases the shaking ceases during sleep, and is suspended in others in abstract study; but, in advanced stages, it continues under all circumstances, disappearing perchance temporarily in one or more parts, though not from all, breaking the patient's rest, and frequently wakening him by its violence. Some are subject to nightmare, others to vertigo, a few to periodical headache; but in the early stages the general health is good, and the patient only complains of the trembling interfering with his different pursuits and habits.

Progress.—Of a strictly chronic nature, and first appearing, as above observed, like the ordinary tremor of old age, it is occasionally limited for a year or two to the parts in which the agitation originally began. The head and upper extremities are generally first affected—sometimes, but very partially, a certain set of muscles only, as those of the lower jaw or of the fore-arm, being seized. Gradually the tremblings extend, until the whole frame is agitated, some limbs or parts being more disturbed than others. At a later period, when the balance cannot be maintained, and the sufferer is obliged to sit supported in his chair, or to keep his bed, the tongue and muscles of the lower jaw, as well as those of deglutition, are implicated. The jaw drops, and is in constant

* Clin. Lect. Am. ed., p. 195.

motion; the mouth is open, and there is a perpetual flow of saliva. Articulation, mastication, and swallowing become difficult. The voice fails, and the sphincters frequently lose their power. The appetite, hitherto good, begins to give way; and the bowels, inclined to be costive throughout, now cease to act without purgatives. Totally unable to feed or clothe himself, and requiring assistance in every office, the patient is reduced to pitiable helplessness. At length, worn out by restless nights, exhausted, emaciated, and perpetually harassed by the uncontrollable agitation and involuntary discharges, but with the mind still unaffected, he dies a lingering death, or sinks more rapidly through the supervention of sloughing of the parts around the sacrum.

The progress of even the worst forms of the disease is sometimes extremely slow, and is occasionally marked by temporary improvement—the intensity of the shaking diminishing for months, though the general debility accompanying its advanced stages may be stationary. Some days are better than others. A considerable number of sufferers are carried off by some of the many maladies incident to the old. The minority die in the manner indicated, through the onward course of the disease itself.

Complications.—The affection is not unfrequently complicated with other maladies, but only accidentally. For a long period the general health is remarkably good, and persons in better circumstances enter into the quiet enjoyments of life with relish. They read much, or desire to be read to, when, by reason of the continual shaking, they are unable to do so themselves. In one case falling under my observation, the tremors appeared soon after a paralytic attack many years before, and there was still partial palsy of the right side of the body. In a second case, of four or five years' standing, occurring in a man sixty years of age, and who sank under it, in the infirmary of Chelsea Hospital, it was associated with chorea so intimately, that it was hard to say which set of symptoms preponderated. This patient was for about a year confined to bed. His head was almost constantly in a state of rotation, his features occasionally distorted, while his arms were tossed about in attempting to use them. All his movements were grotesque and awkward. When supported and made to walk, his legs were thrown wide apart, to prevent falling. He only succeeded in getting into bed by a sudden, violent, jerking effort.

In a third it was accompanied with ague, contracted at Walcheren forty years previously; and in several cases with chronic rheumatism of long standing. The combination with rheumatism appears to be more frequent than any other, so that there would seem to be some relation between chorea and paralysis agitans, more intimate than may at first appear.

Seat—Anatomical Causes.—Experimental physiology and clinical observation in other diseases lead us to infer that the seat of paralysis agitans is in the pons Varolii and medulla oblongata, embracing very probably the cerebellum also; but of its etiology we absolutely know little or nothing. *Post-mortem* examinations are wanting to complete this portion of its history, and all is mere hypothesis. Mr Parkinson, whose interesting essay must ever be referred to, as giving a faithful account of the symptoms of the disease from its beginning to its end, and is still the best work we possess on the subject, offers a conjecture, founded on analogy and an attentive consideration of the peculiar symptoms, that it depends on a morbid state of the medulla contained in the cervical vertebræ, and extending, as the malady proceeds, to the medulla oblongata. In support of this view he quotes a case of *palsy* with analogous symptoms, recorded by Dr Matz, in the third vol. Med. Obs. and Inquiries, wherein, on *post-mortem* examination, the medulla oblongata was found greatly enlarged, compact, and hardened. But he never had an opportunity of investigating the anatomical character of paralysis agitans itself. Nor am I aware that there is any case on record detailing the dissection. A careful inspection of the medulla oblongata and cervical portion of the spinal marrow in the only case I have myself examined did not discover any deviation from the normal state. The brain itself, when sliced, showed innumerable cribriform points, apparently the cut extremities of enlarged capillary arteries. In other respects it was healthy. The present Director-General of the Medical Department of the Navy mentioned to me several years ago, when he was principal medical officer at Greenwich Hospital, that in two instances occurring in that institution, the spinal marrow within the upper part of the cervical canal was softened, a condition the opposite to that found in the parallel case of palsy alluded to by Mr Parkinson. It is not improbable that a microscopic examination of the medulla oblongata and pons Varolii

may hereafter discover changes in these parts to which the symptoms may be owing.

Treatment.—As we are ignorant of the precise nature of this singular affection, we are equally unable to lay down a satisfactory method of treatment for its removal. It is but common honesty to confess that it is beyond the reach of remedial means in old age. Where all is conjecture our practice must be empirical. The intelligent practitioner, if he attempt anything at all, will be guided by acknowledged principles, and the experience derived from analogous affections. Mr Parkinson was under the impression that in incipient cases local bleeding, vesicatories, and issues might be employed with benefit, if not with success, and that even at a later period they might arrest the further progress of the disease. Where signs of local determination are manifest, it is not improbable that mild antiphlogistic measures might be useful; but in no instance occurring in advanced life have I ever met with them, and in several cases I have seen in middle age, presenting in invalided soldiers, there was neither pain nor any other symptom warranting this practice. Dr Elliotson has recorded a case occurring in a man not above five and thirty years of age, who suffered from these and the like symptoms. He was accordingly treated antiphlogistically, but without benefit. The sulphate of zinc was then given, with no better result, after which the carbonate of iron was exhibited and "he perfectly recovered." In four or five cases occurring afterwards the same remedy was not, however, of the least use. Romberg mentions that in the only case in which the treatment produced, if not a complete cure, a marked diminution in the symptoms, this consisted in warm baths with cold effusion to the head and neck, and the use of the carbonate of iron. The age of the patient is not stated. In one case I derived much, though temporary benefit only, from the muriate of morphia with the disulphate of quina. This combination also appeared to allay the agitation in another instance.

PART III

DISEASES OF THE RESPIRATORY ORGANS.

CHAPTER I.

ANATOMICAL CHARACTERISTICS OF THE RESPIRATORY ORGANS AND THORAX IN THE AGED—PHYSIOLOGICAL CONSIDERATIONS—PHYSICAL SIGNS—THE PRINCIPAL DISEASES.

THE respiratory organs, and walls containing them, like other parts of the human fabric, are subject to important changes in structure and modifications in form with the advance of life, of which the following is a brief account:—

Commencing with the larynx, we find its cavity greatly enlarged, and the cartilages composing it partly if not entirely ossified and soldered together. The vocal muscles are generally pale, flabby, and wasted. Following the trachea downwards, it is also seen dilated and ossified; the cartilaginous rings are bony, and the ligaments connecting them either cartilaginous or osseous. Dilatation is more common in the larynx than trachea, but is seldom wanting in both situations. Rokitansky says it always occurs with senile marasmus of the lungs, and is more or less proportional to it. Similar changes are observed in the primary and secondary ramifications of the bronchial tubes, the longitudinal fibres of which are usually, however, hypertrophied, and the minuter branches condensed and opaque, though often attenuated and transparent. The pulmonary mucous membrane in old persons

is, according to MM. Hourmann and Dechambre, the habitual seat of an abundant secretion, a true physiological bronchorrhæa. We, however, frequently meet with octogenarians in whom nothing of the kind exists. Kolliker* states that, in old people "the muscular layer of the bronchi, generally constituting a smooth surface, is broken by larger and smaller interstices," no doubt, it may be inferred, the result of atrophy of the muscular fibres themselves, as well as of the connective tissue. Bronchitic affections are so common in the aged that the normal must not be confounded with the abnormal appearances. Among the latter are granular thickening, redness, or lividity, and simple hypertrophy—the sequelæ of past or persistent chronic inflammation of the mucous membrane. The bronchial glands are also commonly enlarged, sometimes of stony hardness, and generally then invaded with black pigment, so that when cut through they resemble pieces of coal, or in less marked cases gray granite.

Most important changes take place in the lungs themselves. They not only differ in their general aspect from the lungs of the adult, but they also vary in their intimate structure. As age advances, the atrophy affecting them in common with the other viscera increases, and they acquire an emphysematous character in emaciated old subjects, partly due to the disappearance of the intervesicular cellular tissue, partly to the wasting of the structure of the air-cells themselves, and sometimes also to fibrinous deposits in their walls, destroying their elasticity. Laennec, in his incomparable work† on the diseases of the chest, observes that, "in old subjects they present remarkable characters; the calibre of all their vessels seems diminished; they become in some sort exsanguine; the partitions of the air-cells appear thinner than natural, on which account their substance, rendered more rare, becomes less elastic, and thus yielding to the atmospheric pressure on the opening of the body, they are found to occupy not more than one-third of the cavity of the pleura. These characters are especially observable in the lungs of octogenarians."

The careful and minute researches of MM. Hourmann and Dechambre‡ serve but to confirm the accuracy of Laennec's account,

* Manual of Human Histology, by Syden. Society, vol. ii. p. 172.

† Dr Forbes's Trans. 3d ed. p. 148.

‡ Archives Gen. de Med. Aout, 1835.

and establish the law announced by Majendie, but which, if there is any merit in it, belongs to the discoverer of auscultation,—viz., that the density of the lungs diminishes, together with the quantity of blood they admit with the progress of old age. MM. Hourmann and Dechambre refer the external aspect and intimate structure of the lungs in the old (their observations were made on the lungs of old women), to three typical forms, by which one lung may differ from another, or parts of the same lung from other parts.

First Type.—The lungs referred to in this type are met with in plump, fleshy, stout, vigorous old people, with a capacious thorax, as in adult age. They scarcely retire on the chest being opened. Their colour is ashy gray, studded with deep black spots, and lines meeting at various angles. The heart, though well-proportioned, and the great vessels at its base, are hidden by the expansion of the lungs. The cavity of the pleura is remarkable for its dryness. Lungs of this type differ but little in their external conformation from the lungs of an adult. They give the sensation as of wadding when pressed, and crepitate, not loudly, but plainly. In persons who present lateral flattening of the chest, there is a peculiar disposition of the great interlobular fissure. This fissure, in the adult, has the superior lobe lying immediately above it, and passes obliquely to the root of the lungs, so that on the right side the central lobe occupies the middle part, and on the left, has the lower lobe immediately beneath it. But in old age the fissure becomes vertical, so that one lobe of the left lung is directly in front and the other behind, and the middle lobe of the right lung projects downwards, and the lower lobe becomes elevated behind it, so as to form the posterior fourth, or even more, of the summit of the organ. Thus, pneumonia of the summit may be seated in the inferior lobe.

A thin, dried section of lungs of this type is observed to be perforated by exactly rounded holes, united like the meshes of lace. The air-cells are larger than in the adult, but perfectly regular, isolated, and distinct. The pulmonary tissue is divided and subdivided very minutely by linear tracts, which by the aid of a magnifying glass are recognised to be blood-vessels, traceable to the confines of the cells in which they are lost.

Second Type.—Lungs in this type present in old people, whose chests are contracted, the soft parts flabby and wasted. Though

they approach closely those of the preceding type in the regularity of their form, they are smaller, lighter, and imperfectly distended by the strongest inflation. They are bathed in a more or less abundant limpid serum. The black spots and lines are more evident on their surface. On pressure, crepitation is less loud and more diffuse than in the lung of the adult. The heart is small.

A dried slice of these lungs presents a cellular texture, different in many respects from the former. The air-cells are no longer round, but elliptical, and their vessels are also elongated and less numerous. The cells, though deformed, are still isolated.

Third Type.—The lungs in this type are entirely different in external appearance from the preceding varieties. They now form a crumpled up mass, of which the surface is irregular, pressed close to the spine, and surrounded by a copious limpid serum, which fills the vacant space in the thorax occasioned by the wasting of the lung. Livid and flabby, they lose their conical form, the summit being often larger than their base. The lobes are sometimes merely united by a flat thin pedicle, leaving them as it were floating. Inflation scarcely increases their volume; they are extremely light, and give to the touch the sensation of a skein of flax; crepitation is dull and prolonged; the heart is small, often in a complete state of anæmia, and the thorax reduced to a skeleton-like emaciation.

Here the parenchyma of the lungs is converted into a kind of spongy substance, the areolæ of which do not present any determinate form. A slice of the lung can be compared only to torn net-work, the debris of which intercept spaces as variable in extent as in figure. A few slender vessels are discernible with difficulty, and all lobular division is effaced.

Rokitansky's account of the anatomical characters of the thorax and lungs of the aged entirely corresponds with, and is, indeed, based on the researches of MM. Hourmann and Dechambre, who appear to have exhausted the subject. A lung in the advanced state of atrophy resembles more a roll of grayish, slate-coloured wadding or wool than any other object with which I am acquainted; and it is so rarefied and reduced in size, that the marvel is, how life could be so long preserved, with the economy deprived, as it were, of one of its most important organs. With this shrinking the thorax contracts, so as to accommodate itself to the

change in the lung. "The chest," says Rokitansky, agreeing with MM. Hourmann and Dechambre, "becomes depressed, exhibits lateral flattening, and assumes a conical form; there is an arched curvature of the vertebral column in a backward direction; the sternum is thrust forward, and there is a diminution in the vertical diameter in consequence of the curvature of the spine, and the absorption of the inter-vertebral cartilages, and partially even of the vertebræ themselves. The soft parts about the thorax disappear, the muscles become emaciated and pale, the diaphragm thin, lax, and plicated, and the heart small." The folds in the diaphragm make corresponding impressions on the liver.

Physiological Considerations.—"On these changes," Rokitansky observes, "are based the difficulty of respiration, the collapse, pallor, and lividity of the tissues—in short, the general atrophy of old age. The impaired state of the respiratory muscles renders the act of inspiration difficult and imperfect; the deficient contractility of the pulmonary tissue, together with the above-named muscular weakness, opposes similar obstacles to the act of expiration, while the surface of the lungs presents to the atmospheric air so obliterated a capillary net-work, that only a small quantity of blood can be submitted to the vivifying process of arterialisation."* The diminution of the amount of carbon given out by the lungs has been already noticed in the introductory chapter. Hutchinson† has also shown that the vital capacity of respiration diminishes after the thirty-fifth year at the rate of nearly 1½ cubic inches a-year. In a man of sixty years of age it is about thirty cubic inches less than that of a man forty years old of the same height and weight.

The serous infiltration into the cavity of the pleura, which accompanies the more evident withering of the lungs in advanced stages of their atrophy, and which contrasts so strongly with the dryness of the membrane covering the voluminous lungs of the first type, MM. Hourmann and Dechambre, conceive analogous, and not unjustly, to the infiltration and accumulation of serum in the cranial cavity after atrophy of the brain; and it seems to serve a like purpose, warding off accidents to the wasted lung by contre-coup. As in atrophy of the brain, a knowledge of the existence

* Rokitansky, *loc. cit.* p. 53. † M. C. Trans. vol. xxix. pp. 171, 172.

of this compensating and conservative effusion in the chest in advanced senile marasmus of the lungs, may prevent errors in diagnosis, and guard the student from recording as abnormal that which is really a normal phenomenon, seldom wanting under the circumstances stated.

In connection with the physical signs, now about to be considered, it may be advisable to remind the reader, that while in young children the respiratory movements are chiefly executed by the diaphragm, and in adults equally by the intercostal muscles and diaphragm, in old age they are mainly effected by that muscle. And while the enlargement of the chest during inspiration takes place in every direction in the adult, this enlargement is chiefly verticle in the aged, by reason of the anatomical changes in the bony walls of the cavity, which almost entirely prevent expansion in the lateral and antero-posterior diameter. Excluding cases in which the respirations are either remarkably slow or remarkably frequent, the average number of respirations may be stated to be twenty-one or twenty-two in a minute in healthy subjects above sixty years of age. In adults they are rather under that number. Their rhythm, according to Dr Sibson,* in the perfectly tranquil breathing of adults is equal, or as 6 to 6; but, in old age, he states, expiration is prolonged, and inspiration is to expiration as 6 to 8 or 9. The inspiratory movements in the aged are frequently interrupted, or jerking, resembling successive sighs, as if the air, in expanding the lungs or enlarging the chest, met with so many obstacles in its course. This variety of breathing is often seen in perfectly healthy elderly people, though more frequently in diseased subjects, and is a not uncommon attendant in senile pneumonia. So marked is it at times, even in health, that a casual observer can hardly escape noticing it.

Percussion and Auscultation.—The altered form of the chest in old age, the ossification of the cartilages of the ribs, the union of the different parts of the sternum, the curvature of the spine, the wasting of the soft parts, the rigidity of the bronchial tubes, and above all, the rarefaction of the lungs, greatly modify the characters of the physical signs. Under these circumstances, according to the degree of change, the sound on the percussion is remarkably

* M. C. Trans. vol. xxxi. p. 378.

clear, and the respiratory murmur of the adult gives place to a loud noisy whiff, or distinct bronchial respiration, varying in intensity. In robust old people who still retain a certain amount of muscular development, in whom these anatomical alterations of form and structure have not reached the degree adverted to, the chest being still well developed and covered, the lungs voluminous, their cells dilated but isolated, the physical phenomena differ but little, if at all, from those perceived in the adult. The sound, on percussion, may be more sonorous, and the respiratory murmur, though distinctly vesicular, louder and larger; but in many octogenarians, the chest, though altered both in its movements and form, is neither unusually clear on being percussed, nor is the respiratory murmur exaggerated.

The importance of this subject warrants further detail, and I unhesitatingly avail myself of the observations of MM. Hourmann and De Chambre, to whom the profession owes nearly all that is known in regard to the modifications of the physical signs in old age, though, as almost always, the germ of every thing relating to the pathology and physical signs of the respiratory organs may be found in Laennec's great work. Making free with the original memoir, and slightly transposing the arrangement, I begin with

Percussion.—In advanced atrophy, when the air-cells are broken down, and the areolar tissue has nearly disappeared, the resonance of the chest very frequently equals that of well-marked emphysema in the adult. The sound is modified by the situation examined. Owing to the almost constant presence of black or gray indurations in the summit of the lungs; and, secondly, to the clavicle being usually much arched in the old, the region corresponding with the inner half of the clavicle is much less sonorous than the anterior superior region of the chest,—a fact precisely the reverse of that pointed out by Laennec in the adult. It preserves its intensely clear character in the large space bounded by the edge of the sternum, the clavicle, the axillary edge of the scapula, the tympanitic note of the stomach on the left, and the hepatic dulness of the right side.

The sternal region is generally less sonorous, owing as much to bulging of the sternum as to the shrinking of the lungs, which does not allow them to advance under it so as to meet in the median line. It also follows in these cases, that the

heart being uncovered elicits decided dulness, marking precisely its size.

Posteriorly, where the scapula, in consequence of the curvature of the spine, is tilted so that the supra-spinous fossa looks forward, the sonorousness of the supra and infra spinous fossæ is still more obscure than in well-formed adults. But owing to the emaciation of the muscles, it is, on the contrary, more intense when this inclination does not exist.

The resonance of the whole of the remaining posterior aspect of the thorax is considerable, if not obscured by partial inequalities sometimes existing at the salient projections of the ribs, independently of spinal deviation. The stomach and liver occasionally descend so far as to change the ordinary site of their respective sounds.

Auscultation.—In lungs where the air-cells, though deformed and elliptical, are still distinct, the respiratory sound loses the adult characteristics. It is more diffuse, the column of air being apparently less close, and seemingly penetrating larger spaces. Its tone is also clearer, as if the air rubbed against thinner and more vibrating walls. No longer a murmur, it rather resembles the sound produced by expelling the air through the compressed lips.

In lungs which have reached the highest degree of atrophy,—those of the third type,—where the air-cells resemble so much torn net-work, the respiratory sound is but an exaggeration of the preceding; its tone, throughout the whole extent of the thorax, may be compared to that which is heard at the root of the lung, between the scapulæ, in certain emaciated adults; everywhere it partakes of a bronchial character; *it is a universal bronchial respiration* minus the force and intensity of the sound.

Respecting its intensity, nothing is more variable, not only in different persons, but in the same person at different times; sometimes heard with difficulty, it suddenly acquires remarkable power, to entirely disappear a moment afterwards. When a disease, such as pneumonia, obstructs the function of one of the lungs, the sound lung increases its activity, the respiratory bruit acquires greater uniformity, resembles that of the adult, and, in a word, becomes more vesicular.

The resonance of the voice is naturally loud and noisy, almost bronchophonous, where the thorax and lungs have reached the

last stages of senile atrophy; and sometimes so acute and interrupted as to become vibrating and jerking, as in well-marked œgophony. An habitual physiological bronchorrhœa causes a more or less abundant mucous râle to accompany the expansion of the lungs.

In examining aged subjects, it is essential to guard against mistaking old for recent disease of the lungs. Chronic consolidation, contraction of the chest after a former attack of pleurisy, the normal accumulation of fluid in the pleural cavity in advanced wasting of the pulmonary tissues, the râle just alluded to, and the equally physiological osseous rigidity of the bronchial tubes, as well as their dilatation, are so many sources of error which should receive due consideration. All these modify the sounds of percussion and auscultation in health, and vary them in disease. The existence of great tubercular deposit, and even hepatization, more especially when neither crop out on the surface, often entirely escape detection, though sought for carefully, where the lungs are much atrophied and the soft parts emaciated.

The diseases of the respiratory organs are at all periods of life the most common to which man is liable. As age advances, some of them increase in frequency and fatality, while others progressively disappear. Among the former bronchitis, and its common associate, asthma, are peculiarly prevalent. These two diseases carry off immense numbers of old people, and certain varieties of them almost exclusively appertain to old age. The deaths from pneumonia are enormous, and rapidly increase with age, so that in the more advanced periods very few recover who are seriously attacked by it. Tubercular consumption is partly replaced by these diseases as life advances; but it has already been shown that this disease is very far from unfrequent even in extreme old age, and there is no doubt that it is much more common in the aged than is generally supposed. Laryngitis also decreases in frequency with advancing years, though this disease is also far from uncommon in old people. When cancer attacks the lungs, it is very generally met with in advanced life. Hæmoptysis is comparatively rare. Pleurisy is less frequent than in middle life, but much more fatal; as, indeed, are all the diseases of this system of organs. The consideration of the chief of these diseases will form the subject of the following chapters.

CHAPTER II.

BRONCHITIS ACUTA.

At all periods a common disease, bronchitis is peculiarly prevalent in advanced life. Equally dangerous in infancy, it is one of the most frequent causes of death among old people. In some degree we meet it in a great variety of their disorders, and it then appears to come in as one of the ordinary modes of decay, the beginning or the end of a prolonged struggle. Few attain the age of forty without having passed through several attacks, leaving more or less susceptibility to a return of the disease; and the predisposition to it increasing with declining years, it is scarcely regarded, in one form or other, but as an habitual accompaniment of old age.

Causes.—As an acute affection, bronchitis occurs at all seasons. It is, however, much more frequent in autumn and spring, and is peculiarly prevalent among the aged in this country in the months of November, December, February, and March. A great many fall victims to it in these months, and throughout the winter the deaths caused by it are enormous. When to cold and moisture are added an east or north-east wind, bronchitis becomes epidemic, and the wards of infirmaries allotted to old people are then crowded, the inmates presenting all shades of the disease. From the month of November many date the commencement of a catarrh which only terminates with life.

Symptoms and Physical Signs.—In debilitated subjects, and especially in persons who have been addicted to the immoderate use of intoxicating liquors, the disease generally appears in a subacute or asthenic form, and is characterised by the unobtrusive progress of the symptoms. There is usually little or no febrile excitement, though the bronchi of one or both lungs may be the

seat of an extensive and spreading inflammation. Cough and difficulty of breathing are among the earliest symptoms. Both, however, may be absent, and when present they are often so slight as to create no uneasiness to the patient or his friends. The insidious nature of the attack is peculiarly distinctive of senile bronchitis. In this respect there is often a close similarity in the symptoms as they occur in the aged and in infancy, and among the children of the pauper population of large towns. Rigors, or a distinct shivering fit, seldom occurs. The invalid, however, generally feels chilly, and he keeps his bed or hangs over the fire. There is lassitude, general *malaise*, and if feeble or far advanced in years all his infirmities are greatly increased. The breathing is usually hurried or oppressed. A sensation of pressure or of tightness across the chest, preventing full inspiration, is often present, but not so frequently as in the asthenic bronchitis of earlier years. As yet, there may be, as just observed, little or no cough, though in the majority of cases this is one of the first symptoms. The invalid is supposed to have only a slight cold. His case is therefore frequently neglected till, alarmed by the increasing oppression of the chest and general debility, the practitioner is called in, when probably the disease has already extended over the greater part of the bronchi. Percussion elicits a clear sound over the chest, and the ear detects in various parts, but particularly at the root of the lungs, along the spine and between the scapulæ, all varieties of the dry bronchial râles, the sonorous predominating. After a period varying from two to three days from the invasion of the disease—sometimes, however, only a few hours appear to elapse—the cough becomes moist. A scanty frothy expectoration accompanies it, and gradually increases in quantity and consistency. At first thin, saline, and acrid, then a tasteless glairy mucus, it sooner or later assumes a yellow or greenish hue, and is occasionally of a dark colour from its admixture with the black pulmonary matter so abundant in the lungs of the aged.

The physical signs of the disease are now changed. The dry râles are replaced or mixed up with the moist. There is still scarcely any appreciable alteration on percussion. A loud muco-crepitation is generally audible between the scapulæ, while, in other portions of the lungs, the sonorous and sibilous râles may only be present. These are constantly varying. Where no râle

existed in the morning, towards evening there is probably a distinct crepitation of large bubbles; and this again often disappears, the natural respiratory murmur returning on the evacuation of the bronchi; or each inspiration is accompanied with a prolonged snoring or cooing noise, indicating spasmodic constriction or tumefaction of the lining membrane, with corresponding diminution of the calibre of the affected bronchi.

If the disease is now to abate, the constitutional symptoms gradually decline, the skin, if previously hot, assumes its natural temperature, the pulse becomes less rapid, and though the cough continues it is no longer attended with soreness in the chest. The expectoration loses its greenish or yellowish hue, and acquires a white frothy character, while, at the same time, the respiration, less hurried, becomes fuller and deeper. A great prostration, however, remains, and under the most favourable circumstances, after the disappearance of all the phenomena of the disease, several weeks elapse ere the patient regains his usual strength. Such an attack as this lasts from two to three or four weeks. Relapses are common. One attack predisposes to another. I have known as many as four or five similar attacks occur in the course of a year, though in the intervals the individual was perfectly free from cough. The disease often assumes a chronic form, and lays the foundation for asthma and other complaints. In some cases of a more serious nature, the second or secretory stage never appears, and the patient sometimes dies so soon as the third or fourth day from the first occurrence of the pectoral symptoms. It should ever be remembered that bronchitis may go on to a fatal termination without cough, with very little oppression of the chest, and with hardly any appreciable heat of the skin or acceleration of the pulse.

The pectoral symptoms are occasionally, though more rarely than in the adult, preceded by coryza, frontal headache, sore throat, hoarseness, and other phenomena pointing out irritation and inflammation of the nasal, pharyngeal, and laryngeal portions of the gastro-pulmonary mucous membrane. The inflammation then creeps from the air-passages downwards. A burning sensation, or a feeling of rawness behind the sternum, indicates the extension of the disease to the primary bronchi. Cough is a very early symptom in this form of attack, continues throughout the

progress of the case, and is generally very distressing to the patient, occurring in violent paroxysms, aggravating the pain in the head, and occasioning much exhaustion. During and for some time after each paroxysm, there are pains "in the hypochondria, along the edges of the false ribs, in the back and inferior part of the sternum; in a word, along the whole tract of the attachments of the diaphragm" (Roche). As the disease descends into the chest, there is usually a diminution of the nasal discharge, and any difficulty of swallowing that may have been present also disappears. Not so the hoarseness. The laryngeal portion of the membrane, once affected in old people, is long of recovering, and the voice may be altogether lost while the bronchial irritation is advancing. Giddiness, flushing of the face, congestion of the veins about the neck and forehead, sometimes present themselves, and are most marked as the breathing becomes clogged or embarrassed. Under these circumstances, during a fit of coughing, the veins of the head become prominent almost to bursting, and the signs of cerebral congestion are often very alarming, especially in old people physically predisposed to apoplexy. In February 1842 I was pressingly sent for to visit a well-known medical practitioner, seventy-four years of age, of a full habit and florid complexion, whom I had been attending for some days with primary bronchitis associated with coryza. His cough was most harassing. After a paroxysm of unusual severity he was found, by an accidental visitor, lying on his face, frothing at the mouth, and in a state bordering on insensibility. Being close at hand I saw him almost immediately. He was greatly prostrated. On raising his arms they fell from him powerless. His countenance was bluish: his pulse full and soft: both external jugulars were much distended. He was immediately bled to fourteen ounces. The stupor disappeared; and though the bronchitis did not seem to be checked in its progress, there was no return of the cerebral symptoms. Some thickness of speech remained for a week or two. Such cases are not unfrequent, and, where previous cerebral disease exists, the violence of the cough either developes or aggravates the symptoms.

The supervention or ingrafting of an acute upon a chronic bronchitis is a very common occurrence in persons of advanced age. These acuto-chronic cases occur at all periods of the year, but are generally met with in cold weather. Throughout the

winter and spring they are very common. An east wind is peculiarly prolific of attacks of this kind. They are attended with increased difficulty of breathing, and prostration of strength. The cough assumes a spasmodic character, comes on in violent paroxysms, and is sometimes very distressing. It is unaccompanied with the habitual expectoration, of which there is either a partial cessation or an entire suspension. A diminution in the expectoration and a total change in its appearance from what it usually presents are among the first signs of these intercurrent attacks, as a return of its usual character betokens an alleviation of all the symptoms. These are dangerous cases, much more serious than original or accidental attacks. In bedridden people, they are frequently latent. The usual cough has ceased without any very perceptible change in the respiration or appearance in the invalid, and no alarm is created till a sudden pouring out of the bronchial secretion occasions intense dyspnœa and suffocation, and he dies exhausted in a few hours by the extension of the disease and the ineffectual attempts at expectoration.

The extension of the inflammation to the termination of the bronchi and air-cells of the lungs, and the supervention of pneumonia, are what is most to be apprehended in all cases, whatever may be the history of the attack, whether primary or secondary. When situated there, it constitutes the suffocative catarrh or capillary bronchitis of Laennec, the vesicular bronchitis of English writers. This variety of the disease, or this extension of the disease, is almost always in elderly people accompanied with great prostration, a dry, brown, or black tongue, a feeble rapid pulse, and other symptoms of an asthenic or typhoid nature. There is usually little or no heat of skin. The dyspnœa is intense, sometimes aggravated by asthmatic attacks. There is frequently little or no cough, and generally little or no expectoration. The signs of deficient decarbonisation of the blood are present from an early period; the countenance assumes a livid hue, gradually deepening, the whole surface acquires more or less of this appearance, the nails become blue, the extremities cold, the arms are tossed about in great distress, and the patient sinks. Very few aged subjects attacked by asthenic vesicular bronchitis recover. For the most part the inflammation commences there, instead of being propagated downwards, and progressively diffuses itself over a great extent, generally

of both lungs, but sometimes one lung is more seriously engaged than another. It is often difficult to discriminate attacks of this kind from pneumonia—with which, indeed, in every sense, they are intimately allied,—as the râles are equally coarse in the aged, but the absence of dulness on percussion usually settles the question. Generally, however, it is impracticable to examine these cases with the requisite care, owing to the profound prostration into which the aged sufferer is thrown. Should the patient survive some days, he often perishes from the supervention of pneumonia. In cases thus terminating, we frequently find the physical signs of the original affection in the upper portion of the lung, while lower down there are distinct evidences of hepatization.

Acute bronchitis is so very frequently latent in old people, that whenever there is the slightest reason to suppose the chest affected, a physical examination should never be omitted. By it only can we ascertain the true cause of the oppression and prostration consequent on the existence of a more or less diffused inflammation, unaccompanied by the usual rational symptoms of the disease. Where it has reached the second stage, the mere application of the hand to the chest is sometimes sufficient to discover the presence of crepitation, and suggest the nature of the case.

Complications.—A frequent and very serious complication of the disease we are considering is gastric or gastro-enteric inflammation. The symptoms indicating this affection may precede, follow, or be coetaneous with the invasion of the bronchial irritation. In whichever way it appears, it must be regarded with apprehension. From a very early period such cases generally assume a typhoid character, even in persons who may not have passed the meridian of life. This complication is manifested by tenderness at the pit of the stomach, nausea, and complete failure of the appetite. The tongue is red at the tip or along its edges, and at the base covered with a thick fur, varying in colour, but generally brown. Diarrhœa may or may not be present. There is probably very little heat of the skin ; but towards evening it is more observed, and the pulse is then usually quicker than in the morning. The pectoral symptoms are often masked by the severity of the associated disorder, but are sufficiently portrayed to attract the notice of the practitioner. The prostration is very great. The pulse soon flags, the tongue gets black, and it is

necessary to support the strength from the very commencement with suitable nourishment and stimuli. Such cases frequently pass for continued fever; and it is then only the *post-mortem* examination that reveals the amount of the bronchitis, and its termination perhaps in consolidation of the lung. This gastro-pulmonary association of disease sometimes assumes an epidemic form. It is the most dangerous complication of senile bronchitis which we encounter.

A still more common, and infinitely less dangerous association of the disease consists in an atonic condition of the gastro-enteric mucous membrane, evinced by anorexia and flatulent distension of the stomach and bowels, a furred tongue, and occasional fits of sickness without actual vomiting. Diarrhœa also sometimes occurs, and it will be observed, in such cases, that the intestinal and bronchial affections oscillate. The combination of gastro-enteric symptoms, apparently independent of inflammatory action in the digestive tube, is, however, more frequently met with in chronic than in acute bronchitis. M. Beau has directed special attention to "l'embarrass gastrique," as a frequent accompaniment of the latter form of the disease; and he attributes the surprising benefit of emetics in the bronchial affections of the aged to this circumstance.

The rheumatic and gouty diatheses not unfrequently occasion a bronchitis, assuming a specific character; and although we more frequently meet with these varieties of the disease in a chronic form, yet they are sufficiently common as an acute affection to merit a few observations. That there is intense inflammatory action in these cases there can be no doubt, the usual signs and symptoms of bronchitis being present, and often in a very urgent degree. Were I asked, What are the diagnostic symptoms of either form of bronchitis? I would say, taken isolatedly, there are none. The chief peculiarities appear to be a frequent, dry, shrill cough, prolongation of the dry stage, the disease sometimes declining without the secretive stage appearing, greater difficulty of breathing than can be accounted for by percussion and auscultation, and obstinate persistence of the symptoms, notwithstanding the judicious employment of the usual remedies in bronchitis. The association with gout is more frequent than with rheumatism; the presence of one or other of these diseases, or the previous

medical history of the patient, will awaken suspicion, and aid the investigation into the true nature of the bronchial affection. Bronchitis is also one of the most common accompaniments of granular disease of the kidney. Indeed, there are few cases of this disease in which bronchitis does not appear at one time or other; but the pectoral symptoms are usually chronic, though sometimes they occur in an acute form.

Appearances after Death.—The colour of the bronchi varies according to the duration of the disease and the mode of death, whether by asphyxia, or the supervention of pneumonia. In almost every instance, however, their lining will be found of a reddish-brown or deep violet colour, soon changing to scarlet on removing the secretion, and exposing the surface to the action of the air. This redness may only exist in patches, but in general it will be found diffused and universal, extending from the first divisions of the bronchi to their terminations, even in cases where the signs of vesicular bronchitis have been defective. The lungs do not collapse on raising the sternum. An incision, particularly in the depending portions, gives exit to an immense quantity of frothy serum, and the bronchi are either varnished over, or loaded with matter similar to that expectorated during life. The nature of the secretion is often, however, totally different from what was expectorated, and the minute bronchi are sometimes clogged with purulent matter, no trace of which was discovered in the sputa. This is more frequently observed in old, debilitated subjects, whose efforts have been unsuccessful in emptying the tubes of their more viscid contents. Where œdema exists, the lung pits on pressure; if considerable, crepitation ceases. Œdema and lobular pneumonia are very frequently present. The terminal venous trunks, and the right cavities of the heart, are often filled with dark, uncoagulated blood. Fluid is frequently found in both sides of the chest, as well as in the pericardium.

Treatment.—The practitioner is seldom fortunate enough to be called in at an early period of this disorder, and his advice is often only sought when the suddenly increasing weakness and the failure of the ordinary domestic remedies for a cold have created alarm. It will thus sometimes happen that he sees his patient for the first time, after many days' illness, but a few hours before death, a perfect reliance having been placed in these means, the

fallacious lenity of the symptoms deceiving the unwary patient and his friends. The existence of the disease having been ascertained, the next step is to discover its associations; for on a right knowledge of these, and a just appreciation of the powers of the system, must depend the prognosis as well as the selection of appropriate curative measures.

In advanced life, acute or recent bronchitis is usually an asthenic inflammation, or tends in that direction, especially when seated in the smaller tubes. As in numerous cases it has been preceded by a permanent, or almost permanent, chronic catarrh, it is frequently associated with dilatation of the bronchi and emphysema of the lungs, so that, though immediate danger may be averted, perfect recovery is seldom attainable. Nay, under the most favourable circumstances, once emphysema is established, or the bronchi are wasted and dilated or otherwise altered, the patient is generally left with an aggravation of his former symptoms. At best, convalescence is slow and fluctuating. There is, moreover, scarcely any disease, not even excepting continued fever, that, in persons above sixty, varies so much in its progress. A prudent and cautious adviser ought to see his patient, during the acme of the attack, at least three or four times in the twenty-four hours; for the inconstancy of the symptoms often requires a corresponding variation in the treatment or the adoption of entirely new measures. Thus, stimulants may be demanded where a short time before they would have been prejudicial; or, on the contrary, it may be necessary to suspend them, and have recourse to local bleeding, owing to the supervention of pneumonia; or, again, to modify the treatment in such wise as, while local depletion is employed, stimuli, in not inconsiderable quantities, are essential to support the strength and enable the system to contend with the unfavourable turn of the disease. It will save repetition and much confusion if, instead of putting suppositious cases, however carefully drawn from nature, we offer a few general observations on the chief remedies usually resorted to, with special reference to their adaptation to acute senile bronchitis, after which a summary of the treatment may be advantageously considered.

Blood-letting.—It is a well ascertained fact, that the abstraction of blood has not the same salutary effect in inflammation of the mucous membranes that it has in inflammation affecting paren-

chymatous and serous structures. Blood-letting is therefore less frequently employed in bronchitis than in any of the other inflammatory diseases of the pulmonary system. And by many it has been altogether condemned, as inapplicable to the bronchitis of advanced life. Cases do, however, arise, though rarely, in which it cannot be dispensed with. As has been observed by Dr Watson, "If we do not bleed, we run the risk of losing our patient from the effects of the unchecked inflammation; and if we do bleed, we are in danger of losing him by producing a degree of weakness which will render him unable to expectorate the effused mucus, and so liable to perish by suffocation."* That I am no advocate for the indiscriminate employment of venesection in senile bronchitis may be inferred from the fact, that during the last eighteen or twenty years general bleeding has not been resorted to, solely on account of the further diffusion of the inflammation or the degree of the accompanying fever, in more than four or five instances occurring in persons above fifty-five years among the inmates of Chelsea Hospital, though no disease is more common there. Under these and like circumstances, as a general rule offering few exceptions, local bleeding is not only safer but more efficacious; and, as Stokes, Hodgkin, and others have already observed, cupping or leeching is more advantageous when exercised over the upper than lower parts of the chest, viz., under the clavicles, or between the scapulæ, or in the axillæ. General blood-letting is sometimes imperatively demanded, even in persons very far advanced in life and otherwise unsuited to it, for associated and consequent congestion of the brain, threatening immediate apoplexy; or for congestion of the heart and venous circulation, threatening asphyxia. At page 231 I have alluded to a case of the former description, in which bleeding from the arm, and that to a considerable amount too, appeared to save the patient. As an instance of cardiac and venous congestion greatly benefited by it, I may briefly mention the case of an old drunken soldier, about sixty-five years of age, a constant sufferer from chronic catarrh, with emphysema of the lungs, enlargement of the right cavities of the heart, and tricuspid regurgitation, who was a frequent inmate of the infirmary of Chelsea Hospital on account of

* The Principles and Prac. of Phys., 3d ed., vol. ii. p. 36.

the supervention of acute bronchitis. Admitted with an attack of this kind in the winter of 1855, he appeared to be dying. His breathing was intensely difficult. For several nights he had been unable to lie down. His face was livid, his lips blue; eyes suffused, watery, and starting from their sockets; extremities cold and mottled; legs and thighs œdematous. Both jugulars pulsated, and the heart's action was tumultuous and tumbling. He sat doubled up in bed, begging for relief to his breathing. Ether rather aggravated than appeased the dyspnœa. It was clear to all that unless he soon got relief he must die. So urgent were the symptoms, and so earnest the appeal of the poor man, that it was determined to open a vein and watch the effect. The blood gushed in a full stream so strongly that it had to be moderated by pressure below the opening. When about three ounces were drawn, he expressed himself much relieved, and after another ounce escaped the arm was bound up. In a short time he was able to recline on the pillow, which he had not done for upwards of eighteen hours. Soon after this he fell into a refreshing sleep. Next morning he was less distressed, but still unable to lie down. He begged hard to be bled again, and the pulse being round, full, and of fair strength, the operation was repeated, and two ounces of blood let loose, with the same results as on the preceding day. It was manifest, however, that the patient was sinking, and the bleeding was only resorted to to satisfy him, and if possible to smooth the way. He lived several days longer than was expected at the time of his admission, dying about a week after. Post-mortem examination confirmed the diagnosis in every particular. The minute bronchi were intensely red, and filled with muco-purulent matter.

Purgatives.—The occasional disappearance of bronchitis on the accession of a diarrhœa, and the intimate sympathy existing between the gastro-enteric and pulmonary divisions of the mucous membrane, suggest these remedies, and lead to the expectation of great advantages from them, which are, however, seldom realized in elderly subjects. Their active employment in the asthenic form of the disease is inadmissible and seldom warranted in the sthenic. There is, however, one state of the disease in which the judicious use of a brisk purgative is occasionally followed by the best effects; that is, when the excessive secretion into the bronchial tubes

threatens suffocation, the patient's strength disabling him from expelling the accumulation. The compound powder of jalap is then a valuable medicine; and when the condition of the vital powers will permit it, a repetition of the remedy sometimes effectually clears the bronchi, to the great relief of the sufferer.

Mercury.—There is a great diversity of opinion as to the employment of mercury in bronchitis; several physicians of acknowledged reputation condemning it as opposed both by theory and practice; while others, equally worthy of credit, as strenuously recommend it. Among the latter I may mention Dr Elliotson, who, in the disease as appearing in old people, advises its exhibition till the mouth become sore. Dr Graves is also an advocate for its employment, but appears only to have recourse to it after the other and ordinary measures have failed, and does not approve of its indiscriminate exhibition. Dr Hodgkin says, "The obvious effect of this remedy is to increase the fluid secretions, and induce a sort of general colliquative state. The bronchial lining participating in this influence, becomes still further loaded with the secretion by which it was previously oppressed." Having never seen any benefit from it whatever in old people, but rather the reverse, I have for long ceased to prescribe it in senile bronchitis.

Emetics.—At one time very much praised in the cure of bronchitis, emetics have of late years fallen into comparative and unmerited neglect. They were highly esteemed by Cullen. Dr Craigie, in his elaborate work on the "Practice of Physic," recommends them among the chief remedies; Dr Graves and Dr Stokes also speak favourably of them, in the acute and chronic form of the complaint. Laennec advocated their employment in both states of the disease, observing that the tendency of vomiting to produce moisture of the skin, and to facilitate expectoration, is well known. Beau, Canstatt, and Durand-Fardel, men of large experience, and who have written specially on the diseases of advanced life, testify to their value, place them in the first rank of remedies, and talk of their "brilliant success." There is frequently so much aversion to their exhibition in old age in this country, that I have thought it necessary to add these authorities in support of my own approval of them. In the state of supersecretion in which the

minuter bronchi and air-cells are filled with accumulated mucus, an emetic, by unloading the bronchi, sometimes saves the patient from immediate suffocation. It would be easy to adduce many instances where full vomiting has thus been attended with the most satisfactory results. On repeated occasions I have seen the same patient rescued, as it were, from pending dissolution by this means, even where the bronchitic affection was secondary to, or accompanied by, disease of the heart—a very common and a very serious complication, generally forbidding emetics. The following is one of the most remarkable instances of this kind. Although the patient did not ultimately recover, I have little doubt that he would have survived had there not been an accumulation of disease which rendered recovery next to impossible. J. B., an old dissipated soldier, sixty-three years of age, known to have emphysema of the lungs, with enlargement of the heart, laboured under an acute attack of secondary bronchitis for ten days. From a very early period there had been a copious accumulation in the bronchi, with a scanty expectoration. At one of my visits I found him with signs of asphyxia, almost pulseless. The usual stimuli had been given, and his strength had to be supported from the commencement. As a *dernier ressort,* he was ordered an ounce of the vin. ipec., which in twenty minutes produced full vomiting and a copious discharge of mucus from the lungs and stomach. He was so much exhausted by the action of the emetic that it was necessary to give him brandy, but the relief was magical. There was still evidence of an excessive accumulation in the bronchi, and the marked improvement in the breathing appeared to proceed as much from the influence of the emetic on the vagi, as on the partial expulsion of the bronchial secretion. Next morning the remedy was repeated with the same results, and again on the following day. The patient died on the morning of the fourth day, exhausted by a complication of disease. The minute bronchi were plugged up by viscid muco-purulent matter. The relief on each occasion was so great in this instance, that the emetic was eagerly solicited by the sufferer, and all who saw him before the first was administered considered him in *articulo mortis.* Although the vinum ipecac. was given here on account of the extreme prostration, the ordinary emetic of ipecacuanha powder, with or without a grain or two of tartarised antimony, is usually

preferable. Canstatt, apprehensive of inducing diarrhœa, recommends in these and other cases where an emetic is administered, the sulphate of copper.

External Applications to the Chest. 1. *Cataplasms and Tepid Fomentations.*—Broussais strongly recommended these applications, preferring, however, the former, under the apprehension of additional cold from the use of the latter, and he has related several cases which show their value. "I have cured," says he, "a catarrh which for thirty-seven days had resisted five or six blisters placed on different parts, by a large poultice over the front of the chest. The relief was so immediate as to exceed belief. Another case which, though at the end of six days was moderated, was still attended by a very painful cough, was immediately relieved by the same means." The practice is seldom followed in this country. I am satisfied, however, that in the catarrhal variety of the disease, with soreness behind the sternum, warm applications to the chest often do much good. They are agreeable and soothing to the patient, and particularly comfortable to the old and infirm. Cataplasms are probably to be preferred for the reason stated by Broussais, but flannel wrung out of hot water, and covered over by oil skin or gutta percha, can be frequently renewed with less trouble and with little exposure.

2. *Blisters, stimulating liniments, and embrocations* are all useful applications on the abatement of the more inflammatory symptoms. In suffocative catarrh, characterised by a superabundant accumulation of mucus in the bronchi and air-cells, Laennec preferred applying blisters to the thighs, remarking that he had several times had occasion to observe, *particularly in old persons,* that when applied to the chest they rather increase the suffocation and impede the thoracic movements at the very time when the full extent of respiration is required to prevent it. (Dr Forbes' Trans., 3d ed. p. 88.) In the Meath Hospital, Dublin, a liniment composed of spir. terebinthinæ, ℥iij.; acid. acet., ℥iv.; vitelli ovi, 1; aquæ rosæ, ℥iiss.; ol. limon, ℥i., is extensively employed by Drs Graves and Stokes, and is very strongly recommended by both. As a rubefacient applied morning and evening, it generally produces redness of the skin and an eruption of small pimples. In several cases the secretion of the kidneys is increased by it. Embrocations and mustard poultices are generally more efficacious

for the relief of dyspnœa, if applied to the back and spine than to the side or front of the chest. Turpentine epithems are of great service, and are particularly suited to sudden emergencies, so frequent in the asthenic bronchitis of advanced life.

Diaphoretics.—Nauseating doses of tartarised antimony and of ipecacuanha, together with diluents, fulfil a most important indication in the treatment of this disease, and are among the remedies chiefly depended upon by many in all stages of the acute, subacute, or asthenic variety. In old age, however, they are much less useful than at other periods of life. The continued administration of tartarised antimony *ad nauseam* is highly objectionable, and adds to the peril of the patient, weakening the respiratory muscles by its general prostrating power, and thus exposing him to the chance of suffocation. It is only at the onset of the disease, whatever may be its type, or where we have evidence sufficient to satisfy us that though resolution, or the secretive stage, may have commenced in one lung, or in a portion of the lung, but exists and is spreading in the dry stage elsewhere, and that the pulse is indicative of considerable organic power, that we can venture upon so severe a remedy in the old. In fractional doses, say the twelfth or sixteenth of a grain, and purely as a diaphoretic and expectorant, it may be employed at almost any period of the disease; but we shall generally obtain the desired effect by small doses of ipecacuhan, which, as less lowering, is preferable in most cases. The liquor ammoniæ acetatis frequently disagrees with the aged, causing a sense of coldness in the stomach, and occasionally diarrhœa. Opium and its different preparations, generally injurious at every period of life at the beginning of the disease, are peculiarly hurtful in advanced years, before the secretory stage is fully established. They promote the tendency to congestion of the brain, lungs, and heart, retard the dry stage, and, unless given with judgment and discretion at still more advanced periods, they encourage accumulation in the bronchi by impairing the nervo-muscular power of the respiratory muscles. The compound camphorated tincture of opium, too frequently prescribed at the very commencement of the attack, increases the oppression in the chest, and by its heating and stimulating qualities adds to the inflammation, and checks the natural attempt at resolution. It is better to give conium, henbane, or extract of lettuce, in the first instance,

where we are desirous of allaying the irritability of the bronchi, and abating the urgency of the cough,—an important indication, inasmuch as the cough keeps up a perpetual congestion in the lungs, prevents sleep, and exerts an injurious influence over the disease. The antiphlogistic properties of the nitrate of potash render it a medicine of great value in the acute stage, particularly if combined in solution with fractional doses of tartar emetic or ipecacuanha wine, and the tincture of conium or henbane.

Expectorants.—Medicines belonging to this class have been much abused in the treatment of bronchitis, and, as is but too frequently done, recourse to them at the commencement of the disease is often exceedingly injurious, by increasing the already engorged condition of the mucous membrane. If we subdue or moderate the inflammation on which the tightness of the chest, the difficulty of breathing, and the irritating cough depend, we shall have little occasion for these remedies. The means already recommended in the preceding section are best suited to this end, and will effect the object better than squills, senega, ammoniacum, assafœtida, &c. It is only in the advanced stages that we can venture upon these stimulating expectorants, unless the skin is cool and the pulse unaffected; and although they may usually be resorted to sooner in the asthenic variety of the disease, and in debilitated elderly people, experience teaches that which *à priori* reasoning would suggest, that to be really serviceable their administration should be delayed until there are signs that the attack has entered upon the second stage.

Inhalation.—Contrary to what might have been expected, the inhalation of pure or medicated vapour is seldom productive of relief. I have certainly seen benefit from the steam of boiling water diffused through the apartment, or brought near to the patient, in a few rare instances; but, as observed long ago by Broussais, inhalation generally only adds to the already swollen and congested state of the affected membrane, and augments the feeling of fulness and constriction in the chest.

Stimulants.—The great debility which very generally accompanies an attack of acute bronchitis in advanced life, obliges us, in most instances from an early period, to give wine and other stimuli; and nothing is more likely to hazard the safety of the aged patient than a blind and rigid adherence to low diet and

antiphlogistic treatment. From the very beginning, but particularly after the more important symptoms have been subdued, and, above all, on the general accession of the secretive stage, when the pulse will have become less frequent, and the heat of the surface will have moderated, beef-tea, chicken or mutton broth, and chicken-panada may be allowed, and are even necessary. When there is universal muco-crepitation, pointing out extensive disease, and copious secretion, and when with this state of the bronchi the pulse is compressible, or open and soft, wine may be given in moderate quantities, not only with the effect of maintaining strength, but often with marked benefit to the local symptoms. Persons accustomed to high living, and to the daily use of wine and fermented liquors, require these stimuli sooner than persons of more abstemious habits. Among the poor, the ill-fed and ill-clothed, accustomed to large quantities of porter or ale, often displacing essential articles of food, or who freely indulge in ardent spirits, the wonted stimulus is generally more beneficial than wine. Porter is usually very refreshing, and in doubtful circumstances may be given early in all debilitated subjects. All stimuli of this kind should, in the first instance, be cautiously administered; and if any doubt exists as to the propriety of continuing them, the sesqui-carbonate of ammonia with camphor should be substituted.

General Outline of the Treatment.—In slight attacks, where there is little or no uneasiness in the chest, the respiration tolerably free, the pulse but little if at all affected, and where the negative information yielded by percussion and auscultation satisfies us that there is merely catarrhal irritation or erethism of the bronchial mucous membrane, the exhibition of a gentle laxative, castor-oil or rhubarb with magnesia, and at bed-time an antimonial with or without a sedative, the tincture of conium or henbane, together with a bland diet, abstinence from wine and fermented liquors, and confinement to bed, will in general be sufficient to remove the symptoms, or prevent their assuming a more severe character. Too much must not be attempted. The catarrhal variety of the disease seems very frequently to have a determinate duration.

Many cases of this description are speedily cured by a totally opposite mode of treatment,—viz., by the use of stimuli. A general practitioner of much experience assures me that he seldom fails in ordinary catarrhal attacks by prescribing three or four glasses of

sherry negus in the course of the day; and a Scotch physician, a very old friend of my own, is equally successful with what he calls a stiff tumbler of whisky-toddy at bed-time. This stimulating plan has the authority of Laennec, who recommended, at the same hour, a glass of *eau-de-vie* with warm water. In the absence of all feverish tendency, I certainly know of no better treatment than a foot-bath, a glass of whisky or brandy-toddy, and six or eight drops of laudanum, with two or three drops more of chloric ether. The practice, however, requires consideration, and should seldom be left to the judgment of the individual himself.

In the more severe forms of the disease, when it occupies the smaller bronchi and air-cells, active treatment is seldom demanded, and is generally inadmissible in the latter instance, when it assumes a suffocative character; but if, with the local signs of bronchitis, the symptoms are of a sthenic type, the pulse firm, the dyspnœa considerable, and the heat of the surface increased, whatever may be the age of the patient, and should there be no complication strictly forbidding it, bleeding either from the arm, or locally by cupping or leeching, is indicated, though not indispensable. The quantity of blood to be taken must be regulated by the state of the pulse and the nature of the symptoms. General blood-letting should hardly ever be repeated, and experience is altogether in favour of local bleeding, particularly of cupping between the shoulders. The bowels should at once be opened, and afterwards regulated by mild aperients. Active purging is objectionable; it is not only exhausting but interferes with the action of other remedies. The diet should be light but sufficiently nutritious; and even in the severest cases perseverance in abstinence ought not to be insisted upon. A saline mixture, consisting of the liquor ammoniæ acetatis, nitre, and small doses of tartar emetic, or ipecacuanha wine, with or without the tincture of henbane or conium, may be prescribed from the commencement, and continued so long as febrile symptoms are present, with the view of determining to the skin and kidneys, and of relaxing the exhalants in the affected membrane, and thereby promoting the normal termination of the disease. The temperature of the apartment should be maintained at 60° or 65°. Blisters and other severe counter-irritants are injurious in the early stage of the disease, before the heat of the skin is reduced and secretion

matured. Stimulating expectorants are equally hurtful until then. The cough should be relieved by henbane, conium or lettuce. If these sedatives fail, opiates may be substituted; but as all preparations of this otherwise precious medicine suppress the secretion of the bronchial mucous surface and check expectoration, its exhibition should be delayed. On the abatement of febrile reaction, wine and other stimulants are admissible, and sometimes indispensable, from the onset of the disease, should it display at this period an asthenic tendency. In enfeebled, broken down, cachectic habits, consequent to intemperance and deficient nourishment, or both, gin, brandy, or whisky is often of more service in preserving vital power than wine or less powerful stimuli. They should be given in small quantities, well diluted with warm water, every hour or two, till the danger has passed away. Occasionally the prostration is so alarming, even in the most temperate, that the strength requires to be supported from the first invasion of the disease, and we are compelled to give wine, with as much nourishment as can be taken, while at the same time it may be necessary to abstract blood locally, on account of pain or pulmonary engorgement threatening pneumonia. In certain cases of great bronchial accumulation often proceeding from a paralyzed condition of the bronchial muscles and general prostration, emetics are of signal service in stimulating the pneumo-gastric nerves, and mechanically assisting the expulsion of the contained secretion, and their repetition is frequently advisable. Extreme cases of this kind, threatening immediate suffocation, are otherwise best encountered by brandy, the sesquicarbonate of ammonia with camphor, and turpentine epithems to the neck, chest, and spine. All narcotics should be abandoned in these and like circumstances, and if returned to, they should be given only in such small doses as to avoid their depressing effects on the nervous system.

When associated with gastritis or gastro-enteritis, an exclusive attention to the bronchial affection will end in disappointment. The excessive prostration which generally accompanies this complication of the disease, and the nervous and typhoid symptoms that rapidly appear and often precede a fatal termination, indicate the necessity of upholding vital power, and abstaining from all means likely to diminish the strength of the patient. Tenderness at the pit of the stomach, with retching or vomiting, calls for the

application of leeches to this region, and they are frequently of great service not only in relieving the gastric disorder, but in moderating the cough and checking the vomiting, which generally terminates a paroxysm when there is much irritability of the stomach. The mere existence, however, of nausea, retching or vomiting, is no evidence of the presence of gastritis; and the tongue is very often much loaded where the lining of the stomach is perfectly free from disease, the whole gastric mucous surface sympathizing with the condition of the bronchial membrane without participating in the inflammation. People accustomed to the use of spirituous liquors and of intemperate habits are more frequently the subjects of this gastric or gastro-enteric complication, and bear even local depletion badly. When there is much heat in the region of the stomach, with tenderness, acidulated drinks are grateful, and, by reducing inflammatory action, exercise a beneficial effect on the whole system.

The co-existence of the gouty diathesis will require, in addition to the means already advised, the remedies suited to this habit of body; and it will often be observed that until an impression has been made on the phenomena indicating this peculiar condition of the system, the bronchial irritation continues undiminished. Of all the medicines at present known for their salutary influence over gout, colchicum is the one most depended upon, and here its specific virtues are equally well attested. In the uncomplicated states of the disease, it has been recommended by several authors; and according to Dr Hastings (after Dr Badham, one of the earliest and best writers on the disease), as quoted by Dr Forbes,* "it allays the cough, promotes the flow of urine, keeps up a regular alvine discharge, and can be given much more generally than squills, because it does not produce that feverishness which results from the use of the latter remedy, and can therefore be employed where there is considerable fever." It is, however, a powerful medicine, and requires great caution in its exhibition in the aged and infirm. Colchicum with diaphoretics or diuretics, particularly the nitrate of potash, is also of much value in the rheumatic form of the disease.

* *Loc. cit.*, p. 81.

CHAPTER III.

BRONCHITIS CHRONICA, CATARRHUS SENILIS, CHRONIC CATARRH, OR WINTER COUGH.

Cough, with expectoration, is perhaps the most frequent of all the infirmities incident to old age. With advancing years, an increase in the quantity and viscidity of the natural secretion of the bronchi seems to take place, and many, after they have arrived at the declining period of life, or long before that, expectorate, on first awakening in the morning, and occasionally during the day, mucus more or less abundant and tenacious, without pain or difficulty. When the cough and secretion are moderate, and the respiration and circulation unaffected, this can scarcely be considered disease; but such individuals are peculiarly liable to catarrhal attacks, and in winter are frequently the subjects of acute bronchitis.

History.—An increase in the natural secretion of the respiratory mucous membrane, and a morbid alteration in its quality, occasioning cough, more or less troublesome according to the amount of secretion and the degree of irritation, are the chief symptoms of chronic catarrh. In advanced years, persons of a relaxed and feeble habit of body, especially those who have been subject to catarrhal attacks in early life, and have shown at one time or other the signs of scrofula, are seldom free from these symptoms during some portion, or the greater part of the winter. On the return of summer, the cough and expectoration abate; they probably altogether disappear, again to recur on the accession of cold weather. From year to year the same course is observed; the attacks become more frequent, are of longer duration, and the intervals between each diminish, till by degrees the derangement becomes permanent, and there is habitual cough with expectoration, subject to fluctuations in degree.

Such is the usual history of this complaint as observed in old people. In other instances, after an attack of acute bronchitis, some cough with expectoration remain; the more violent symptoms have entirely subsided, but have left behind them an irritability of the affected membrane and a disposition to preternatural secretion which sometimes continue throughout life, and are liable to exacerbations dependent on ever-varying states of the atmosphere, a deviation from ordinary and regular habits, and all the usual exciting and sustaining causes influencing the progress and character of chronic disease—the catarrhal irritation being easily aggravated, or passing with facility into acute or subacute inflammation.

In its essential characters, chronic catarrh only differs from the acute variety of the disease in the milder nature of the symptoms, its protracted duration, and the absence of febrile excitement. So long as it is limited to the larger bronchi, and preserves a simple form, the pulse continues natural, and the complaint may persist for almost any period, with very little or no difficulty of breathing. Generally, however, the acute attacks to which the patient is constantly exposed are succeeded by more or less dyspnœa, with wheezing; and when they are frequently repeated, the respiration, if not permanently impeded, is easily embarrassed on the least exertion, and the pulse quickens. As the disease advances, and the lesions consequent to it appear, there is invariably some shortness of breath, occasionally assuming an asthmatic character. The general health at the same time gradually gives way, and the sufferer acquires the habits and aspect of a confirmed invalid. The mild and uncomplicated forms may exist for many years with comparatively little inconvenience, and cases are constantly presenting themselves wherein the individuals have expectorated in no inconsiderable quantities for thirty or forty years, without the general health apparently suffering by the derangement.

Character of the Expectoration.—The quantity, quality, and colour of the sputa are subject to infinite modifications, and though in many instances the appearances are pretty uniform, variations are perpetually taking place in protracted cases. According to the general character of the bronchial secretion, names have been given, and an attempt made to divide the disease into

corresponding forms. Laennec and his followers have called it "dry catarrh" (a name which he himself observes involves a contradiction) when the cough is dry, or only accompanied with the expectoration of small, round globules, free from air, semi-transparent, and of a pearl-gray colour; "humid or mucous catarrh" when the sputa are yellow, gray, or puriform, and more or less opaque and abundant; when they are transparent, clear, ropy, and resemble white of egg mixed with water, it has been called "pituitous catarrh." The more fluid portion of the expectoration proceeds from the general surface of the respiratory mucous membrane, the more viscid from the muciparous glands, but neither during life, nor on *post-mortem* examination, can these different modifications of the sputa be connected with a peculiar and distinctive state of that membrane—be predicated before death; and I agree with Dr Watson, "that there are by no means such differences in the symptoms or treatment of the several forms of chronic bronchitis as to make these numerous subdivisions of any practical utility." In a large number of cases the sputa are opaque, yellow, greenish, or gray, sometimes nearly black, and frothy. The expectoration runs together, but it is often nummular. The grayish sputa are generally more viscid, and expectorated in irregularly shaped, round, ragged masses, floating in a turbid mucus of the same colour, but sometimes sinking if dropped into pure water. The yellow, green, and gray shades predominate in long protracted cases. According to Hodgkin,* the yellow shades seem to belong to the mucus itself; the green and the gray appear to depend upon the membrane by which they were secreted, or by which they have been in contact. Although in acute bronchitis, or in recent cases of chronic bronchitis supervening upon this form of the disease, the inspection of the sputa, in connection with the other symptoms, affords important information, a return from the opaque, diffluent, white, yellow, or green, to the transparent and viscid secretion, generally indicating an increase in the bronchial irritation (Andral); yet in protracted cases of the chronic and apyrexial form of the disease, a consideration of the quality and colour of the secretion seldom yields "any direct, practical results."

The sputa, generally tasteless, or nearly insipid and inodorous,

* Lectures on the Mucous and Serous Membrane, vol. i. p. 66.

are sometimes saline, or of a mawkish sweetness; at other times they are extremely fœtid. This condition is more frequently observed in senile chronic bronchitis, with irritative febrile excitement; and in the instances which have fallen under my observation, the sputa have generally been copious, pale yellow, frothy, and adhesive, flowing out in a homogeneous mass from the containing vessel. Fœtid expectoration is often connected with dilated bronchi, but it frequently exists without this lesion; and as dilated bronchi occur without fœtor of the sputa, the offensive odour would appear to proceed from the elimination of sulphuretted hydrogen from the pulmonary mucous membrane, and its admixture with the expectoration, rather than from the prolonged retention of the secretion through diminished muscular power of the bronchi, or perhaps a paralysed condition of the ciliary movements. In a recent case terminating fatally by pneumonia, and in which the expectoration had for several months been so offensive as to pollute a large ward, no cavities nor dilated bronchi existed. The odour had entirely ceased after death, there being no trace of it in the sputa at the *post-mortem* examination, though the man was known to have had chronic catarrh, with this peculiarity, for many years.

Complications and Sequelæ.—With the advance of life and continuance of the disease complications occur, an intimate acquaintance with which is of infinite more importance than any information derived from the most careful inspection and analysis of the sputa, since the means we adopt for the removal or amelioration of the bronchial affection, as well as the prognosis, very much depend on the combined maladies. These are not necessarily the results of the bronchial irritation. The catarrh is very often the first link in the chain of morbid action, but not unfrequently it is the very last. Highly important as this subject is, I must content myself with an enumeration only, or, at best, with a brief summary of the more common complications and sequelæ of the disease, a full consideration of which would far exceed my limits, and afford ample materials for several sections of this work.

The associations now referred to may be classed—*First, Into those connected with constitutional disease, contamination, or infirmity,* and of these the most common in advanced life are gout, chronic rheumatism and scorbutis, or an atrophic and scorbutic

condition of the blood from senile decay of the assimilating and respiratory functions. Nothing, also, is more common than the co-existence of obstinate cutaneous eruptions with chronic bronchitis in old age; and the rapid disappearance of a long-persisting eczema, where there has existed at the same time some degree of catarrhal irritation, is occasionally followed by a diffused inflammation extending to the air-cells. The persistence of chronic catarrh in the aged, and its great frequency, are often due to its numerous complications, and there seems every reason to believe the more simple forms or early stages of the affection are sometimes vicarious, the dry and altered state of the skin throwing upon the bronchial mucous surface duties which the skin is no longer efficiently able to perform. Under the head of secondary bronchitis, Dr Stokes has given much interesting information on the specific forms connected with scrofula and syphilis. The former association is, I am inclined to think, far from rare in advanced life. This combination invests the disease with a peculiar obstinacy and tendency to exasperation on the application of otherwise inoperative causes. These subjects have frequently had glandular swellings in early life, and entirely escaped other manifestations of delicacy of constitution in the vigour of manhood, but are now a prey to persistent catarrh, or they catch cold readily, and under the most favourable circumstances it hangs long on them. The gouty variety of chronic bronchitis is generally apyrexial, and the affected membrane congested rather than inflamed; but here again, as in other forms, there exists a strong predisposition to acute attacks.

Secondly, Local Complications.—Chronic bronchitis is very frequently associated with tubercles, emphysema, dilatation of the bronchi, œdema of the air-cells and cellular tissue, chronic pneumonia, &c. A much greater number than is generally supposed, of old people suffering from protracted catarrh, have crude tubercles, in a dormant state, disseminated throughout the lungs, not recognisable by the usual physical signs. After forty, Dr Stokes observes, this complication is not at all unfrequent. The catarrhal secretion would seem to act favourably in retarding softening of the tubercular deposits, though, on the other hand, when excessive, it entails wasting of the body, and, as M. Beau has already remarked, constitutes a peculiar form of senile con-

sumption. Emphysema is by far the most common condition of the lung, but, as observed in the anatomical remarks commencing this chapter, it seems to be a truly physiological condition of these organs in the aged, independently of catarrhal irritation, though of all pathological causes this appears to be the least questionable in its production, the congested or inflamed state of the bronchi and air-cells destroying their elasticity, and predisposing them to dilatation or rupture in violent expiratory efforts.* Dilatation of the bronchi seems in very many cases to be a sequela of the disease, and very probably proceeds from a corresponding loss of cohesion, muscular contractility and elasticity, with atrophy of the structures composing them. Both œdema and pneumonia exist in a considerable number of the cases proving fatal. The lining of the bronchial tubes is usually either thickened or atrophied; but we anticipate the observations on the anatomical characters of the disease.

Thirdly and *fourthly*, Affections of the heart are a very frequent association. Dilatation of the right cavities is common, and the whole heart is often at the same time hypertrophied. When valvular disease is absent, there is, in numerous examples, every reason to believe that either of these states, or both, are consecutive to obstructed pulmonary circulation. The symptoms of the cardiac complication are generally of the most distressing and serious nature. There is permanent dyspnœa, which the least accession of the inflammatory or congested state of the pulmonary mucous membrane augments into intense anxiety. Asthmatic paroxysms occur, and there is no suffering more painful than that arising from the supervention of acute bronchitis in a lung already impeded in its functions by emphysema complicated with cardiac disease. All who labour under these organic lesions, with bron-

* Mr Rainey has rendered it highly probable that fatty degeneration of the tissue of the lung is one of the anatomical conditions on which this loss of its elasticity and contractility depend; while Dr Jenner's observations have led him to the conclusion that the most frequent anatomical change of the lung having this result is fibrous degeneration,—the consequence, he says, of the exudation of that variety of lymph which escapes from the capillaries, where they are the seat of slight but long-continued congestion in a person of tolerably healthy constitution. So common is the exudation of this variety of lymph, he continues, in the congestion of old persons, that the changes of tissues which result from its presence are to be reckoned among the degenerations incident to old age.—*Med. Ch. Trans.*, xl. p. 26.

chial irritation, are ever in a critical state of health. A common cold often proves fatal to them, and they die asphyxiated, with the lungs engorged and œdematous. Congestion of the liver, and other abdominal viscera, as well as general dropsy, are common accompaniments of the cardiac complication of the disease, while effusion into the shut cavities, the pericardium included, as often attends the closing scene. Anasarca is a frequent symptom in protracted catarrh in the aged, and in the winter season especially is often coetaneous with an aggravation of the disease. Generally indicating, in these cases, some organic change in the heart or kidneys, it may be regarded as an unfavourable feature; but it occasionally simply arises from general debility or venous congestion, owing to impeded respiration, and disappears on the bronchial affection and difficulty of breathing subsiding. Many very infirm bedridden people thus recover, to be again attacked at another time. Still, it is an important symptom, though, in the absence of renal or cardiac disease, not alarming. When persistent, the kidneys are frequently granular, and the catarrh is then commonly the result of this degeneration, occurring, according to Rayer, in about seven-eighths of the chronic form of granular kidney. An albuminous state of the urine, pain in the loins, disordered digestion, a sallow, cachectic countenance, with or without dropsy, are the principal symptoms of this important association, from which a considerable number of the aged poor received into workhouses suffer,—the cough, expectoration, and difficulty of breathing, being not unfrequently the prominent symptoms compelling them to seek relief. The cardiac and renal complications of chronic catarrh are among the most serious to which the aged are exposed. They reciprocally react upon each other, and constantly peril the life of the sufferer. Temporary relief may be procured by judicious treatment, and the invalid may be preserved from exasperated attacks of the bronchial affection by regimen, climate, and clothing; but sooner or later this or that complication generally terminates fatally, by œdema of the lungs, engorgement of their structure, or the supervention of pneumonia.

Fifthly, The simultaneous existence of *hepatic* and *gastric* irritation is very common, when the bronchial disease is of long duration, and the functions of the lungs much impeded: either may be singly present, but usually both are observed, and the combina-

tion, with impaired digestion, is extremely frequent, indeed, few protracted cases are without it. The gastro-hepatic association usually proceeds *pari passu* with the original affection, but is subject to variation in degree, like the catarrhal irritation itself. Among the chief symptoms characterising it, we observe uneasiness in the region of the liver, with increased secretion of abnormal bile; a capricious appetite, with indigestion, and flatulent distension of the stomach and bowels. Pain at the scrobiculus cordis and along the upper part of the abdomen is seldom absent, although every other symptom of chronic gastritis may be wanting. Not unfrequently the gastric irritation exceeds in severity the bronchial affection. The cough then creates pain in the stomach, where there is sometimes a constant gnawing uneasiness, which absorbs the whole attention of the patient, and to which he ascribes all his ailment. For a long time, the disorder of the digestive organs is functional, but the continued irritation occasionally ends in structural disease of the stomach. Usually the combination with hepatic derangement only proceeds from congestion of the liver, the impeded respiration and imperfect aeration of the blood obstructing its circulation, and causing it to take on a supplementary action; but in other instances the catarrhal affection is accidentally associated with organic disease, involving its structure. In the former case, the liver is generally found extending beyond its natural limits, and on *post-mortem* examination, somewhat softened, and highly engorged. The vicarious action which the liver and kidneys assume in numerous examples of protracted catarrh, is not confined to these organs. Sometimes an extremely offensive odour is emitted by the skin. This odour has been noticed by several authors, especially by Canstatt. If recent, and very offensive, it usually indicates approaching dissolution. In two instances it preceded death by only a few days, but in both it appeared suddenly. The breath and whole surface, in one of these cases, were so highly tainted, where a few hours before nothing of the kind was perceived, that with the presence of typhoid symptoms rapidly supervening, I diagnosed sudden gangrene of the lung. On *post-mortem* examination, however, both lungs exhibited only the usual signs of chronic bronchitis, with crude tubercles, and recent consolidation of part of one of the lower lobes. Intensely fœtid expectoration and cutaneous exhalation take place, therefore, with-

out appreciable deviation from the ordinary anatomical characters of persistent chronic catarrh.

Anatomical Characters.—The lining membrane of the bronchi presents various degrees of injection and shades of colour, from a pale rose to a deep red or reddish-brown tint; sometimes of a bright scarlet, it is more frequently of a purple or livid hue. Cases are recorded by Bayle and Andral, in which the membrane was perfectly white throughout all its extent, and without any other appreciable alteration "in individuals presenting all the symptoms of an inveterate chronic bronchitis, with puriform expectoration." This whiteness is, however, comparatively rare in senile chronic catarrh. Out of a great number of examinations, I have only met with it once, and that in a man seventy-seven years of age, where, though the expectoration was very abundant, and had been so for ten or twelve years, it was of a serous, or sero-mucous character. He appeared to succumb from mere exhaustion of the vital powers. In protracted cases, and particularly where the secretion has been of a purulent, or muco-purulent nature, the bronchial membrane is occasionally minutely granular, resembling deep red velvet, or rather plush, thus simulating the granular state of the eyelids in persistent chronic conjunctivitis, and of the mucous membrane of the stomach, mentioned by Louis, as sometimes accompanying softening of this structure. It is usually, at the same time, hypertrophied, though occasionally, and that far from unfrequently, atrophied. Softening and ulceration are extremely rare. One of the most common changes in the chronic bronchitis of old people is a preternatural development or hypertrophy of the longitudinal fibres of the bronchi, presenting whitish, raised, thread-like cords, contrasting with the surrounding lividity. The cartilaginous rings at the origin of the subdivisional tubes are generally ossified, and the various forms of dilatation of the bronchi are frequently observed. The other lesions usually found are *narrowing*, and *obliteration* of the minute bronchial tubes from thickening, and plastic inflammation, affecting sometimes a considerable portion of their tract, communicating to the lung a tough, doughy, uncrepitating character, and scarcely emitting any fluid when cut; *œdema*, with pitting on pressure, and copious serous discharge on incision; *emphysema*, vesicular, interlobular, and subpleural, the latter affecting especially the margins of the lungs; *pneumonia;*

tubercles; effusion into *the serous cavities; congestion* of the *brain,* and effusion into the ventricles; *alterations in the heart and great vessels.* The other lesions likely to be discovered may be deduced from what has been said on the frequent coincidence of chronic bronchitis, with gastric, hepatic, and nephritic disease.

Physical Signs.—The physical signs of chronic bronchitis do not differ from those accompanying the second stage of the acute forms of the disease. In both states the mechanical causes influencing the respiratory sounds are analogous, or so nearly allied that the râles can hardly vary; and in simple chronic catarrh, without co-existent pulmonary condensation, effusion, or engorgement of the substance of the lung, the chest continues resonant on percussion. Universal clearness on percussion, and the presence of the dry and moist râles are therefore the characteristic physical signs of uncomplicated chronic bronchitis. The râles are modified by the condition of the mucous membrane, and the fluidity or tenacity of the secretion. If the tubes are narrowed, and the ingress of the air is greatly impeded, we shall have the râle of a hissing or sibilous character. This sound appears to be confined to the minuter bronchi. The sonorous, cooing, or grave variety, has its seat in the larger tubes, and, according as the secretion exists in either of these set of bronchi, or in the air-cells of the lungs, will the respiration be marked by fine crepitation or large crepitation, the crepitation arising from the bursting of small or large bubbles in tubes of smaller or larger calibre. When both lungs are affected, which is almost always the case, all varieties of the dry and moist râles may be heard in different parts of the chest. In one place the râle may be sibilant, immediately contiguous it may be sonorous, depending on the size and condition of the tubes; while not far off, in some other part of the chest, we hear the sub-crepitating or muco-crepitating râle only. In general, the sonorous and muco-crepitating râles predominate, thus indicating the seat of the affection to be in the larger tubes, or drowning by their intensity the finer râles of the smaller tubes. The râles are ever varying with the state of the affected membrane as to dryness or moisture; and after a copious expectoration, a complete emptying of the bronchi, the moist râles sometimes wholly disappear for a time, and are replaced by the dry ones. In confirmed cases, where there is general and habitual engorge-

ment of the membrane, the natural respiratory murmur is wholly absent or greatly modified and masked by the abnormal sounds; and in exasperated cases, limited in extent, the return of the respiratory murmur is one of the first indications of an abatement of the attack. The dry musical râles are in general more favourable than the moist, the sonorous more so than the sibilant; and of the moist râles, the muco-crepitating is more satisfactory than the crepitating or sub-crepitating. The grave, sonorous, and muco-crepitating râles have their seat in the larger bronchi, where the disease may last for years without danger to life. When intense, and near the surface of the lung, analogous vibrations are discovered on applying the hand to the corresponding part of the chest. These râles are occasionally audible to the patient himself, and wheezing is heard some distance off. Occasionally we detect a sudden diminution in the intensity of the existing râle, or respiratory murmur, under the stethoscope; at other times, where neither has been heard a short time before, a rapid appearance of one or other has occurred, probably after a paroxysm of coughing. The temporary, partial, or complete occlusion of a principal tube by the secretion, aided perhaps by spasm, and consequent impediment to the passage of the air, is the cause of this, and is one of the most common phenomena of chronic catarrh. Death sometimes arises from the sudden occlusion of a leading bronchus in this manner, as has been shown by the often quoted case related by Andral.

The physical signs are greatly modified by the co-existence of emphysema of the lung; and as this, in most of its forms, is one of the usual accompaniments of persistent chronic catarrh in the aged, the phenomena attending it are generally present. The most important of these are, unusual resonance of the chest, with diminution of the respiratory murmur, crackling, prolongation of expiration, and permanent dyspnœa, amounting to orthopnœa, on any increase of the habitual engorgement of the bronchial mucous membrane. Dilatation of the tubes often exists without obvious physical signs, but the diagnosis may frequently be announced by the presence of pectoriloquy, cavernous gurgling and respiration, without coincident constitutional symptoms of tubercular excavations. The posterior portions of the chest, particularly the inter-scapulary space, is the usual site of these sounds. Œdema

occasions dulness on percussion; the inspiratory act is accompanied with a sub-crepitating râle, and the expectoration being generally serous, or consisting of sero-mucous matter, will awaken suspicion as to the probability of this complication, which negative reasoning may confirm, but these are no certain signs. The diagnosis between this affection and pneumonia is stated in treating of the latter disease. It is unnecessary to refer in this place to the physical signs of the cardiac complication. Tubercles, when equally diffused through the lungs, and especially if accompanied with pulmonary emphysema, are in general not recognisable by auscultation. If sufficiently numerous to produce dulness and modify the respiration, their presence may be diagnosed often with certainty; but the peculiar structure of the lung in the aged, and marked character of the catarrhal abnormal sounds render the detection of crude tubercles exceedingly difficult, if not impossible. More reliance may be placed on the constitutional symptoms and general state of the patient than on the signs furnished by a physical examination of the chest.

Treatment.—In a large proportion of cases occurring both in public and private practice, the disease is fully confirmed before relief is solicited; and among the poor especially it is generally only in its exasperated forms and complications that it presents itself to our notice. Usually considered a natural attendant upon old age, and as frequently neglected in its simple state, structural changes take place at an advanced period in the affected membrane and tubes, by slow degrees involving the organisation of the lung, and then remedial means fail to effect more than a palliation of the accompanying symptoms. So long as the disease is limited to the lining of the larger bronchi, maintains a simple form, and occurs in a person whose constitutional powers are still vigorous, and who is in a position to avoid the ordinary causes perpetuating and aggravating the affection, much may be accomplished in warding off acute attacks, if we fail in entirely removing the malady itself. Where the summer remissions are distinct, and the breathing is not permanently affected, it is surprising how much good may be obtained by a judicious recourse to hygienic measures. Under other circumstances, our best endeavours will be confined to allaying the cough, moderating excessive secretion, and supporting the system under the exhausting effects of a continued drain and

irritation implicating a vital function. Further mischief may thus be arrested, and life prolonged with comparative comfort to extreme old age.

Derivatives, the direct application of medicated vapours to the bronchial mucous membrane by inhalation, and the internal exhibition of expectorants and sedatives, constitute the principal remedies in chronic catarrh. To these may be added emetics, diuretics, and tonics, change of air, and all regimenal measures calculated to husband the strength. Among the very best means to relieve the habitual congestion of the affected tissue, warm clothing, and especially flannel next the skin, stands pre-eminent. Without some such provision, the best directed efforts utterly fail. It is often marvellous, in aggravated cases complicated with important local changes, how much real benefit is effected without any medicine whatever, by the equable temperature, the warmth and repose of the bed in poor persons ill-clothed, and exposed to all the inconveniences and vicissitudes of our climate. Even in establishments allotted to the aged and infirm, where the clothing is comfortable, and due attention is paid to the ventilation and temperature of the dormitories, the greatest good is very generally speedily procured by removing catarrhal subjects to the infirmary, and thus avoiding exposure to the cold air of the closets and passages. Some of the most threatening attacks proceeding from an increase of the bronchial irritation, an afflux of blood to the permanently congested, and relaxed pulmonary mucous surface, assume a favourable character in a few hours, with little or no assistance from medicine, and the remainder of the winter is thus passed without danger, or any persistent accession to the habitual catarrh.

In the more simple varieties of the disease of comparatively recent standing, and where we may still expect to accomplish a cure, counter irritation of the chest may be employed along with the hygienic measures now hinted at. All violent remedies of that sort should however be avoided. Blisters and issues are not only of no benefit, but, on the contrary, as remarked by Laennec, they are only one more evil to those already existing. Any benefit likely to accrue from derivation, will be obtained by stimulating liniments, which, being more manageable, and unattended with debilitating effects, are better suited to the circumstances. In the

preceding chapter I have already alluded to this class of remedies, and pointed out their utility in bronchitis. There, also, I have spoken of emetics, and the peculiar states demanding them. Heberden recommended them, and followed them up by tonics. Laennec says, "I have cured by emetics catarrhs of very long standing in old persons, and still more in adults and young children. In the case of an old lady of eighty-five, who had laboured under a chronic catarrh for eighteen months, with an expectoration amounting to two pounds daily, I prescribed fifteen emetics in one month with complete success, as the patient lived eight years afterwards free from complaint." The inhalation of medicinal substances, especially vapour imbued with the expectorating gums or creasote, is only suited to advanced stages; it is a practice of which I have had little experience, and that little is rather unfavourable than otherwise. The direct repression of the secretion by this means is a dangerous expedient; and though tar vapour has been highly praised in protracted bronchitis occurring in adults, I question much its efficacy or safety in this disease in the aged, though it would at first sight seem more peculiarly suited to the atonic condition of their system, as well as to the increased relaxation of the bronchial mucous membrane. Mixtures containing the camphorated or ammoniated tincture of opium, the vinegar or oxymel of squills, and ipecacuanha wine, are generally of great benefit in moderating the cough and facilitating expectoration. Henbane and conium are however preferable to opium and its compounds, as accomplishing all that is required without occasioning constipation, a not unimportant matter in managing a disease very generally attended with torpor and irregularity of the bowels. Still we are often obliged to have recourse to them, every other sedative failing to subdue the bronchial irritation. The objections to opiates in this disease, though not groundless, have been greatly exaggerated. If given in medium doses, combined with ipecacuanha, the nitrate of potash, or, at bed-time, with James' Powder, there need be little apprehension of suppressing expectoration; and if they moderate excessive secretion, a principal object in the treatment of many cases will be obtained. It should be perfectly understood, that the cough is a salutary effort of nature to expel morbid accumulation; and all that ought to be attempted should be to restrain its violence by allaying excessive irritability. Where the secretion is

viscid, and only rejected after protracted coughing, the addition of the bicarbonate of soda, bicarbonate of potash, or the sesqui-carbonate of ammonia, to the pectoral mixture, will often render it less tenacious, and facilitate its expulsion. In cases attended with violent fits of coughing of a spasmodic character, and where there is usually, with this peculiarity, much difficulty of breathing, great relief is occasionally procured by adding chloric ether, or by pills containing the extract of conium, extract of belladonna, and powdered ipecacuanha repeated every three or four hours, the dose of each ingredient being proportioned to the severity of the symptoms. The compound galbanum pill with belladonna is sometimes very beneficial in such cases. The bowels should be regulated by the mildest aperients, combined with tonics. Unless in bad weather, exercise, especially passive exercise, should be regularly indulged in. The clothing should be sufficiently warm to prevent chilliness, and determine to the surface, but not to overload and embarrass the movements of the chest or limbs. Light nourishing diet is necessary; and though wine and all fermented liquors are injurious if indulged to excess, care must be taken not to deprive the patient of them if he has been accustomed to stimulants, unless on the supervention of acute symptoms, which, for a time, necessarily forbid them.

When the disease is entirely chronic in its nature and duration, or is exhausting the patient by excessive secretion and restless nights, the combination of tonic with sedative and expectorating medicines is indicated. The mistura cascarillæ comp. is well suited to a number of these cases, and much benefit will frequently be derived from a mixture containing quinine, conium, and camphor. An occasional emetic will then also be of service. Quiet nights may be secured by the compound ipecacuanha powder, the extract of lettuce, or the compound conium pill. Night is the best time for narcotics, and if intermitted during the day, repose will be procured when it is most needed. A convenient night pill, obviating constipation and checking the cough, may be formed of three or four grains of the compound aloetic pill, with a quarter of a grain of opium, or an equivalent dose of the extract or of the muriate of morphia, and a grain of ipecacuanha powder. Half a grain of codeia given at bed-time is occasionally most soothing, and successful in procuring sleep when other hypnotics fail.

The metallic astringents are only safe when the affection is essentially chronic, the skin cool, the expectoration easy and abundant, and the debility and emaciation the result of the inordinate secretion from the bronchial surface. Under these circumstances great benefit may be derived from the sulphate of iron or the sulphate of zinc, in solution with the disulphate of quina, to which mixture may be added the compound camphorated tincture of opium. The citrate of iron and quinine is also a valuable remedy. On the whole, however, probably the best preparation we can make use of in cases adapted for this description of medicine is the mistura ferri composita. Combined with henbane it is serviceable in the chronic bronchitis of adults, and very satisfactory results are often obtained from it in the atonic, apyrexial, catarrhal affections of the old. It was, if I mistake not, a favourite remedy with the lamented Dr Graves, whose skilful resources in every department of practical medicine earned for him an enduring reputation.

A combination of tonic, diuretic, sedative, and expectorating medicines, will generally prove more serviceable than adherence to one or two only of these remedies, however unscientific the union may appear. Diuretics are among the very best medicines we can employ; and their efficacy is much enhanced by an occasional active purgative, such as the compound jalap powder. Diaphoretics are more suited to temporary accessions of inflammatory irritation, but the difficulty of procuring diaphoresis in the aged renders them almost nugatory. Determination to the surface is best preserved by warm clothing. Flannel should always be worn next the skin, and catarrhal subjects should in winter wear, in addition, spun silk.

Abstracted from all theory, the balsams and expectorating resinous and vegetable substances exert an undoubted influence over chronic bronchitis. Copaiva, balsam of Tolu, myrrh, gum ammoniac, assafœtida, and the various preparations of senega and squills, but particularly the latter, have long preserved a merited reputation in this disease. Carried in the blood, these medicines modify the action of the extreme vessels of the pulmonary mucous membrane, and are singularly serviceable in diminishing its irritability, and reducing the amount of secretion. The balsams and resinous substances are, however, solely adapted to the advanced apyrexial

state of the disease, uncomplicated with gastric irritation, and are therefore inappropriate in numerous cases of senile chronic catarrh, where this association is very common.

There is reason to believe that a share of the efficacy of squills, senega, the balsams and turpentine, in chronic bronchitis, is due to their physiological effects on the function of the kidneys, an increase in the flow of urine usually coinciding with the abatement of the pectoral symptoms during their administration; and as it is easier in general to maintain a determination to the kidneys than to the skin in elderly persons, diuretics, as we have just said, are a valuable addition to our medicamenta in the treatment of all protracted bronchitic affections of the aged. The following formulæ will be found well suited in a variety of cases of senile chronic catarrh:

℞ Decocti senegæ . . . . . ʒvij.
Potassæ nitratis . . . . . gr. iij.
Tinct. camph. comp. vel tinct. conii. . ♏ xx.
Spiriti æth. nitr. . . . . ʒss.
Oxymellis scillæ . . . . . ʒss.
Fiat haustus ter die sumendus.

℞ Liquoris am. acet. . . . . ʒiij.
Potassæ acetatis . . . . . ℈i.
Aceti scillæ . . . . . ʒss.
Spiriti æth. nit. . . . . ʒss.
Tinct. camph. comp. . . . . ♏ xx.
Misturæ camph. . . . . ʒvi.
Syrupi aurantii . . . . . ʒi.
Fiat haustus ter die sumendus.

℞ Decocti senegæ . . . . . ℥v.
Tinct. camph. comp.—scillæ, āā . . ʒij.
Syrupi Tolut. . . . . ʒiv.
Sumat ℥ss. vel ℥i. ter die.

The last of these is strongly recommended by Dr Stokes in the second stage of bronchitis. When the stomach will bear it, small doses of turpentine not only increase the flow of urine, but act beneficially on the relaxed bronchial mucous membrane, and, according to Dr Copland, turpentine is preferable to the balsam of copavia, so much recommended by Dr Armstrong and others. Dr

Billing speaks very favourably of Venice or common turpentine, the efficacy of which is increased by combining it with powdered senega root in pills. Most of the terebinthinates, however, soon produce gastric or intestinal irritation obliging their discontinuance. We are now at once brought to the consideration of the treatment of the associated states of the disease.

The coincidence of gastric irritation, then, generally forbids the employment of these remedies—the balsams, gum resins, and terebinthinates. If the symptoms indicate inflammation of the mucous membrane of the stomach, the diet will require to be of the blandest description. Farinaceous food will generally agree better than any other. Occasional leeching, followed by gentle counter-irritation to the scrob. cordis, will be serviceable. The abatement of the gastric symptoms is usually followed by improvement in the bronchial affection. Should the expectoration continue abundant, small doses of the sulphate of iron combined with the extract of gentian, and conium, or henbane, will frequently be useful in restoring a healthy tone of the stomach as well as the bronchial mucous membrane. The sulphate of iron with the compound aloetic pill proves an appropriate combination in not a few of these cases. Debility of the digestive organs, with flatulence, demands the addition of carminatives and mild tonics to whatever pectoral mixture may be selected, while, at the same time, abstinence from all ingesta found to disagree must be enjoined. Canstatt states, that the Extract. Cardui Benedicti is almost a specific in this state of matters. *Hepatic* irritation will be best encountered by gentle mercurial laxatives, alterative doses of blue pill, or the hydrarg. cum. creta, with the pulv. antim. combined, or otherwise, with the extract of taraxacum, and Dover's Powder. The *cardiac* complication must be managed in accordance with its precise nature. The association with structural or functional disease of the heart is so important, that, whether the original or consecutive affection, it very frequently assumes the first place in our regard. Both the bronchial and cardiac irritation or lesion mutually react on each other; but usually it will be found that present distress proceeds from an aggravation of the catarrhal disorder induced by some of the ordinary exciting causes of the disease. The tincture of digitalis with hydrocyanic acid and opium; colchicum, with diuretics and sedatives; sometimes a few

leeches to the præcordial region, are among the chief remedies in this complication. The cough should be alleviated by the frequent administration of sedatives, and excessive secretion moderated by senega and squills, with ammoniacum, or the balsam of Tolu—or small doses of some of the metallic astringents already spoken of. The diuretics above recommended will be found of great service, particularly if conjoined with digitalis, in quieting the circulation, and preventing serous accumulation in the lungs. Asthmatic attacks may be benefited by the extract of belladonna, stramonium, the lobelia inflata, and other sedatives or narcotics. Andral recommends the combination of sulphate of quinine with opium, where the fits of coughing are very distressing, without the expectoration being very abundant. The more powerful remedies, digitalis, colchicum, and hydrocyanic acid, require to be administered with caution in advanced life. The two first at least are cumulative, and all ought to be discontinued on the earliest intimation of their action on the system. The presence of *œdema of the lungs* will suggest perseverance in diuretic and expectorating combinations. When the strength of the patient will permit it, an occasional smart purgative—for instance, the compound powder of jalap, with or without scammony—may be given with decided improvement to the breathing. I know of no better remedy, though in debilitated cases the practice requires caution. A similar plan of treatment should be pursued when the limbs are infiltrated; and, as in most dropsical cases there is much depression of the vital powers, small quantities of gin-punch are often beneficial in sustaining the strength and stimulating the kidneys. The association of chronic bronchitis with dropsy, even where the abdomen is largely distended, should not lead us to abandon the case as hopeless. Where the kidneys can be acted upon, and the effusion is not so much the consequence of organic disease as of general debility, with temporary engorgement of the right cavities of the heart, life may be prolonged for a considerable time—nay, there may be a complete restoration to health. I have seen such cases occurring in men above seventy years of age ; and I attended, some years ago, a general officer, shattered by wounds and numerous minor infirmities, who, at the advanced age of seventy-four, was a victim to protracted catarrh, with consequent dropsy of more than two years' standing. So great was the debility in this case, and

so impaired the constitution, that on the first show of dropsy the patient was not expected to live many weeks. The simultaneous occurrence of *granular disease of the kidney* with bronchitis does not bring with it any variation in the general method of treatment. Though much good may be effected in the early stage of the disease, the complication almost always soon proves fatal, and the nephritic symptoms almost wholly arrest the attention of the physician. The association with *emphysema* and *dilatation, narrowing,* or *obliteration* of the *bronchi,* merits no particular allusion. These lesions are incurable, and their presence does not point out any special plan of treatment. One or more are usually combined, and sometimes all are found at the same time in one or both lungs.

In conclusion it may be observed, that in confirmed senile catarrh, the avoidance of the usual causes aggravating and perpetuating the disease, the use of warm clothing, and attention to diet, greatly promote the comfort of the invalid, who may also pass the remainder of his days in comparative ease, without aggravated attacks of dyspnœa, by removing to a genial climate, such as Nice and its neighbourhood, or to Malaga. Those who in our own climate live on the east coast, generally benefit much by proceeding to the west and south-west districts, inland or by the sea-side. The temperature is more equable on the coast. A dry atmosphere is generally better suited to cases attended with supersecretion, as a moist one is more serviceable where the expectoration is viscid and scanty.

CHAPTER IV.

BRONCHORRHŒA — PITUITOUS CATARRH — PITUITOUS PHTHISIS—CATARRHAL PHTHISIS—BRONCHIAL FLUX.

THE affection known by the above names is characterised by the expectoration of "a colourless, transparent, ropy mucus, frothy on the top, and resembling the white of egg diluted with water." —(*Laennec.*) Usually unaccompanied with fever, it differs in no essential particular from apyrexial chronic cattarrh; and it is only in accordance with some of our best writers on the diseases of the respiratory organs, that I give it separate consideration. Laennec, Roche, and Andral, have so accurately and fully described it, that almost all subsequent writers have closely followed their steps; and the article on it by Roche, in the "Dict. de Medicine et de Chirurgie," 1830, has furnished ample unacknowledged materials for not a few authors.

History.—Like primary chronic bronchitis, chronic bronchorrhœa is almost exclusively confined to the aged. In its history, mode of invasion, progress, complications, physical signs, rational symptoms and anatomical characters, it cannot be said to differ from this disease, and the peculiar watery nature of the sputa appears to be that alone which has induced Laennec and others to treat it as a distinct affection.

Of the two forms that have been described, viz. the acute and chronic, the first is usually symptomatic, sudden in its appearance and attended with suffocative dyspnœa. Rapid in its progress, it is sometimes fatal in a few minutes. The other, arising gradually, may go on for a long series of years without materially affecting the general health, and usually terminates, as Laennec has observed, in the supervention of œdema of the lungs, and finally suffocation from inability to expectorate. Paralysis of the lungs is a not unfrequent consequence of this, as well as other forms of senile catarrh. The sero-mucous expectoration characterising the com-

plaint, varies in quantity from one or two ounces in twenty-four hours to three or even six pounds. Some patients known to Laennec discharged from two to three pounds in one or two hours, and he mentions that he was acquainted with two old gentlemen, one of whom, upwards of seventy, had expectorated during the last ten or twelve years, in two daily paroxysms, about four pounds of colourless, ropy, and frothy fluid; the other brought up every morning, by gentle spontaneous vomitings, repeated at short intervals during several hours, from three to six pounds of a liquid exactly like white of egg mixed with a third part of water. This gentleman, upwards of sixty, enjoyed tolerable health, and walked several hours every day.* Examples of this kind are, however, comparatively rare, and in many of the recorded instances there seems reason to believe that a great portion of the fluid was ejected from the stomach, catarrh of this organ being a frequent association of this and other varieties of bronchial irritation. Among several old people coming under my observation with bronchorrhœa, accompanied or otherwise with asthma, in whom the secretion was very abundant, I have never seen it exceed a pint and a half or two pints in twenty-four hours, and in this case it was brought up by gentle fits of coughing, occasionally aided by vomiting, particularly in the morning. This person, upwards of seventy, died anæmic and exhausted, and, as in one of the cases of excessive bronchial flux related by Andral, the lining membrane was found extremely pale. The discharge in the disease proceeds more from the general surface of the pulmonary mucous membrane than from the muciparous glands or crypts. Bayle and Laennec have noticed that the disorder often exists in a high degree as a consequence of the simultaneous development and persistence of a great number of miliary tubercles in the lung. A copious and watery expectoration, somewhat resembling gum-mucilage, accompanies pulmonary œdema, and the secretion may even prove the immediate cause of death by asphyxia, a case of which is mentioned by Andral as occurring in a man forty-five years of age, affected with pneumonia and chronic bronchitis.

Acute idiopathic bronchorrhœa is a very rare disease. Dr Hodgkin† believes that a very general increase of the secretion of

* Laennec on the Dis. of the Chest, 3d ed., trans. by Dr Forbes, p. 85.

† Lect. on the Morb. Anat. of the Ser. and Mucous Membranes, vol. ii. p. 64.

the bronchial mucous membrane, sufficient to produce almost universal mucous rattle, and a corresponding difficulty of breathing, imminently threatening or even causing death, may be occasioned by an irritating cause, the direct application of which may be very partial, just as a foreign body irritating a small part of the conjunctiva or Schneiderian membrane is seen quickly to produce a copious flow from the eyes and nose. Sudden effusion into the bronchi, as remarked by Roche, is sometimes the spontaneous means of cure of certain diseases, and particularly of serous accumulations. Andral details the case of a man thirty-six years of age, in whom the sudden appearance of a bronchial flux coincided with the absorption of a hydro-thorax. "These critical bronchorrhœas," says Roche, "are always temporary and rarely dangerous. They belong to the same order of facts as serous diarrhœas, vomiting of the same nature, and copious sweats called by the ancients critical, and which remove in a few days, and often still more rapidly, anasarcas, abdominal dropsies, pleuritic effusions, and many other diseases." The affection is a frequent result of mitral regurgitation, causing in the first instance pulmonary congestion relieved by bronchial effusion, and this termination is obviously then a conservative process; but, on the other hand, sudden congestion of the lungs, with serous effusion into the bronchi and air-cells, is a not unfrequent cause of rapid death in aged subjects prone to chronic catarrh with emphysema. In January 1843 I met a case of this kind in a man of sixty-four years of age, who appeared to be in good health a few hours before. After short exposure to a raw, cold atmosphere, immediately on leaving a warm apartment, he was seized with difficulty of breathing, with ineffectual efforts to expectorate, and foaming at the mouth, and died in less than an hour, insensible to the last. The bronchi were found loaded with brownish serum. Both lungs crepitated, but on being cut they emitted an immense quantity of serum of the same character. Death seemed to be partly due in this case, as it probably is in similar instances, to sudden innervation of the pneumogastric nerve, the severance of which, it is well known, is followed by asphyxia, with copious effusion into the air-cells.

Treatment.—After what has been said as to the similarity, if not identity, of the chronic form of this affection, with the apy-

rexial chronic species of bronchitis, it is quite unnecessary to dwell upon the management of such cases. The general curative measures do not differ from those adapted to the atonic state of chronic catarrh. The cough is usually without pain, and the secretion expectorated by the gentlest efforts, without any distress. Under these circumstances, it may fairly be questioned whether we ought to interfere at all. "Experience has taught practitioners," says Andral, "that several of these copious expectorations, which produce no disturbance in the system, should be valued; they are a sort of evacuation set up by nature, which are not always stopped with impunity;" and it is judiciously remarked by Sir Henry Holland, that "the practice of restraining such habitual discharges is injurious in the attempt, hazardous if it be really effected." Unless where the excessive secretion appears to be wearing out the vital energies, no agents should therefore be employed that are likely to arrest the evacuation. Where, however, we have evidence of its injurious effects on the system, where the constitution appears to be sensibly suffering by the abundant loss from the bronchial mucous membrane, then, as in other cases of habitual and detrimental discharges, it will be necessary cautiously to moderate it; in every case it will be proper to support the strength by suitable nourishment, and wine if required. The careful administration of the citrate of iron and quinine, or of the sulphate of iron or zinc, with or without the sulphate of quinine, the frequent use of diuretics, especially the decoction of senega with squills, and the compound spirit of juniper, or sweet spirit of nitre, small doses of turpentine, or the balsam of copaiva with spirit of nitre, and the other means already recommended in chronic catarrh, are proper; but the moment injurious effects are observed to arise, if the action of the heart is unduly excited, or there is increased difficulty of breathing, all remedies calculated to arrest the secretion should be discontinued, and camphor with the carbonate of ammonia administered. The sudden suspension of an habitual bronchial flux, by inhalation or otherwise, is attended with imminent risk, and, as in the case of sudden arrest of a serous or mucous diarrhœa, is likely to be followed by inflammation of the substance of the secreting organ, or effusion into the neighbouring cavities. It is almost needless to observe that sufferers from this peculiar form of bronchial irritation should be warmly

clothed. A dry, bracing atmosphere is generally best suited to the relaxed condition of the pulmonary exhalants; but as the affection is usually complicated with local changes, and often accompanied with asthmatic attacks, much depends on peculiar idiosyncrasy as well as on special combinations; and the experience of the patient is often the best guide to what is most desirable, in respect both to climate and locality.

CHAPTER V.

PNEUMONIA.

THERE is perhaps no disease that has received a greater share of attention than inflammation of the substance of the lungs. Almost every circumstance connected with it has been investigated with a zeal commensurate with its importance; and at the present day it may be safely averred, that our knowledge of pneumonia exceeds that of any other internal disorder. The writings of Laennec and Andral in France, and of Stokes, Addison, and Williams in our own country, have mainly contributed to this knowledge; but it must be admitted that to the French pathologists are we chiefly indebted for the accurate information we possess of the anatomical characters, varieties, and peculiarities distinguishing it at different periods of life. The indefatigable Grisolle, investigating with exemplary patience the contributions of the French school, and largely profiting by the observations of our countrymen, has furnished a bulky tome exceeding 700 octavo pages, in which almost every topic connected with it has been discussed. MM. Rilliet and Barthez, and Dr West, have minutely studied the disease in children; and, more to our purpose, MM. Hourmann and Dechambre, availing themselves of the ample opportunities afforded at the Salpêtrière, have sedulously cultivated the inquiry, and their monograph, published in the "Archives Générales de Médecine," 1835, is still the most complete that has appeared respecting the pneumonia of advanced life. In the following sketch of the disease, I shall not hesitate to avail myself occasionally of Grisolle's work and of the interesting essay of MM. Hourmann and Dechambre; and I take this opportunity of acknowledging my obligations to the zeal and industry of these gentlemen,—obligations which have not been acknowledged by several writers on the Continent who have largely

drawn from their labours. They themselves, however, stand much indebted to Andral, in whose works the germ of much they have developed exists.

Frequency.—Of the inflammatory diseases affecting the respiratory organs, the frequency of pneumonia at advanced epochs of life is only exceeded by bronchitis, of which it is very often a consequence; and of all acute diseases, with this exception, and excluding also, as sometimes rapidly fatal, apoplexy and palsy, it is that which destroys the greatest number of old people. Often insidious in its origin and progress, it is occasionally altogether latent, and death is not unfrequently attributed to other causes in old age when pneumonia has chiefly or entirely occasioned it. Pneumonia carried off in England and Wales in the seven years 1848–54 no fewer than 24,572 persons, male and female, of forty-five years of age and upwards, the mortality increasing with age. In a *population* of 539 old men in Chelsea Hospital, whose age varied from fifty-five to ninety-five and upwards, it was the undoubted cause of death of 48 of that number, during the fourteen years ending 1859. "At the Bicêtre, from 1832 till 1835, pneumonia formed very nearly a ninth-part of the cases treated in the wards of that hospital, and about a sixth of the deaths observed in the same period."* "I believe I speak the truth," says Cruveilhier, "in affirming that five-sixths of our old women at the Salpêtrière die from pneumonia."† Every circumstance connected with a disease of such frequency and fatality is therefore deserving consideration; and the immense importance of the subject will, in the estimation of most readers, be held as a sufficient reason for treating it here methodically, and as the only apology necessary for indulging in details some of which possess little value in the eye of the practical physician.

Precise Seat.—There are several points which, being applicable to the disease at all periods of life, I shall either pass over in silence, or merely allude to briefly. One of these points which has much engaged the attention of pathologists in all countries, is the essential seat of the inflammation. That this should have given rise to much discussion, and be still an unsettled question, is not at all surprising, when we consider the nature of the tissues com-

* Prus. Mém. de l'Acad. de Méd., tome viii. p. 1.

† Anat. Path., tome ii.

posing the substance of the lungs, their tenuity, intimate connection, and close approximation. It appears to be the most generally received opinion in Great Britain, that pneumonia has its seat on the internal surface of the air-cells, and that it more or less involves their texture. The disease, however, may commence in one or other of the parts comprising the parenchyma: in one case, the air-cells are primarily affected; in another, the connecting cellular or inter-vesicular tissue; and ultimately the whole may become involved, the inflammation spreading from one tissue to another, though retaining its original site, more particularly or exclusively, with more or less pertinacity. Broussais, "who considered it very difficult to draw the line of demarcation between pneumonia and bronchitis, in which view he is followed by Stokes, contended that the capillaries and the tissue which connects the different vessels of the parenchyma of the lungs, are the seat of the irritation;" "it is certain," says he, "that peripneumonia is, from the moment of its commencement, inflammation of all the sanguineous capillaries of the respiratory organ." A similar opinion is maintained by Dr Williams,* who considers "the capillary ramifications of the pulmonary artery and veins to be the proper seat of pneumonia; and that these may involve more or less of the tissues through and around which they pass." More recently, Professor Hasse of the University of Zurich, has also advocated the origin of the inflammation in the capillary system, though he observes that the parenchyma of the lung "may become primarily inflamed."† MM. Hourmann and Dechambre‡ have endeavoured to explain the granular and non-granular forms of hepatization by the different seat of the inflammation; in the former case the vesicles, in the latter the inter-vesicular cellular tissue, are presumed to be mainly or solely affected; but, as observed by a critic in the "British and Foreign Medical Review," April 1842, whatever be the merits and justness of this suggestion, neither belong to the writers who have just been named—Dr Williams, in the article on Pneumonia above quoted, having previously given the same explanation of the "granular" and "uniform" appearances of hepatization.

Anatomical Characters.—It has been observed by Andral that

* Cyclop. of Prac. Med., Article *Pneumonia.*

† Path. Anat., Syden. Soc. Ed., p. 255.

‡ Archives Générales de Méd., tome x. et xiii., 2d serié.

" the symptoms of pneumonia, the greater or less danger it brings with it, and the modifications which its treatment may undergo, are connected with the different states of the lung, with respect to its different degrees of inflammation." Following the example of Laennec, he therefore commences the history of pneumonia by the description of its anatomical characters, and almost all subsequent writers have adopted a similar arrangement, persuaded that a knowledge of these characters is essential to a perfect appreciation of the symptoms, physical signs, prognosis, and treatment of the disease.

The description of the anatomical characters of pneumonia drawn by Laennec has not been excelled, and since the publication of his views, three stages or degrees of acute inflammation of the substance of the lung have been admitted,—viz., first, *simple engorgement;* second, *red hepatization;* third, *purulent infiltration.* Andral has described these three stages under the names of *engorgement; red softening;* and *gray softening, with simple purulent infiltration, or formation of abscess.*

Accurate as is the account given by Laennec and Andral of the morbid appearances, their description is chiefly applicable to the changes observed in the adult. The rarefied condition of the lung in the aged, its increased lightness, the dilation and rupture of the air-cells, and the presence of carbonaceous matter diffused through its substance, modify the character of the different stages, sometimes in a remarkable degree, and especially affect the second and third stages of the disease, in a manner peculiarly distinguishing the red and gray hepatization of old age from the same stages in the adult, so that it is often as easy to point out the lung of an old person attacked with inflammation, as it is to discriminate between the healthy lung of the different epochs of life.

First Stage: Engorgement.—In this stage, no very material difference is perceived in the appearance of the affected structure, from what is usually observed in the adult. The lung, engorged with blood, is doughy, pits on pressure, and is red or livid, and heavier. It loses its elasticity, and scarcely crepitates, but it still floats in water, and rises above the surface according to the degree of engorgement and permeability of the air-cells. When incised, an abundant frothy, sanguinolent serum gushes from the cut surface, and continues to flow on pressure in greater quantity than in the

adult. The lung is also more friable, and is sometimes as easily lacerated as the spleen; but still it retains a considerable degree of its natural tenacity, and is not so readily torn as it is in the more advanced stages.

This is perhaps the place to observe that Dr Stokes,* reasoning from analogy and the nature of the physical signs, considers that Laennec's first is really the second stage of the disease,—that a stage of irritation has existed previous to the secretion which causes the crepitating râle; and he farther remarks that he has repeatedly seen a condition of the lung, which seems really the first stage, in which the pulmonary tissue is drier than usual, not at all engorged, as in Laennec's first stage, and of a bright vermilion colour, from intense arterial injection. Andral mentions the occurrence of sudden death under what appeared to be an invasion of severe pneumonia, when, on inspection, it could not be discovered that more than an active determination of blood to the affected organ had taken place; and in the neighbourhood of tubercular deposits, as well as in the vicinity of portions of the lungs already in the first and second degrees of hepatization, we not unfrequently find the parenchyma minutely injected, without any apparent secretion into the affected tissues.

The stage of engorgement is usually accompanied in fatal cases with red or gray hepatization, death rarely occurring until the disease has advanced to one or other of these stages.

The circumstances favouring congestion in aged persons are so numerous, that great attention is required to discriminate between it and inflammatory engorgement of the lung. Increased friability of the pulmonary tissue may result, according to Andral, from an accumulation of blood, which may be altogether mechanical, and which may have been established during the last struggle, or may have supervened after death.† It amounts almost to a certainty, however, that when congestion with softening of the texture of the organ exist in a situation opposed to gravitation, it is the result of inflammation.

Second Stage: Red Hepatization—Red Softening.—In this stage the air-cells are either wholly or partially impermeable; the lung has acquired greater density; it no longer crepitates, and

* On the Diseases of the Chest, p. 310.

† Clinique Med. Trans., by Spillan, p. 378.

when thrown into water, it sinks to the bottom with a facility proportioned to the degree of consolidation and absence of healthy texture. Externally, it is smooth, and probably less livid than in the preceding stage; the colour varies; sometimes it is of a reddish-brown or a deep dull red, at others of a violet hue. These colours pervade the affected structure with more or less uniformity, but occasionally different shades of the same colour are observed on the exposed surface, passing into each other, and communicating to it the appearance of certain kinds of marble or granite, a resemblance which is occasionally heightened by the existence of black and drab-coloured points, the former from carbonaceous matter, and the latter from the presence of healthy tissue, or the conversion of the effused matter into pus, and the commencement of the succeeding stage. It is generally darker in the aged than in the adult, owing to the greater abundance of dark pulmonary matter, as well as the greater accumulation of undecarbonized blood. MM. Hourmann and Dechambre describe it as being often of an azure blue, and sometimes black in the planiform variety. When cut or torn, we observe either a perfectly smooth surface, or one which is granular. These varieties of hepatization are not, however, more peculiar to this stage of pneumonia in the old than they are in the adult. They are equally characteristic of the hepatization of old age and the hepatization of children; and though MM. Hourmann and Dechambre have particularly distinguished the *granular* and *non-granular* forms of hepatization in aged persons, the chief difference consists in the granulations being larger in the aged, depending, no doubt, as remarked by these authors, on the increased size of the air-cells at this period of life. The granulations vary in appearance according to the regularity and dilatation of the cells; sometimes assuming a distinct rounded form, "like little red nipples;" at other times, though still prominent, they are less regularly developed, and have a tendency to intermingle one with another. MM. Hourmann and Dechambre inform us that *non-granular* hepatization, with or without friability, may be found in each variety of pulmonary rarefaction, but that lungs offering only a confused assemblage of irregular cells never presented to them red or gray granulations, which appear to have their seat exclusively in those of their two first types of the senile lung. In 88 cases they found,

after carefully examining the structure of hepatization, the granular form highly developed in 70 cases, while in the remaining 18 they could not ascertain the existence of granulations. Hence, hepatization in old people, with granulation, is nearly four times more common than non-granular or planiform hepatization; and these remarks also apply to the succeeding stage of pneumonia.

According to MM. Hourmann and Dechambre, in the majority of cases, red granular hepatization is much less friable than in the adult. It then presents a perceptible resistance, to such an extent that it may be easily divided into thin flexible slices; it is also, as they have observed, lighter, and seldom sinks when placed in water, but remains at a variable depth, sometimes even near the surface, owing, no doubt, to the specific lightness of lungs rarefied by the progress of age.

Third Stage: Gray Hepatization—Gray Softening.—This condition of the lung is characterised, as in the preceding stage, by solidification of its texture and impermeability of the air-cells; the lung is compact, sinks in water, and has ceased to crepitate; instead of the reddish serum which escapes in the second stage, a copious, opaque, yellow pus now flows on incision, and the exposed surface presents a granular or non-granular appearance, and a grayish drab-colour, assuming, as in red hepatization, various shades, and imitating certain kinds of granite, from being interspersed with reddish and black points. The different textures composing the parenchyma are more friable than in the preceding stage; the finger often sinks into the lung on the least pressure, and when squeezed it breaks down into a grayish pulp.

Abscess of the Lung.—The rarity of primary abscess in the lung is now almost generally admitted; and though the researches of Dr Stokes and others have shown that it is not so unfrequent in this country as it appears to be on the Continent, still it is so very uncommon that many of our most accurate observers have never met it as a consequence of pneumonia, independent of other anatomical lesions. The rarefied condition of the lung in old age seems, however, to favour the formation of small abscesses, which are occasionally seen interspersed through the red and gray consolidated tissues, as if certain air-cells had broken down and coalesced during the plastic or suppurative process, and formed so

many sacs for the reception of the effused or secreted matter. Abscesses of this kind are also occasionally seen on the surface of the lung in old people dying from pleuro-pneumonia. That they are connected with the air-cells, and not merely in the sub-pleural cellular tissue is made evident by insufflation. In 16 cases of primary abscess of the lung, collected by Grisolle, 6 occurred in persons above seventy years of age, and 4 in persons of from fifty to fifty-eight years old. M. Mercier found abscesses in 4 out of 29 fatal cases of pneumonia at the Bicêtre. "I know many physicians of the hospital," he remarks, "who, during long experience, have never seen any. The medical constitution may have favoured their production."*

Gangrene of the Lung.—The termination of acute primary pneumonia in gangrene is also more common in advanced age than it is in the adult. In an immense number of cases of pneumonia which I have either examined myself or seen examined, I only recollect one instance of gangrene of the lung succeeding to pneumonia at the middle period of life, whereas in 14 consecutive cases occurring in Chelsea Hospital in the years 1842 and 1843, gangrene of a portion of the lung presented itself twice. Both occurred in the winter of 1843, and might consequently have depended on some peculiar epidemic influence. In one man, aged sixty-five, the upper lobe of the left lung was in the stage of gray hepatization, and there was a gangrenous cavity capable of holding a nutmeg on its anterior surface, with sloughing of the contiguous pleura. The symptoms in this case were very obscure. A few reddish sputa first directed attention to the chest, on examining which the lung was found solidified. Typhoid symptoms occurred very early. The countenance, naturally ruddy, became deadly pale, the eyes sunken, and death happened about six days after the rigor from which the patient dated his indisposition. In the other case, presenting in an old man long subject to chronic bronchitis, the earliest symptoms were suppression of the habitual expectoration, sudden prostration, dulness in the side, with the usual signs of consolidation without crepitation. The breath was exceedingly offensive, and the whole body exhaled a disagreeable, cadaverous smell. Death ensued on the third or fourth day after the fœtor of the breath was perceived, and, as

* Bull. de la Soc. An., 12 An., p. 279.

nearly as could be estimated, about a week from the accession of the pneumonia. On *post-mortem* examination, the greater part of the lower lobe of the right lung was in a gangrenous state. The portion in contact with the diaphragm was wholly destroyed, forming, in the centre of the lobe, a large sloughing, rugged cavity, of a greenish-black colour, containing a quantity of a similar coloured pus, and emitting a most intolerable odour. The remainder of this lobe and a portion of the middle lobe were consolidated, and of a variegated drab colour; the upper lobe was livid, and in the first and second stages of pneumonia. The left lung was sound. I mention these cases out of many others, the notes of which I have not preserved, but which have left a distinct impression on my mind that gangrene of the lung is not unfrequently epidemic in the old.

Side affected, &c.—The same general law appears to prevail in old age as in the preceding periods of life with regard to the lung most frequently affected. In all ages the preponderance is in favour of the right lung; but, according to MM. Hourmann and Dechambre, this preponderance appears to be less obvious in old age than at other periods. In 61 cases occurring in persons above sixty, these authors found pneumonia 34 times on the right side and 27 times on the left; while in 23 additional cases it was double. Grisolle found that above the age of sixty, pneumonia of the right side was as 6 to 1 of pneumonia of the left side. He remarks, however, that his observations on this subject are too limited for any inference; besides which, the patients alluded to by MM. Hourmann and Dechambre were generally much older, and hence the two orders of facts are not quite comparable. My own experience agrees very much with that of MM. Hourmann and Dechambre as to the side affected, the preponderance being slightly in favour of the right lung. The average age of my cases approached seventy. Dr Stokes states, that inflammation of the right lung is oftener of the sthenic, and that of the left lung of the typhoid character.* This may perhaps account for the nearly equal liability of either lung to inflammation in aged persons—inflammation of the right lung still preponderating, but not to the same extent as at other ages, owing to a greater prevalence of typhoid attacks in advanced life.

* Dis. of the Chest, p. 318.

The lower lobes, as in the adult, are more frequently attacked than the upper, and their posterior portions much more so than the anterior. Particular epidemic constitutions influence the first fact more obviously than the second. In rapid examinations we should look particularly for the disease at the inferior and posterior parts of the chest; by rapid, I mean such explorations as exhausted conditions of the patient will only admit of. The minute bronchi are invariably implicated in senile pneumonia, and the inflammation extends to the larger tubes in the majority of cases, so that the distinction of primary and broncho-pneumonia, except as signifying the order of attack, is in reality a distinction without a difference in the aged. Indeed, without reference to any particular period of life, Andral long since pointed out, in his "Clinique Médicale," that inflammation of the bronchi uniformly accompanies inflammation of the pulmonary parenchyma. The pleura pulmonalis very generally participates in the inflammation in the adult. In the aged it is less frequently affected, and the explanation may probably be found in the circumstance, that in elderly subjects pneumonia is oftener a result of the extension of bronchitis than in middle life.

Causes.—Sufficient has already been said to show that old age peculiarly predisposes to this disease. It is to this period of life especially that Laennec's observation seems applicable, that "many persons are seized with it in their very chambers, and in spite of the utmost care taken of their health." Chomel equally insists on the influence of predisposition of an unknown nature in developing the disease. This predisposition will often be found to consist in persistent bronchial irritation, an habitual bronchitis, which is ready, on the exasperation of the disorder, to involve the textures immediately adjacent, and to spread from the minute tubes to the air-cells and intervesicular cellular tissue, the anatomical differences in the tissues opposing a certain barrier only to the diffusion of the inflammation. The abatement of the habitual cough and expectoration, or their entire cessation in these cases, favours the notion that the attack is primary and not secondary, as it really is, to the long-continued original affection. Fruitful sources of intercurrent pneumonia in advanced life may also be found in the frequent existence of carbonaceous and cretaceous indurations in the pulmonary tissue, acting as so many thorns; apoplectic

engorgements; the far from unusual presence of tubercular deposits; and the common parietal and valvular affections of the heart incident to old people, and causing congestion of the pulmonary parenchyma, easily lighted up into a low typhoid form of the disease. The aged are also peculiarly liable to pneumonia on the receipt of severe injuries. A few hours are often sufficient to evoke the disease in that common accident, fracture of the neck of thigh bone.

The most common exciting cause is cold. At both extremes of life the influence of this cause in the production of pneumonia is incontestable, and not less remarkable in old age than in infancy. In London, as in Paris, the maximum number of admissions from the disease takes place in the last and three first months of the year. Dry cold seems to occasion it more than cold with moisture. "At the Salpêtrière, the humid and moderate cold of December," Cruveilhier says, "is observed to cause bronchitis, dry and sharp cold, pleurisy, pleuropneumonia, and pneumonia." A rapid fall in the thermometer in the winter months is often followed by a remarkable increase in the number of primary and secondary attacks in the asylums of the aged; and among the feeble and bed-ridden, pneumonia not unfrequently then assumes a truly epidemic character. They die from a low congestive form of the disease, faithfully described by Andral, and called by Laennec "the pneumonia of the dying," as being common in the moribund, and which Piorry has also described in a very interesting memoir, under the name of "Hypostatic Pneumonia." Congestive pneumonia has been long known to surgeons, and is particularly alluded to by Boyer, in giving directions for the management of fractures. It is much to be dreaded in these accidents in the aged, and in all diseases causing them to keep the recumbent posture. It appears to be chiefly situated in the intervesicular tissue, and is always limited to the depending parts of the lung, though it sometimes involves the whole of the affected lobe.

Symptoms—Mode of Invasion.—As in the adult, the disease may arise suddenly in the midst of sound health, or be preceded for some days by failure of the appetite, general weakness, and erratic pains in the limbs and chest. Occasionally, though more rarely than at other epochs of life, it appears to be the localization of an

inflammatory fever which has existed for several days, and which settles on the lung, stomach, or brain, according to the predisposition and variable susceptibility of the organs. Andral has directed attention to this form of invasion, and observes that, in such cases, the attack is often unaccompanied by any well marked local symptoms. In general, at advanced periods of life, the febrile derangement is not premonitory, but reactive, and, *cæteris paribus*, increases or diminishes with the progress, extent, intensity, and character of the local disease. In the intercurrent attacks so common in aged subjects, the inflammation is usually latent, and may remain wholly unobserved throughout its progress; and in a large proportion of cases succeeding chronic or acuto-chronic bronchitis, its commencement is also very insidious, if not imperceptible. Now, my own experience entirely accords with the statement of Grisolle, that in almost all subjects between the ages of fifty and seventy, it is only developed consecutively to acute or chronic inflammation of the bronchi.* The disease occasionally sets in with the well-marked symptoms almost habitually announcing it at the middle period of life; and even at eighty and upwards, it sometimes assumes a character of intensity that could hardly be expected at so advanced an age. It then only differs from pneumonia in the adult by the rapidity of its progress, the greater prostration, and the brevity of the formative and fully developed periods. The rigors, pain in the chest, febrile commotion, and tension of the circulation, are also more speedily followed by nervous symptoms, and in unfavourable cases the patient soon sinks into a comatose typhoid condition, from which he hardly ever recovers. These symptoms accompany, from the commencement, another and frequent form of senile pneumonia.

The season of the year appears to have a marked influence in promoting the acute or sthenic form of the disease, announced by rigors, febrile heat, and unequivocal pectoral symptoms. At the Salpêtrière, MM. Hourmann and Dechambre† inform us that it always assumes this character in the months of March and April, at which period shivering and pain in the side are more frequent than at any other time of the year. Grisolle also makes a similar remark, with the following suggestive observations: "Chez

* Grisolle, *loc. cit.* p. 183. † 4 Mém., p. 11.

l'adulte, un frisson qui survient au milieu d'un état de santé parfait peut indiquer le début imminent de plusieurs affections, telles qu'une fièvre typhöide ou eruptive, un rheumatisme articulaire aigue, une angine, un érysipèle de la face, &c. Chez les vieillards, au contraire, moins sujet que l'adulte à ces diverses maladies, un frisson violent devra plus specialement faire redouter le développement d'un pneumonie." In general the disease occurs without initiatory symptoms in broken-down constitutions; but I have sometimes seen it preceded by a long protracted shivering in feeble old people who have for years been confined to bed with many of the infirmities of advanced age.

In the preceding form of attack, the disease is developed in an obscure, latent manner. An observation of Pinel the younger,* that pneumonia was frequently seen in the Infirmary of Salpêtrière without pain in the side or expectoration, with a cool skin, and with the respiration almost natural, has been fully confirmed, and is of every-day occurrence. MM. Hourmann and Dechambre state that, in about one half the cases they encountered there, there was neither shivering nor pain. A general malaise and feeling of weakness, slightly accelerated breathing, or irregularity of the respiratory movements, a short interrupted cough, and heat of skin, were the only symptoms which then betokened the onset of the attack. In some cases there were neither heat of skin, cough, nor disorder of the respiration. The patients remained in bed, had impaired appetite, and could give no account of their condition. There were no local symptoms whatever indicating disease of the respiratory organs. MM. Hourmann and Dechambre also notice a very important fact, which I have already referred to, and which, though contrary to what is usually observed, is not unworthy of repetition, viz., that a pre-existing cough and dyspnœa, accompanying an asthma or a chronic catarrh, sometimes cease, or at least diminish greatly the instant pneumonia has declared itself. The aged, however, seldom complain of difficulty of breathing during the progress of the disease, whatever may be the frequency of the respiration, "so that it is incumbent to count the movements of the chest, to avoid all source of error in this respect."

* Consider. sur la Constitution Sénile, et sur son Influence sur les Malad. Aiguës; Arch. Gén. de Méd. 1823.

In some still more obscure cases, observed by MM. Hourmann and Dechambre among the old females at the Salpêtrière, the patients did not even complain of weakness nor discomfort of any kind. Neither nurses, watch-people, nor neighbours, perceived any change in them. They rose, made their beds, walked, ate as usual, and, feeling fatigued, lay down and expired. Such are among the "sudden deaths" at that hospital. In Chelsea Hospital, I have on many occasions seen men present themselves at the infirmary, after endeavouring to work in their gardens, complaining only of some oppression in the chest, or of general weakness without any symptom referrible to the chest, when a physical examination discovered, perhaps, a portion of one or both lungs hepatized. Nay, cases have occurred to me in which men must have thus been going about with a portion of one or both lungs in a state of suppuration. I remember a remarkable instance of this kind, of a man about sixty years of age, who, after travelling fifty or sixty miles by rail, and then walking four miles from the station, died almost immediately afterwards in the infirmary, in whom, along with copious purulent effusion in the cavity of the chest, the left lung was almost entirely hepatized, and in various portions had suppurated.

These obscure and latent forms of attack are frequently met with in aged subjects labouring under chronic disease of the brain, heart, or some other internal organ.

Whatever may have been the exact mode of invasion, the acute form of pneumonia is soon accompanied by a group of symptoms which combine and succeed each other in infinite variety. The patient generally complains of pain or soreness in some part of the chest, flanks, or loins; the respiration is accelerated, and there is more or less difficulty of breathing, with cough, which, usually dry at first, is soon accompanied with a scanty, semi-fluid, grayish, frothy, mucous expectoration, gradually increasing in viscidity. It is still catarrhal, yellow or white. In the fully formed stage of the disease, it becomes glutinous, reddish, or rust-coloured, though not nearly so frequently as in the adult, and throughout the whole period, it sometimes, nay often, presents the ordinary character it possesses in bronchitis. The whole system sympathises with the local derangement. There is increased heat of skin, thirst, loss of appetite and general prostration, with more or less rapidity of the

pulse. At the commencement of the attack, the chest sounds clear on percussion, the respiratory murmur is weak, and in uncomplicated cases free from any admixture of râles, though, in consequence of the usual accompaniment of bronchitis, these are seldom entirely absent. Subsequently, as the lung becomes more and more engorged, and the secretion from the air-cells and bronchi increases, percussion elicits a dull sound in the site of the affected part, and the respiratory murmur is obscured by a moist crepitating, or more generally a subcrepitating râle. In a more advanced period, the dulness is greatly increased, and the crepitation and respiratory murmur are replaced by tubular breathing and bronchophony. The lung being now impervious, and disqualified for its function, the dyspnœa, general distress and prostration, reach their highest degree.

It may not be unprofitable to examine more in detail, though briefly, the local and general phenomena of the disease.

Rational or Functional Symptoms: Pain.—This symptom generally accompanies the attack in some degree, whether the inflammation is limited to the substance of the lung, or extends to the pleura. It is seldom, however, of an intense character, even in pleuro-pneumonia, and is very generally rather an obscure sensation of uneasiness than of actual pain, extending over the site of the disease, or occupying the whole of the chest. Percussion sometimes increases the uneasiness, when the inflammation of the lung is complicated with pleurisy; but in the greater number of cases, where this association exists, tenderness is much less marked than in the adult. It should be ever remembered, that the site of pain, as MM. Hourmann and Dechambre have observed, does not always correspond with the affected portion of the lung, even where there is much suffering. Generally, whatever part of the lung is inflamed, whether the summit or lower lobe, the anterior or posterior surface, the patient points to the lower and fore part of the chest, the pit of the stomach, or the vicinity of the nipple, as the seat of distress; sometimes, though very rarely, to the opposite side of the chest; and not unfrequently to either hypochondrium and loins. The stethoscope is the only safe guide in the application of local measures of treatment, as by it only can the exact seat of the disease be ascertained.

Dyspnœa.—The respiration is generally accelerated, but the dif-

ficulty of breathing is seldom considerable; nor does the entrance of air into the chest usually produce the same amount of distress and painful sensation of tightness that it occasions in the adult. The movements of the chest are sometimes modified in a remarkable manner; occasionally the respiration is slower than natural, and in more rare instances it is interrupted, irregular, and of a jerking spasmodic character. The amount of vascular reaction, and the presence or absence of pre-existing organic disease of the heart, brain, or lung itself, have considerable influence on the respiratory movements, even before the pneumonia is fully developed, and maintain their influence throughout the progress of the disease. As in the adult, the difficulty of breathing is "generally in the direct ratio of the extent and intensity of the disease," though offering many exceptions. It has also been supposed to be greatly influenced by the seat of the inflammation—Andral, Bouillaud, and others, stating, "that, *cæteris paribus*, pneumonia of the upper lobes occasions greater dyspnœa than an equally extensive and equally advanced inflammation of the lower lobes." MM. Hourmann and Dechambre appear to confirm this observation in relation to the disease in old persons, but the researches of Grisolle* show that the decision of these writers is not perfectly just. In 44 cases of fatal pneumonia, carefully selected from their similarity in respect to age and intensity of the disease, and differing only in the seat of the pneumonia, this author found scarcely any difference in the number of respirations in the two descriptions of cases,—viz., in the pneumonia of the upper half, and pneumonia of the lower half of the lung. MM. Hourmann and Dechambre assure us, that difficulty of breathing amounting to orthopnœa, with lividity of the countenance and jactitation, sometimes attends pneumonia of either the right or left superior lobe, but that it is more frequently observed, and generally more marked, in the former case. Such a degree of dyspnœa, amounting to orthopnœa, rarely occurs, however, unless in double pneumonia, or in pneumonia complicated with heart disease, or universal bronchitis. Otherwise, in the majority of cases of senile pneumonia, the respiration is but slightly accelerated, and the patient seldom complains of difficulty of breathing, however short and hurried the respiratory movements may be. A natural and very

* *Loc. cit.* p. 210.

deceptive state of these movements, with absence of all difficulty of breathing, is not unfrequently observed from the commencement to the termination of the disease in extensive consolidation, or even diffused suppuration of the lung.

Cough.—The greater number of patients cough from the onset, but, as in the adult, the cough varies much in intensity, frequency, and character, being modified by different degrees of nervous susceptibility and the nature of the co-existing lesions. Generally it is slight; sometimes it is altogether wanting, or so trifling as neither to attract the attention of the patient himself nor of his ordinary attendants. Usually it is feeble, short, and hacking, and greatly differs in volume from the loud, diffused, tormenting cough of bronchitis.

Expectoration.—The sputa vary greatly in colour, consistence, tenacity, and quantity. At the onset they are usually absent, and only make their appearance with the further development of the disease. Generally they are scanty, expectorated with difficulty, and very liable to be suddenly suppressed; sometimes and not unfrequently, they never appear. The viscid, glutinous, and sanguinolent, or "rusty-coloured sputa," so generally characterising the disease at the middle period of life, are comparatively rare in the old; and when seen, it is usually in the more acute and sthenic attacks occurring in the spring in persons retaining some of the vigour of earlier years. More frequently the sputa furnish very little or no information, as, in the majority of cases, they are catarrhal throughout—opaque, gray, yellow, or green. The consecutive changes and modifications observed in them as the disease advances or declines are also much less constant and regular than in the adult, and pneumonia frequently passes on to the third stage, as already observed, in the old without expectoration, or with a scanty expectoration of thin frothy mucus only. In this, the third or suppurative stage, the sputa are usually serous, and of a chocolate or purplish colour. These, the liquorice or prune-juice sputa of Andral, are perhaps, however, less characteristic of the passage of the pneumonia into the third stage than they generally are in the meridian of life. When met with in old people, it is often at an earlier period, in the stage of engorgement or red hepatization, and they as frequently announce a congestive or typhoid form of pneumonia of an alarming character. Muco-

puriform expectoration is not uncommon, but sputa entirely purulent are very rare. Dr. Stokes informs us that he has never seen them except in cases of active pneumonia in the young and robust.

Decubitus.—Whichever lung is affected, the patient lies on either side with equal ease. In almost every case the decubitus is dorsal, so that we have often to contend with ulceration and sloughing of the nates in protracted cases.

Physical Signs.—In many attacks the existence of the disease can only be determined by auscultation and percussion, and the signs furnished by these means are nowhere more valuable; but they are often greatly modified by the anatomical condition of the lung in the old, and apt to mislead the inexperienced, accustomed only to the disease as it occurs in the adult. Thus, in not a few cases, even of extensive consolidation, there is scarcely any diminution in the resonance of the chest; and the characteristic crepitating râle, announcing the first stage in the adult, is generally altogether wanting. The physical signs vary with the different stages of the disease.

First Stage: Percussion.—During the period of invasion, or of vascular injection, the chest continues to sound clear over the seat of the impending inflammation. As the congestion increases, and the lung becomes more dense and less permeable, the sound emitted may be somewhat duller, but in a vast number of cases there is no appreciable alteration in the resonance of the healthy and affected side until the pneumonia has advanced to the next stage.

Auscultation.—At the onset of the disease, characterised by engorgement of the affected tissue and preternatural dryness of the terminal bronchial tubes and air-cells, the *first stage* of Stokes, the respiratory murmur is often remarkably modified. Sometimes it is *intensely puerile* in the affected part, agreeing with the observation of this author;* at other times, and much more frequently, it is quite the reverse, *feeble* and indistinct. The air-cells appear then to have partly lost their elasticity, and perhaps the minute bronchi, in a state of vascular turgidity, cease to act, so that both murmurs of respiration are perceptibly weakened and otherwise altered. When the respiration is puerile, the respiratory

* *Loc. cit.*, p. 324.

murmur often acquires a rough, broken, interrupted character, apparently from the unequal and imperfect expansion of the lung, and a local bronchial *souffle* is sometimes heard in the interscapulary space, or, less rarely at this period of the disease, in the vicinity of the congested portion of the lung. Tubular breathing is, however, sometimes audible at the root of the lung at a very early period, in cases in which the invasion of the pneumonia is accompanied, in the part affected, by a weakened state of the respiration.

The duration of these modifications of the respiratory murmur is limited and uncertain. In conjunction with other phenomena, they are, however, not unimportant,—and, when associated with febrile disturbance and local irritation, the advent of pneumonia in old bedridden individuals may be often predicted before more obvious and decided symptoms annouuce the existence of the disease.

In the course of an indefinite period, varying from a few hours to one or two days, but most generally very soon after the invasion of the disease, the stage of secretion arrives, constituting the *second* stage of Stokes, the *first* of Laennec and most authors. A mucous or sero-sanguinolent fluid is now poured out into the air-cells, and before expectoration takes place we may detect the existence of the fluid by the occurrence of various moist râles, modified by the state of the breathing, and the consistency, viscidity, and exact site of the secretion; so that, as in the adult, all shades of the crepitating and muco-crepitating râle may be heard. The true crepitating râle of Laennec, accurately compared by Dr Williams to the sensation produced by rubbing a lock of hair between the fingers close to the ear, and, when distinctly developed, almost of itself declarative of the disease, is very seldom present in advanced life. In subjects beyond the age of fifty, and particularly in still more advanced age, between the ages of sixty and eighty, the bubbles composing the pneumonic crepitation are very generally larger, more humid, and less numerous; the râle essentially resembles the subcrepitation of capillary bronchitis, and is very often speedily masked by copious accumulation in the larger bronchi, when it becomes muco-crepitating.

The almost invariable absence of the so-called pathognomonic crepitation in aged persons is fully confirmed by the observations

of Grisolle, Cazneuve, and MM. Hourmann and Dechambre; though it is perhaps difficult to explain the cause of this absence, the fact is unquestionable. Reasoning from what they have observed in this class of persons, MM. Hourmann and Dechambre assign the absence of true crepitation to the increased dimensions of the air-cells in the aged, forgetting, however, that the sub-crepitating râle as frequently accompanies the disease in young children under five years of age, in whom an exactly opposite condition of the cells exists. Having its seat in the minute bronchi, it seems reasonable to suppose that the presence of the subcrepitating râle in the pneumonia of these opposite periods of life, arises from the more generally associated bronchitis, and the diminished energy of the inspiratory efforts by which the obstruction in the bronchi cannot be overcome, nor the air-cells fully dilated. The more feeble and shallow the respiratory movements, the less frequently do we meet with the pathognomonic crepitation. After a violent fit of coughing, by which the accumulated mucus is dislodged, we sometimes catch, in the deep inspiration that follows it, a minute crepitation, but generally it is neither more nor less than a mucous râle, limited in extent, and differing in no respect in the best marked examples of pneumonia in old age from the sub-crepitating râle of capillary bronchitis. It is the localization of this râle that gives it diagnostic value.

The crepitation is seldom long limited to the precise part of the inflamed lung. By reason of the generally associated bronchitis, it rapidly extends over a wider area. At first only weakening the respiratory murmur, it soon altogether masks it; and in proportion as it replaces the sound of pulmonary expansion, so may we judge of the extent and progress of the disease. When we no longer hear this sound, and the general symptoms continue unabated,—when the crepitation continues to spread, and has wholly replaced the respiratory murmur,—then we may anticipate the supervention of consolidation of the lung, with its peculiar phenomena. On the contrary, the return of the respiratory murmur, and the gradual disappearance of crepitation, indicate the resolution of the disease; but the restoration of the affected textures to their normal condition is generally more tedious and less perfect than in the adult—pneumonia which does not seem to have advanced beyond the first stage being very often, in elderly

persons, followed by symptoms of continued irritation of the lung or bronchi.

In the more remote and unaffected portions of the lung, the respiration may be, and often is, puerile. When the disease is situated in the lower lobe, the upper usually gives evidence of increased activity. Puerile respiration is however more frequent in the opposite lung when the disease is extensive, and is then and there very often accompanied with various dry evanescent bronchial râles. In the *immediate vicinity* of the inflamed portion of the lung, the respiratory murmur is commonly weakened, and the extension of the disease is frequently preceded by the diminished sound of pulmonary expansion. In a few hours after we have ascertained this weakening, we often discover in the part a mucous, muco-crepitating, or sub-crepitating râle, announcing the advancement of the morbid process. Increasing intensity of the respiratory murmur in the unaffected lung, or in remote portions of the diseased lung, generally indicates increasing interruption to the passage of air into the pulmonary vesicles, approximation of their walls, and a tendency to consolidation of the affected tissues; but this activity of the respiratory murmur is not always an index of the extent and severity of the disease, no more than is the amount of difficulty of breathing, much depending on associated circumstances, and the nervous susceptibility of the individual.

The rigidity and larger dimension of the bronchi in advanced life are favourable to the development of bronchial respiration; and in situations which have afterwards, on *post-mortem* examination, been found healthy, or only congested, this phenomenon had existed in a marked degree. Bronchial respiration is sometimes the primary physical sign, and very frequently it attends the early stage of the disease; but it is less permanent in its character, and less constant than in the succeeding stage, while, at the same-time, it is usually confined to the root of the affected lung when it is present from the beginning, or accompanies the crepitation of the first stage. Its transitory nature, remoteness, and the absence of other signs of hepatization, such as unequivocal dulness, distinguish it from the bronchial respiration of this stage. The frequency with which it precedes and accompanies crepitation in the pneumonia of old persons, and the facility with which it is pro-

duced, give it importance. Nevertheless, although intensity of the respiratory murmur and bronchial respiration more frequently attend the invasion of the disease in the old than in persons of middle age, I believe they are usually secondary phenomena dependent on the impeded respiratory function of a contiguous portion of lung in a state of active inflammation. They frequently accompany deep-seated central inflammation of the lung, which neither percussion nor auscultation can reach, and which, from the absence of the pathognomonic expectoration, is often entirely latent, or would otherwise remain so.

Second Stage: Percussion.—The signs announcing this stage depend on the consolidation of the affected tissues, and consequent diminution in the quantity of air in the lung. If near the surface, percussion elicits a dull sound; but the disease requires to be pretty extensive, and without intervening healthy structure, to emit the unequivocal dull sound of hepatization in middle age. A slight diminution in the resonance of the chest immediately over the affected portion of lung is all we generally observe in old age. Where there is added to this, resistance to the extremities of the percussing fingers, the consolidation is considerable. In interlobular pneumonia, dulness on percussion is wholly wanting.

Auscultation.—One of the most frequent accompaniments of this stage is tubular breathing. The readiness of its production has already been explained, and it is very seldom wanting in the hepatization of old age. The modifications which the voice undergoes at this period of life affect the sounds dependent on vocal resonance. The fremitus produced by a deep-toned powerful voice is seldom observed, and bronchophony is also occasionally absent; while œgophony is far from unfrequent, the shrill acute tremulous voice of certain old people favouring its production. Taken isolatedly, these signs might occasion an erroneous diagnosis; but in connexion with the history of the case, and the existence of the sub-crepitating or muco-crepitating ronchus in the spot affected, or in some neighbouring portion of the lung, they will seldom mislead an attentive observer, who will soon discover that the œgophony is consequent to the state of the voice; and the dulness on percussion, if equalling that produced by effusion, which in old age is hardly ever the case, is without signs of extrusion, which

would necessarily result were the effusion, as observed by Stokes, so extensive as to cause general dulness.

The passage from the first to the second stage is generally rapid in old age. A few hours after the sub-crepitating râle has been distinctly audible, it is often replaced or associated with the signs of consolidation and obliteration of the air-cells. In one instance I found, on re-examination an hour after my first visit, that a considerable portion of the base of one lung gave out bronchial respiration with dulness, which before presented only the signs of engorgement and secretion into the air-cells.

Third Stage.—The physical signs of suppuration of the lung do not materially differ from those observed in the second stage, and are chiefly tubular breathing, diminished pectoral resonance, and where the voice is sufficiently strong, and the larger bronchi patent, increased vocal vibration and bronchophony. There are no certain phenomena by which the passage from the second to this stage of the disease can be determined. A sub-crepitating, or more frequently a muco-crepitating ronchus, generally exists, and increases in loudness, and in the size of the bubbles with the accumulation in the bronchi, till at length it becomes a gurgling audible in parts removed from the inflamed spot. The tubular breathing and vocal fremitus decrease with the prostration of the individual, and the diminished energy of the voice and respiration. It is only by the succession of the physical signs, the occurrence of a ronchus composed of large humid bubbles in a portion of lung which had previously exhibited signs of consolidation without crepitation, and the coincidence of this state with increased exhaustion, a peculiar dusky cachectic expression of the patient, noticed by Andral, feebleness of the pulse and typhoid symptoms, that we can suspect the supervention of this alarming stage of the disease. If to these are added their sero-sanguinolent sputa, the existence of interstitial suppuration may be pretty confidently announced. But these combinations and states have been observed in cases which had only arrived at the second stage.

Abscess.—The auscultatory signs of the termination of the disease in abscess are very obscure in the aged, inasmuch as tubular respiration, gurgling, and dulness in percussion, often exist where the pneumonia has not passed beyond the second stage.

Besides which, pneumonic abscesses, when they form in aged persons, are generally more or less numerous, of limited extent, and interspersed through the lung. The precise elements of physical diagnosis are therefore very generally wanting. When a large abscess has formed, and communicates freely with the bronchi, the nature of the expectoration, the sudden evacuation of purulent sputa, together with gurgling and cavernous respiration, will enable us to declare the termination of the disease in circumscribed suppuration; but the extreme rarity of such a combination in advanced life will have due influence in cautioning the observer not to give a hasty diagnosis. In broncho-pneumonia there is sometimes a very abundant expectoration of purulent matter from the inflamed bronchi, independently of suppuration of the pulmonary parenchyna.

In concluding these observations on the physical signs of pneumonia, it may be well to repeat that the course they pursue is subject to greater variation in the aged than in the adult, and not always so regular as I have appeared to represent it. The disease may attain the third stage, may pass into diffuse suppuration, or even into abscess, without the usual phenomena of auscultation, all of which are more frequently absent than at the middle period of life. The feebleness of the respiratory efforts is a chief cause of this absence, and the rarefied condition of the lungs another. Lobular pneumonia, as already observed, seldom gives any physical indications of its existence, even when the inflamed spots are near the surface. The second and third stages often arrive without having been preceded by any crepitation whatever; nor is the third stage necessarily accompanied with crepitation. The disease on these occasions appears to pass rapidly through its various stages. It is chiefly in typhoid cases that we observe hepatization unpreceded by crepitation in the adult; and the disease, as it occurs in old age, is often but a variety of this form, locally characterised by a passive and highly congested state of the affected textures, with a low degree of inflammatory irritation. In cases happily terminating in resolution after consolidation of the lung, the occurrence of crepitation, the *râle de retour* of Laennec, is far from constant, complete dulness on percussion, with bronchial respiration, being frequently succeeded, as has been observed by Stokes and Grisolle, by a return of the respiratory murmur without crepitation.

General Symptoms.—The obscurity which frequently envelopes the local phenomena sometimes equally extends to the general symptoms. In many cases, the constitution scarcely, if at all, sympathises with the morbid action in the lung. The disease is then either latent or only to be detected by the ear. Usually, however, there is more or less febrile disturbance, the intensity of which is in direct relation to the nature, extent, and severity of the inflammation, and the remaining vigour of the constitution. The heat of the skin, the flushing of the face, and the general orgasm of the circulation, are rarely so highly developed as they are in the adult, even in the most acute, uncomplicated, and sthenic attacks. If symptoms of this character show themselves at all, it is almost always at a very early period only, and the disease then differs in no essential point, as already remarked, from the pneumonia of manhood, except in the transitory duration of high inflammatory excitement, and the more rapid passage of the first into the second stage. After sixty, and as the patient approaches still nearer the decline of life, the constitutional phenomena are generally of a different description, and very soon, if not from the beginning, the febrile reaction is moderate, obscure, or of an adynamic type. In cachectic and feeble old subjects, debilitated by protracted disease, by hemiplegic seizures, or chronic catarrh, the invasion of the inflammation, and the progress of the general symptoms, as well as of the local phenomena, are usually so unobtrusive as to escape ordinary attention. This is more particularly the case in all consecutive attacks, but the same absence or obscurity of the usual symptoms is not unfrequent in primary forms of the disease. A careful exploration of the chest seldom fails, however, where suspicion has at any time been aroused, to discover modifications of the respiratory murmur, or some dulness on percussion, which, with other circumstances, enable us to form a diagnosis.

In the usual form of senile pneumonia, whether preceded or not by initiatory rigor, several hours elapse before the temperature of the skin is exalted. A slight redness of one or both cheeks is often the first indication of general febrile disturbance. During the first and second stage, the skin continues warm and dry; towards the third stage, or when a fatal termination approaches, it is cold and clammy. The pulse soon becomes small and rapid, the

tongue dry, shrivelled, with difficulty protruded, and covered with a brown fur, gradually getting black. The teeth and gums are incrusted with the same dark sordes. There is not much complaint of thirst, but liquids are taken with avidity when offered. Anorexia is a very early symptom. Slight heat of the surface, with acceleration of the pulse, loss of appetite and cough, or rapidity of the respiratory movements, sufficient to attract the attention of the practitioner though not of the patient or his friends, are often the first symptoms warning us of danger; and among these, complete loss of appetite is not the least important. Some cases are accompanied with constipation; others by diarrhœa. The urine is scanty, generally deep brown, reddish or yellow, while the disease is at its height. There is great prostration, increasing rapidly. Delirium of a low muttering kind is seldom absent, and increasing during the night-time, compels vigilance on the attendants, as aged subjects are then much disposed to leave their beds, and wander about the room. The blood is slightly buffed, the crassamentum not very firm. If the countenance is not dusky, it is generally sallow, especially towards the unfavourable termination of the disease, or as it enters on the suppurative stage. This change in the appearance of the face is always a dangerous symptom.

With the progress of the inflammation, and the nature and extent of the alterations going on in the lungs, the oppression of the chest and the difficulty of the breathing increase. Pain in the side is frequently absent, or disappears at an early period, and the expectoration generally ceases with the increasing prostration. The patient often dies asphyxiated, though the disease may be limited both in extent and degree. A series of cases sometimes terminate unfavourably, and the local mischief is found only implicating a small portion of the lung, the disease being still perhaps in the first stage, or partially passing into the second; while in other instances nearly the whole of the lung is seen infiltrated with purulent matter where the febrile reaction has been trivial, if at all observable.

Exceptional cases are thus constantly occurring, both as regards the physical signs and general symptoms. Respecting the latter, the chief circumstances to be remembered are, that whatever may be the mode of invasion, whether acute or insidious, with or with-

out rigor, the accompanying fever has a strong tendency to assume an adynamic or typhoid type, and, if unchecked by judicious treatment or the conservative powers of the system, is soon marked by profound prostration, nervous debility, and coma. Asthenic pneumonia sometimes appears epidemically in the hospitals of the old; and it would seem that the adynamic fever of which Pinel has left a description, as prevailing among the old inmates of the Salpêtrière, was only a form of this disease, accompanied with great prostration, blackness of the tongue and other phenomena, often characterising it in advanced life.

Progress and Duration.—The disease runs through its various stages more quickly in the aged than in the adult, and, as a general rule, the older the patient the sooner does purulent infiltration or gray hepatization commence. The progress of the disease is greatly influenced by the treatment, the habits of the sufferer, and the nature of the inflammation. Complicated and consecutive pneumonia is more rapid. The primary and adynamic form usually runs its course towards a fatal termination in six, eight, or ten days.

The difficulty of estimating the duration of senile pneumonia is increased when we attempt to define the duration of its different stages. Where the disease is often obscure in its origin, and influenced by so many circumstances in its progress, it is obviously impossible to ascertain with any approach to accuracy the average period these stages attain maturity. The passage from the first to the second stage is generally rapid. We have often all the signs of consolidation where only two or three hours before there was no dulness—nothing but feeble respiration, with or without the sub-crepitating ronchus. In the asthenic or adynamic form, hepatization appears frequently to take place without having been preceded by any crepitation whatever, the albuminous and other products of the inflammation rapidly filling up and obliterating the air-cells. M. Beau alleges that in these cases the disease chiefly affects the interstitial, or, in other words, the extra-vesicular tissue of the lung. The physical signs appear to favour this view. Congestive pneumonia usually selects this seat, catarrhal pneumonia the air-cells.

Laennec, in endeavouring to fix the duration of the various stages, remarks, that "in debilitated or very old subjects, or where the disease has supervened in the course of another severe malady,

the inflammation reaches the stage of purulent infiltration in the short space of thirty-six or even twenty-four hours; in other instances it varies from two to six days." This is perhaps all that can be safely asserted. Admitting that in many cases we can pretty accurately announce the passage from the first into the second stage, and thus, in these instances, have it in our power to estimate the duration of the first stage, we have no means by which we can positively declare that purulent infiltration has taken place, and therefore none by which we can form an idea of the duration of the second, prior to its termination in the third stage, supposing that purulent infiltration is invariably preceded by red hepatization, a supposition the truth of which is by no means demonstrated.

The opinion that pneumonia runs through its different stages more rapidly in the old, has been questioned by Grisolle,* who, in consulting his own experience, and comparing the cases of individuals comprised between the ages of sixty and seventy, with those of subjects less aged, does not find that there is any remarkable difference as to the greater or less rapidity with which pneumonia passes from the first into the second stage. It is possible, however, he adds, that in more advanced old age it may be different, but he knows no facts that positively demonstrate it.

The mean duration of 109 carefully recorded cases was found by MM. Hourmann and Dechambre to be nine days seven-tenths. It is not stated of what description these cases were. The duration of the disease in the adult is reported by Andral to be eleven days; by Chomel and Laennec, from seven to twenty days; and by Bouillaud, from eight to twelve days. Thus, observe MM. Hourmann and Dechambre, the progress of pneumonia is constantly more rapid in the old than in the adult. In 33 successful cases, the same authors found the mean duration of the disease was fourteen days three-tenths; whilst in 76 fatal cases it was but seven days seventh-tenths.† In 20 cases of suppuration of the lung, M. Durand-Fardel found the duration of the disease was five days seventh-tenths.‡

Convalescence, usually rapid in the adult, is tedious and imperfect in the old; sometimes it is retarded by œdema of the lung; at other

* *Loc. cit.*, p. 304. † Ibid., p. 15. ‡ Ibid., p. 499.

times the inflammation lingers here and there, and is often succeeded by persistent congestion of the bronchi, with all its consequences.

Prognosis.—The prognosis is thus almost always unfavourable, even supposing immediate danger past. After sixty this danger greatly increases with advancing years. The complicated and associated states of the disease are more fatal than the more simple and primary forms. Lobular pneumonia, being generally consecutive to or connected with a cachectic state of the system, is seldom recovered from. It is, however, detected with difficulty. Asthenic attacks generally terminate unfavourably. Perhaps about eight-tenths of those seized with pneumonia above seventy years of age perish (Grisolle). Chomel states that when an interne at the Salpêtrière in the winter of 1810–11, during which the disease was very common in that hospital, it was constantly fatal in persons above seventy.* At that hospital and the Bicêtre, the mortality it occasions is sometimes appalling, and far exceeds what is ever met with in this country. In both hospitals the predisposing and exciting causes are prevalent, and during the winter in active operation. Besides which, there, as in most institutions for the aged, there is often more or less reluctance to enter the infirmary, so that, together with the insidious origin and rapid progress of the inflammation, it has very frequently gone on to the second or even the third stage before it has been brought to notice. I believe that when it reaches the latter stage in the old it is invariably mortal.

Our knowledge of the extreme danger of the disease in advanced life should redouble our exertions to discover it at an early period, and not disarm us. It is of more consequence to the practitioner to be aware, as M. Durand-Fardel has remarked,† that at every period of life, even beyond the age of ninety, primitive pneumonia may be cured when taken in time and properly treated, than to be able to give the exact proportion who die out of a given number at a given age. In 1842 a decrepit octogenarian in Chelsea Hospital recovered after nearly the whole of the left lung was consolidated; and in the spring of 1860 I had a feeble cachectic old man of seventy years of age under my care, with pleuro-pneu-

* Dict. de Méd., Art. *Pneumonie*, p. 391. † *Loc. cit.*, p. 506.

monia of the same side, followed by extensive effusion, who also got quite well. I might adduce other instances of remarkable recoveries in cases apparently desperate.

In estimating the probable termination of the disease, the physician will be much influenced by the character of the accompanying fever, the nature of the inflammation, and the previous habits and condition of the patient. The state of the respiration is a very important element in the question. The greater the dyspnœa and difficulty of expectoration, the more cautious he will be in prognosticating a favourable issue. Nor should the absence of dyspnœa put him entirely off his guard, as many cases occur which are throughout free from it, but which nevertheless are rapidly mortal. Delirium is a very unfavourable symptom. Laennec observes, that "when the determination of blood to the head is very great, and marked by coma in the beginning of the disease, as is often the case in old persons, the patients in whom it occurs usually die before hepatization is completely established; or the inflammation reaches the stage of purulent infiltration in a few hours." Our apprehensions of an unfavourable termination are generally verified when the delirium persists, and is of a low, muttering kind. Coma, with failure of the pulse and hurried breathing, very frequently precede death but a few hours. Inflammation of the upper lobes is, *cæteris paribus*, more dangerous than when seated in the inferior lobes. Double pneumonia in the old is almost invariably fatal.

Diagnosis.—The invasion of the disease is sometimes so insidious, and its progress so masked, that all the energies of the practitioner are required to find it; with every attention, it occasionally escapes detection. I have already alluded to cases of latent pneumonia in which even the physical signs are wanting. This form of the disease is peculiarly disposed to attack bedridden or feeble old people, labouring under chronic disease of the brain, heart, or some other internal organ, in whom most acute inflammations, wherever situated, are usually but imperfectly developed. Primary pneumonia is always more easily discovered than secondary attacks; and the lobular form of the disease, so frequently dependent on a reduced or cachectic state of the system, is, as formerly remarked, usually unrevealed. M. Grisolle has so very faithfully and clearly laid down the general principles

of the diagnosis of senile pneumonia, that I cannot refrain from giving the reader the benefit of the author's observations in his own words :—

"La fièvre," says he, "et les phénomènes sympathiques, fournes, par l'expression de la physionomie et par l'état des forces, sont des élémens de diagnostic très important, surtout chez les vieillards. Nous avons vu précédemment, qu'à cette époque de la vie, la pneumonie étant souvent latente, le point de côté, les crachats caracteristiques peuvent manquer souvent il n'y a pas d'oppression, et l'examen de toute la poitrine, ne fait découvrir aucune alteration dans le bruit respiratoire, parce que la phlegmasie siége dans les parties profondes et centrales de l'organe. Cependant, malgré les résultats purement négatifs que donne l'exploration des organes thoraciques, si on apprend que le sujet, apres avoir éprouvé un frisson plus ou moins violent, a été pris d'une fièvre intense, si on constate que cet appareil fébrile continu, date déja de plusieurs jours, et qu'il s'accompagne d'une alteration notable dans l'expression du facies et dans l'état des forces, si l'examen de la surface de la corps et des organes contenus dans les cavités splanchniques, ne fait découvrir nulle part de phlegmasie, on devra regarder l'existence d'une pneumonie comme *infiniment probable ;* et dans la plupart des cas, les symptômes ultérieurs ne tarderont pas à transformer cette présomption en certitude. Ici les doutes du médecin se fondent sur plusieurs ordres des considérations : 1°, Sur la fréquence des pneumonies chez les vieillards ; 2°, Sur ce que de toutes les phlegmasies qu'on observe à cet âge, il n'en est point qui si montre plus souvent qu'elles, d'une manière latente ; 3°, Parce que de toutes les maladies aigues dont les vieillards peuvent être atteints, c'est la pneumonie qui excite la fièvre la plus intense, prostre le plus les forces, réveille le plus grand nombre des sympathies sans déterminer presque des troubles fonctionnels du côté de l'organe malade ; tandis qui si une phlegmasie assez intense pour avoir excite la fièvre, qu'on observe s'était declarrée dans un des organes contenus dans la tête ou l'abdomen, on observerait des desordres fonctionnels qui feraient aisement découvrir le siége de la maladie. Chez les enfans et les jeunes gens, et souvent même chez les adultes, un appareil fébrile intense, qui a débuté par un frisson violent, et qui ne s'accompagne d'abord d'aucun désordre fonctionnel prédominant, se rattache beaucoup

moins necessairement qui chez les vieillards, à l'existence d'une pneumonie.

"Chez les vieillards, il faut tenir compte de tous les troubles fonctionnels qui surviennent un peu de malaise, de la fièvre, doivent toujours éveiller la sollicitude du médecin, et le porter à en rechercher la cause, le point de départ. A cet âge, un mouvement fébrile, précedé de frisson qui dépasse la durée de la fièvre éphemèrie, et qui ne trouve point son explication dans une phlegmasie appréciable à la vue, ou par des symptômes locaux, doit faire soupçonner une pneumonie; si la fiévre persiste quatre à cinq jours dans une saison, ou les pneumonies règnent, elle suffira pour au médicin, non pas une conviction entière, mais une forte présomption que le mouvement fébrile se rattache à une pneumonie. Ces preceptes sont ceux de M. Chomel."*

In obscure and doubtful cases, unaccompanied with cough or any apparent dyspnœa, both these symptoms may sometimes be produced by successive deep inspirations; and abdominal pressure seldom fails to develop some dyspnœa of a character different from that slight embarrassment produced by a similar means in subjects free from disease of the respiratory organs. Cruveilhier states† that the characteristic sputa are occasionally obtained by coughing after swallowing some mouthfuls of liquid; but often there is no expectoration whatever. It is in these obscure cases that, Addison‡ observes, "an ordinary examination of the chest may fail to detect the disease. On desiring the patient to breathe, neither crepitation nor tubular respiration can be heard; but on urging him to inspire violently, and to cough, both signs became sufficiently developed to declare the presence of the disorder." Powerful percussion will also sometimes bring out deep-seated dulness when ordinary percussion fails.

By percussing the chest, and applying the ear or the stethoscope, not hurriedly but carefully and repeatedly, whenever there is fever without obvious local cause, the practitioner is often rewarded by the discovery of a modification in the respiratory murmur, or a crepitation in the lung, probably limited to a small spot, which of itself intimates little, but which, in combination

* *Loc. cit.* pp. 490, 491–502. † Anat. Path., tome ii. p. 2.

‡ Guy's Hospital Reports, vol. iv. pp. 14, 15.

with other phenomena, warrants the suspicion of impending or existing pneumonia.

Now, the disease with which we would most likely mistake a case of this kind, would be bronchitis, since the râle of the first stage of the pneumonia of old people is, in the greater majority of cases, but the mucous or the sub-crepitating râle, equally characteristic of capillary bronchitis. In the latter disease, however, the râle is more diffused, and usually extends over the base of both lungs; whereas in pneumonia it is more or less limited to a circumscribed spot, perhaps of the breadth of two or three fingers; and when the pneumonia is double, the inflammation generally attacks the opposite lung consecutively—it may be several days after the accession of the disease in the lung primarily affected. Bronchitis usually attacks both lungs simultaneously. But the circumstance which gives precision to the diagnosis is increasing dulness in pneumonia; and where this is conjoined with sanguinolent or scanty and viscid expectoration, or its cessation, the diagnosis is established.

It is only in advanced stages that the disease is likely to be mistaken for pleurisy. The history of the case, and the existence of crepitation in the vicinity of the portion of the lung yielding dulness on percussion together with bronchial respiration, and where the voice is at all strong, thoracic vibration, point out that the consolidation of the pulmonary parenchyma is pneumonic, and not the result of the pressure of effusion. Besides which, as I have formerly observed, an effusion sufficient to cause universal dulness on percussion would be accompanied with obliteration of the intercostal spaces and descent of the diaphragm, or displacement of the heart, circumstances which of themselves would be almost sufficient to enable us to declare that the dulness and absence of the respiratory murmur proceed from copious pleuritic effusion and not from pneumonia. Moreover, blowing respiration, or tubular breathing, arising from spurious consolidation, consequent to pleuritic effusion, is of a subdued character, and generally without any admixture of râle. In asthenic and typhoid pneumonia, in which a rapid hepatization very frequently takes place without preceding crepitation, the diagnosis chiefly rests on the facts previously noticed, the absence of the signs of eccentric displacement, and the existence of vocal fremitus. When ægo-

phony accompanies senile pneumonia, it always proceeds from the natural, tremulous, bleating character of the voice, and is not likely to deceive an attentive observer.

The diagnosis of pleuro-pneumonia is founded on a combination of the signs and symptoms of simple pneumonia and simple pleurisy. The chief of these are pain in the chest, aggravated by percussion; ægophony, or a to-and-fro friction sound; and the presence of the mucous or sub-crepitating râle in some portion of the chest, generally in the vicinity of the pleuritic stitch, with or without expectoration.

Varieties, Complications, and Forms.—Besides sthenic and asthenic pneumonia, all the other forms, complications, and associated states of the disease occurring at the middle period of life, are also met with in the old. These have been described with much minuteness and great industry by various authors. The *bilious* variety is seldom seen in advanced life, but vomiting, gastric, gastro-hepatic, and gastro-enteric symptoms occasionally, and not unfrequently, present themselves. Diarrhœa sometimes occurs at a very early period, preceding or ushering in the disease, and especially accompanies adynamic pneumonia, with which, however, it is not necessarily associated, but, when present, an important symptom, influencing the progress of the disease, complicating the treatment and increasing the danger.

Broncho-pneumonia is the usual state in which the disease exists in old persons. So very commonly is inflammation of the air-cells and intervesicular tissue, forming the parenchyma of the lungs, and inflammation of the bronchi united, that, as formerly hinted, it may be questioned whether pneumonia, however limited, ever presents itself at this period of life without this combination. The bronchitis is very often the primary affection. We have already noticed the frequency with which pneumonia is consequent upon the acute and chronic varieties of this disease. In this consecutive and very common form, one or both lungs may be affected, but usually the pneumonia is confined in the first instance to one side, while both sides are engaged in the primary or bronchitic affection. The history of the case will generally enable us to determine the precise nature of the malady; but whether the pneumonia is primary or secondary, the circumstance of the associated bronchitis has no material influence on the treatment. The prog-

nosis will be regulated by the severity of the local symptoms and the general condition of the patient.

If, in the course of an acute or acuto-chronic catarrh, the expectoration suddenly diminishes, or, still more so, entirely ceases, while the general symptoms are aggravated, particularly if the heat of the skin is much increased, the supervention of pneumonia may be suspected, and our suspicions will be confirmed if, on examination, we discover dulness in any portion of the lung where the sound had previously been clear. The expectoration in broncho-pneumonia generally gives little or no information, as it usually continues catarrhal; and auscultation as often fails to detect any change in the character of the mucous ronchus which had from the beginning accompanied the bronchitis. The occurrence of rusty or "marmalade" sputa, with aggravation of the general symptoms, would convert suspicion into a certainty that pneumonia had succeeded to the original disease, even though the signs of consolidation were absent. Broncho-pneumonia is a common termination of influenza in the aged, and generally the immediate cause of death when that disease is epidemic.

The *rheumatic* and *gouty* diatheses influence the character of pneumonia in some cases, and a metastasis of either disease to the lungs is said to have proved fatal. Broussais, as I have observed in the preceding chapter, considered pneumonia as a more common effect of gout than bronchitis. I have already stated my belief that gouty bronchitis, or bronchorrhœa, is much more common. In the course of a pretty extensive experience among old gouty subjects, I do not remember to have seen a single example of gouty pneumonia unpreceded by catarrh, and of which it did not appear but the sequela. Grisolle* has met with pneumonia complicated with articular rheumatism in two cases only; and he states that MM. Chomel and Requin do not speak of this complication in their monograph.

A remittent and intermittent pneumonia have been described, and the intermittent form is sometimes observed in aged persons. The following are the remarks of M. Beau on this subject, and I quote them, as I have seen such cases much less frequently than this author appears to have done :—"Under the influence of treat-

* *Loc. cit.*, p. 175.

ment, pneumonia in old age very often presents an intermittent character—all the symptoms, physical as well as rational, sometimes ceasing (after a bleeding, for example) for an entire day or so, to return perhaps on the following one, with its accustomed, or perhaps aggravated severity. This temporary *lull* of the symptoms may occur three or four times in the course of the treatment. Hence the necessity of the physician being very guarded in his prognosis as to the ultimate issue, and of his being cautious in giving an opinion respecting the probable duration of the disease; for a patient may be seen to be one day on the fair road to recovery, and the very next his case may turn out to be perfectly hopeless."*

A remarkable mobility or shifting of the physical signs of the disease has been observed, and appears to belong more particularly to broncho-pneumonia. Occasionally these signs disappear for a time, to return again, or they become audible in some other portion of the lung, which was free from them a few hours before. In turn they cease here, and are heard elsewhere. It is not improbable that in these cases a temporary congestive lobular pneumonia is set up, where the stethoscope discovers crepitation, with bronchial respiration, or a limited and equally temporary splenisation, as it is called, of the lung occurs, which disappears from one spot to arise in a neighbouring portion. Around these circumscribed points the respiratory murmur is often very feeble, showing a congested and inactive state of the air-cells, passing into inflammation, or into that condition attended with the rather indistinct and passing physical signs referred to.

Treatment.—Pneumonia in the adult, presenting no anomaly, and following a regular course, is one of the diseases the medical treatment of which, until lately at least, has been considered as the most simple and most rational. The senile constitution, and the complications which often accompany it, render it necessary to modify the treatment in many respects, and the rapidity with which the disease runs its course in old age demands corresponding solicitude. Here delay is fatal, and in too many cases the inflammation will be found to have attained the second, or even the third stage, before advice is sought, when little more can be done than to alleviate particular symptoms, and maintain the strength

* Journal de Médécine and Med. Ch. Rev., April 1844.

of the patient. It is in public practice especially that such cases present themselves, and here it is that the rate of mortality, and the inefficacy of remedial means, are often truly disheartening. Taking primary sthenic pneumonia as the most simple form,—as that which nearest approaches the pneumonia of earlier years,—I shall endeavour to sketch in outline the plan of treatment adapted to the generality of cases in the aged, passing briefly in review, in the first place, the various remedies usually employed. A somewhat similar arrangement will be followed in considering the treatment of the asthenic and adynamic form of the disease. Particular circumstances and complications may then be appropriately considered.

1. Sthenic Pneumonia. *Bleeding.*—It is well known that this is the means above all others on which British, and the majority of Continental and American practitioners, chiefly rely in the treatment of the more active and sthenic forms of pneumonia occurring in adult life, though, as above hinted, some diversity of opinion has recently been promulgated and enforced, particularly since Louis threw doubts on its influence in retarding or curing the disease. Blood-letting has, however, been altogether forbidden in the pneumonia of old age and young children, under the apprehension of inducing a fatal collapse, or of rapidly increasing the debility of the patient to a dangerous extent; and some of the most strenuous advocates for the remedy in the pneumonia of the adult have either proscribed it, or, less positive in their denunciation, have advised us to be very sparing with it in advanced life. Aged persons affected with pneumonia have thus, says Andral,* been often left to die because the physician did not dare to bleed them. "Nevertheless," remarks Grisolle, "these fears are exaggerated. The age of the patient cannot be an absolute contra-indication to the employment of bleeding, though the consideration of age ought to engage the physician to be less lavish with it."†

In the sthenic pneumonia of advanced life, occurring in vigorous habits, general bleeding is sometimes as imperatively demanded as it is in less mature years; nor ought old age to prevent us from repeating the operation whenever the circumstances appear to require it. We are told that Frank bled a man eighty years old,

* Clin. Méd., trans. by Spillan, p. 405. † *Loc. cit.*, p. 566.

whose life was in danger in consequence of severe pneumonia, eight times with success. Following to a certain extent the example of this physician, I have on more than one occasion, in certain epidemic states, bled octogenarians affected with sthenic pneumonia once or twice during the day, and repeated it to the same extent the following day, with the happiest results. Grisolle* found five out of six subjects above sixty years of age sufficiently vigorous to bear venesection with advantage. Cruveilhier says,† the principal remedy in the old, as in the adult, is blood-letting, when employed within the first twenty-four hours. "It is hardly conceivable," he observes, "how well old people of eighty, eighty-four, and eighty-eight bear bleeding." Durand-Fardel‡ tells us that he has seen the disease arrested in the first stage, in a female of ninety-two years of age, after two bleedings to the extent of ten or twelve ounces each, in the space of twenty-four hours, without the patient experiencing any apparent inconvenience. The timid will gain encouragement in recommending this measure in senile pneumonia, from the recollection that it has the support of not only these authorities, but of such men as Chomel, Williams, Hourmann and Dechambre, Canstatt, and other equally eminent physicians, whose names do not occur to me at present; and he will find numerous cases recorded by M. Foucart in the "Archives Générales de Méd.," tom. vi. p. 87, &c., tending to prove the utility of the remedy, and of the antiphlogistic regimen in general, in many of the diseases of old people, and particularly in the acute affections of the thoracic organs.

The same general rules for the abstraction of blood in the pneumonia of the adult apply to the pneumonia of old age. It would be hazardous, and no judicious practitioner would attempt it, to endeavour to cut short the disease by a large and full bleeding, as in the young and the robust; but general bleeding in advanced life has the same relative therapeutic value as it has in younger subjects. The amount of blood to be taken, and the question of the repetition of the operation, must depend on the peculiar circumstances of individual cases. Six or eight ounces may be reckoned a proper bleeding for a person suffering from acute sthenic pneumonia, whose age does not exceed seventy or seventy-five; but the duration of the disease, the intensity of the fever, the

* *Loc. cit.*, p. 566. † *Loc. cit*, p. 2. ‡ *Loc. cit.*, p. 544.

strength of the pulse, the state of the breathing, and the immediate effects of the remedy, are the chief guides in these respects. The patient should be bled sitting in bed, and the moment an impression appears to be made on the pain, the breathing, or action of the heart, the arm should be bound up. Generally speaking, venesection should be restricted in the aged to the first twenty-four or forty-eight hours of the disease, during which the vascular turgescence and orgasm of the circulation are at their height. After that, and in all doubtful cases, cupping should be preferred, unless the indications for general bleeding are obvious.

Having thus stated the views of others, as well as my own, on this highly important question, I am once more anxious not to be misunderstood. Although I have recommended bleeding in sthenic pneumonia occurring in vigorous constitutions, irrespective of age, still I feel bound to observe that the cases requiring and admitting it are in reality few. Occasionally a succession of cases occur in which bleeding appears to be imperatively demanded; but, on the other hand, still more frequently, we dare not bleed. Of late years these cases have been increasing. A low form of pneumonia, not exactly of an adynamic type, is more common than it used to be, and for one case now suited to bleeding, we meet with at least a dozen that would be injured by it. In the autumn of 1860, and winter of 1860–61, out of at least twenty cases, I have not once bled, or felt called upon to bleed. My views of the proximate nature of the disease are not changed. It is not here as in apoplexy, in the pathology of which our knowledge has greatly extended. I believe that if there is any disease more than another likely to be benefitted by blood-letting, or which pathologically and physiologically suggests and warrants this measure more than another, it is acute sthenic pneumonia occurring in sound constitutions. Inflammatory diseases have changed their type, or the powers of the system are now-a-days less vigorous than formerly, and succumb more speedily, decidedly, and unresistingly, to loss of blood and active treatment. Thirty years ago and upwards, bleeding was the sheet-anchor in most inflammatory diseases, and in none more extensively and more successfully employed than in pneumonia; but disease has assumed a different character, and the attentive observer knows full well that, as

Sydenham long ago pointed out, there are certain years and certain seasons in which active measures, and blood-letting in particular, can neither be had recourse to with benefit nor safety. We are now in this cycle or "constitution." It is protracted, and has long been oscillating, though seemingly ever advancing; and if it go on advancing, the present generation will live to see bleeding expunged from the list of remedies in this as in most other diseases. The next may see fit to revive it.

Emetics.—Remedies of this class are much employed on the Continent in the beginning and also during the progress of the disease. Both French and Italian physicians laud them. From my own experience of their effects, I cannot speak so confidently of their utility in pneumonia as in bronchitis, in certain states of which they occasionally appear to snatch the patient from impending dissolution. They are serviceable, however, in cases accompanied with gastric disturbance or copious bronchial accumulation. When not contra-indicated by any special cephalic complication or cardiac affection, M. Durand-Fardel,* following apparently the usual practice of Cruveilhier and Prus (at the Salpêtrière?), has recourse to an emetic in the first instance in senile pneumonia, whether the disease is then met with in the first or second stage. He gives a scruple or a scruple and a half of ipecacuanha with a grain or two of tartar emetic, which dose is repeated two or even three times, and followed up in a few hours by bleeding. This treatment, he observes, usually diminishes the dyspnœa, facilitates expectoration, and sometimes removes the pain in the side. He has never seen any inconvenience from it, and rarely any contra-indication to it, except in a far-advanced stage of the disease. It should be perfectly understood that the aged bear emetics much better than might be supposed; and in a disease of so much danger, any safe and promising addition to the resources of our art is worthy of every consideration.

Tartar Emetic.—The employment of this powerful medicine in large and repeated doses in the pneumonia of old people is contra-indicated. A collapse is apt to ensue, which, by its continuance and profound impression on the nerves of organic life, is more dangerous than the immediate but less injurious consequences of moderate general blood-letting. We cannot regulate the effects of

* *Loc. cit.*, p. 548.

full doses of tartar emetic, but we can measure the impression on the system in venesection almost to a nicety. These doses have not only a most depressing influence, but very generally they occasion vomiting and purging, which sink the powers of life rapidly. Tolerance of the remedy is seldom attained in the old.

The objections, however, to heroic doses, the Rasorian method, do not maintain when the remedy is cautiously administered, as a sedative, or diaphoretic and expectorant, in doses of the eighth or twelfth of a grain every two or three hours. In doses of a sixth or quarter of a grain, it is a valuable medicine in sthenic attacks, often obviating a second bleeding; and in doubtful or less acute cases, it is an admirable substitute for venesection. It ought not to be given where there is associated gastric or gastro-enteric irritation, as it is then liable to aggravate the symptoms, and induce a colliquative diarrhœa. I have never seen it occasion diphtheric inflammation, which seems, however, to be one of its consequences when administered largely, because I never venture to give it but in fractional and moderate doses. It should be distinctly understood that its use in senile pneumonia is limited to the more sthenic attacks of the disease, resembling similar attacks in the adult; and it should not be persevered in after the acute symptoms have subsided, except in infinitesimal doses, such as the twelfth or sixteenth of a grain. On the Continent it is not thus restricted, and is sometimes prescribed with opium, partly to guard against it attacking the bowels.

White Oxide of Antimony.—There are few medicines the virtues of which are so equivocal as the one in question. The greatest diversity of opinion exists among authors as to its effects; some maintaining that it is altogether inert, others that it is a substance of great value in the treatment of pneumonia, possessed of powers not inferior to tartar emetic, and a more safe remedy than it in old age. It is certainly less depressing in its operation; but as it is usually combined with other substances, in this country with calomel, its influence on pneumonia requires further observation. It may occasionally replace tartar emetic where this preparation cannot be borne, but whether preferable to it is very doubtful. Like tartar emetic, it is prone to occasion diarrhœa.

This is the most convenient place to mention that a strong infusion of ipecacuanha is much used in the treatment of pneu-

monia by Professor Broussonet of Montpellier. It is said to possess qualities equalling those of the different preparations of antimony. M. Rességuier, who reports this mode of treatment in his Clinique of the General Hospital at Montpellier, as quoted by M. Durand-Fardel, says, "Ipecacuanha is especially a heroic remedy in the pneumonia of old people, in whom the weakness of age creates in us a dread of the asthenic effect of bleeding. It excites the vitality of the pulmonary organ, and places it in a condition favourable to the resolution of the inflammation."

Nitrate of Potash.—A prejudice exists among German practitioners against the use of this salt in the thoracic phlegmasiæ of old people, principally, it seems, from a belief of its debilitating and depressing effects. In my hands, I cannot recollect a single instance in which it appeared to have been hurtful; and as far as my experience goes, I am much disposed to recommend it as a safe, salutary antiphlogistic, either alone or in combination with small doses of tartarized antimony. During the increment of the disease, and while inflammatory reaction is evident, administered in doses of four or five grains every five or six hours, it assists in reducing the orgasm of the circulation, and, by acting on the kidneys, it quietly determines from the lung without diminishing vital power. On the Continent, especially in Germany, the hydrochlorate of ammonia is preferred, an opinion prevailing that it diminishes vascular action, and promotes expectoration without inducing debility. I have had no experience of this medicine in pneumonia, but in bronchitis it seems to fulfil the expectations formed of it.

Purgatives.—Active purgative medicines have little effect in controlling the advance of the disease, and by reducing the powers of the system are positively injurious: it is not here as in bronchitis, where super-secretion may often be removed or prevented by the administration of an active cathartic. In the first instance, it may be advisable to prescribe a dose of colocynth and calomel, or the black draught, to procure full feculent evacuation; but subsequent action on the bowels should be obtained by the mildest laxatives, castor-oil or rhubarb and magnesia, and purging carefully avoided.

Mercury, Calomel, and Opium.—The all but universal testimony of the profession in this country, and of the majority of German

and American physicians, as to the salutary operation of mercury in pneumonia, is, without actual statistical data, the best proof of its alleged efficacy. Physicians who object to it in bronchitis do not hesitate to confide in it in inflammation of the substance of the lung. It is chiefly in the second stage of the disease that its beneficial operation is considered to have the greatest influence.

The usual mode of administering mercury in pneumonia is in combination with opium, and the preparation is either the blue pill or calomel, but much more generally calomel. The opium has been supposed by Armstrong and others, to be the active and salutary ingredient in this combination; but though pain may be relieved by it, and dyspnœa consequent upon pain and irritation moderated, the good effects are chiefly appreciable when the specific action of the mineral on the system becomes evident, and opium alone does not appear to retard the progress of the disease, or expedite resolution. Calomel and opium are seldom prescribed till after the inflammatory orgasm of the circulation has been reduced by appropriate means, since it is found that the specific operation of the mercury is rendered more certain and speedy by the primary reduction of the febrile reaction. In advanced life, the more rapid abatement of the inflammatory symptoms enables us to commence the mercurial treatment earlier than in middle age, and with advantage. No more opium should be admitted into the combination than is sufficient to prevent the calomel from running off by the bowels.

It may be proper, in the first instance, where the pulse is full and firm, to unite the calomel with antimony, and to order this combination immediately after blood-letting, presuming that this measure has been deemed necessary. Thus, two grains of calomel and the same quantity of white oxide of antimony may be given every three or four hours, till the tension of the circulation has somewhat diminished, when the same quantity of Dover's Powder may be added, with the advantage of diminishing nervous susceptibility, preventing the action of these medicines on the bowels, and moderating the cough, without checking expectoration. The instant narcotism is observed, and signs of venous circulation in the brain begin to show themselves, the opiate ought to be omitted as positively hurtful.

Regimen.—From an early period, usually from the very begin-

ning of the disease, whether primary or secondary, the patient should be allowed sufficient fluid nutriment. As the accompanying fever abates, and signs of debility begin to show themselves, stimulants become indispensable, though their effects should be carefully watched, and their quantity regulated by the state of the pulse. Where the patient can partake of it, porter will be found an agreeable beverage; but wine or spirits, diluted with water, must not be withheld where the vital powers are beginning to flag; stimulants then rank among the chief remedies.

Counter-irritation.—Blisters over the site of the inflammation are frequently of great service, and may be applied much earlier than in the adult, as they occasion, if at all, but little reaction. They nevertheless should be removed soon, immediately vesication or distinct redness is observed; for if long applied, the blistered surface is liable to become gangrenous. A linseed poultice seldom fails to produce vesication, when the inflamed surface is ripe for it. Where there is associated bronchitis, occupying a great extent, turpentine epithems will be found more convenient and useful than blisters. I refer the reader to my remarks on external applications, under the head of "Bronchitis."

Outline of the Treatment of Sthenic Pneumonia.—During the first and second stages of the disease, as long as inflammatory reaction is considerable and the local symptoms are urgent, moderate venesection may be employed with benefit, and repeated if necessary, irrespective of age; with this reservation, that no more blood should be abstracted than is absolutely necessary to relieve the patient. The instant an impression has been made on the pulse, the arm should be bound up, and the horizontal posture assumed. Full feculent evacuations should then be procured by colocynth and calomel. In the interval, tartar emetic or ipecacuanha should be administered in such doses as to act more as an expectorant and diaphoretic than as a nauseant. In nearly all cases the appetite is null, so that there is usually little risk in indulging the patient to any extent in light nourishing food. Indeed, a main difficulty in many cases, is to get sufficient down for the wants of the system, so that it becomes an imperative necessity to eschew all medicine likely still farther to impair the appetite. When the general and local symptoms do not appear to require so active a measure as bleeding, but are still sufficiently developed to make this doubtful, a

combination of tartar emetic, with the nitrate of potash, and the liquor of the citrate of ammonia, with or without the tincture of digitalis, acts beneficially in reducing inflammatory orgasm, and staying the progress of the disease. It is seldom that the cough requires special attention; it is relieved by whatever moderates the inflammatory action. If urgent, it may be appeased by henbane or opium, added to this mixture. Here, as in bronchitis, opiates require to be given cautiously, and always in combination with antimony or ipecacuanha. The best expectorants, in the first instance, are such remedies as diminish vascular action.

In the second stage, the stage of red hepatization, it will generally be advisable to give, in addition to the above means, repeated small doses of calomel and opium, in the manner already pointed out, so as to touch the mouth gently; or, where the disease continues to advance, the tartarized antimony, together with calomel and opium, may be administered in the form of a pill, containing the sixth or the eighth of a grain of tartarised antimony, two grains of calomel, and two of Dover's Powder, every three or four hours. A blister should be applied to the affected side, and replaced, immediately it has produced redness or vesication, by a large linseed poultice.

The degree of vital power must regulate the abstraction of blood in this stage. When the hepatization is extensive, or still advancing, the powers of the system are generally greatly reduced; and it is then only expedient, if at all, to take away blood locally. Circumstances, such as pleuritic pain, with difficulty of breathing, unrelieved by mustard cataplasms, or turpentine epithems, may require this measure, notwithstanding the general prostration or feebleness of the pulse. In these difficult and doubtful cases, should bleeding be considered advisable, the strength must be maintained by concentrated soups and wine; where the previous habits of the patient have been intemperate, the accustomed stimulant should be given in preference, along with such food as may be relished. At more advanced periods, on the abatement of constitutional reaction, this practice may be pursued boldly. The stimulating expectorants, inappropriate in the beginning of the disease, may now be employed with benefit. The decoction of senega, with squills, sweet spirits of nitre, and the sesquicarbonate of ammonia, as advised in bronchitis, is a valuable mixture. Many

old people rebel, however, against these and like combinations; and then we are forced to rely on food, wine, stimulant embrocations, and more concentrated formulæ. In these circumstances, nitro-muriatic acid, with the tincture of bark and the tincture of orange-peel, is often of great service in restoring the appetite, facilitating digestion, and sustaining the strength.

In the suppurative stage, the chief indications are to relieve urgent symptoms and preserve vital power. When the disease seems to have reached this stage, and the purulent infiltration engages a considerable portion of the lung, the resources of art have little influence, except in prolonging, for a limited period, the life of the patient. The remedies just mentioned are now most appropriate, and the chief of these are the decoction of senega with the sesquicarbonate of ammonia, to which may be added camphor. Wine or brandy should be freely given, and the warmth of the surface preserved by artificial heat.

The rapidity, irregularity, and associated states of pneumonia in the aged render it necessary to combine and modify the treatment, so as to suit individual cases. Nothing is easier than to lay down an ideal plan of treatment suited to the stages of the disease, and to apportion the remedies in this and that manner accordingly; but in practice, this desirable simplicity is unattainable or inapplicable; and where the various stages of the inflammation are often united from the period at which the case has come under observation, it is clear that the physician must very frequently be guided in his choice of measures by the leading principles of his art, to say nothing of science. All things considered, the general condition of the patient and the state of vital power are the best guides in the adoption of a more or less passive, or a more or less active treatment.

Treatment of Asthenic Pneumonia.—In this form of pneumonia, which is often obscure in its invasion, latent in its progress, or only to be detected, if at all, by the physical signs, and which is very frequently a sequela of bronchitis, *broncho-pneumonia,*—or of protracted stagnation of blood in the depending portions of the lungs, *hypostatic or congestive pneumonia,*—active antiphlogistic measures are wholly inapplicable. Whether primary or secondary, the disease is usually accompanied from the first, or from an early period, with great depression, so that all means calculated

to lessen the vital energies still more must be avoided as positively hurtful. General blood-letting, sometimes of great value in the sthenic pneumonia of advanced life, is, in the asthenic form of the disease, a most dangerous remedy, however cautiously employed, however sound the constitution, and however early resorted to. The period at which even the local abstraction of blood by cupping or leeches can be beneficial is restricted to the first few hours, during which it may perhaps be doubtful whether the symptoms will assume an adynamic character. Once the disease has declared itself in this form, the abstraction of blood, even locally, ought to be advised with extreme reserve, and then only from the urgency of pleuritic symptoms or the extension of the inflammation to the pericardium. Dry cupping will, under other circumstances, prove a good substitute. Any attempt to check the further progress of the disease by bleeding can only be founded on an erroneous view of its pathology, terminating in the most disastrous results.

Similar remarks apply to the employment of sedative doses of tartar emetic, the depressing influence of which renders this a very unsafe remedy in the asthenic pneumonia of advanced life.

The rapidity with which this form of the disease runs through its different stages in old persons—consolidation of the affected tissues often taking place in a few hours—suggests the employment of mercury ; and this is the remedy on which we place our chief reliance. Small doses of calomel, from two to three grains, ought to be given, with a sixth, or, if need be, a quarter of a grain of opium—or, still better, two or three grains of Dover's Powder, every four hours, till the mouth is touched. In order speedily to produce this effect, it will, in some instances, be advisable to rub the blue ointment into the groins and armpits. Meanwhile the strength must be carefully supported by strong soup, jellies, farinaceous food, quinine, and wine. Generally, from the very beginning, stimulants may be given with advantage. With the increase of prostration, so must their quantity be augmented. If habituated to ardent spirits, it will be advisable to use the spirit which the patient has usually indulged in, instead of wine, diluting it, and prescribing it in such quantities as to prevent over-stimulation. A large blister should also be placed over the corresponding portion of the lung affected, and removed before

vesication is established, so that the debility consequent upon profuse serous discharge may be prevented. Turpentine epithems are perhaps still more useful, having the advantage of more speedily producing counter-irritation to any desirable amount, with the additional recommendation that they can be renewed as often as need be. It is of the first importance to vary the position of the patient from time to time, so as to obviate the injurious effects of gravitation, and the patient should lie as much as possible on the sound side.

Diarrhœa, a not unfrequent accompaniment of asthenic pneumonia, should be moderated, but, even if practicable, not entirely checked. This symptom presents a formidable objection to the administration of calomel or antimony. The gray powder or blue pill should be substituted on these occasions, combined with Dover's Powder. When vomiting accompanies the diarrhœa, the powers of life sink rapidly. Saline effervescing draughts, with laudanum, brandy, and counter-irritation to the pit of the stomach, are our principal resources in these desperate cases.

Cephalic symptoms must be treated according to their import. Arising very frequently, in this form of pneumonia, from the circulation of venous blood in the brain, they are only relieved by such means as mitigate the original disease. Opiates are here highly improper, and should forthwith be discontinued. Blistering the nape of the neck is sometimes serviceable. When there is much stupor, the case is generally all but hopeless.

Dyspnœa is generally not very urgent in the more simple forms of the disease, and then does not usually appear until an advanced stage, at which period large accumulations in the bronchi take place, through retention of the secreted matters from increasing weakness. Emetics are sometimes serviceable under these circumstances, and often useful at an earlier period. In desperate cases they afford a chance of clearing the lungs, and permitting the more perfect oxygenation of the blood, and thus diminish dyspnœa, as well as drowsiness consequent thereon. Musk in large doses sometimes procures relief when other means have failed. Recamier states that he has given it in doses of twenty-four or thirty grains, with an effect which he almost considers specific.

CHAPTER VI.

CHRONIC PNEUMONIA.

We occasionally meet with impermeable, indurated portions of the lungs in old people dying with chronic bronchitis and its consequences, emphysema of the lungs, and dilatation of the bronchi, or of long-standing heart-disease, accompanied by pulmonary congestion. These masses vary greatly in size and number. Sometimes not larger than a hazel-nut, at other times they equal the bulk of a walnut or more. When less than a hazel-nut, they are with difficulty distinguished from tubercular infiltration, and yet they are, though not invariably, unaccompanied with tubercles. They seem to be the remains of unresolved lobular pneumonia, occurring in cachectic states of the system, and are perpetuated by a low degree of inflammatory action of a strictly chronic character. Their colour is livid-red, or in other instances iron-gray or ash-gray, streaked or speckled black with the black pigment of the lung. Sometimes they are nearly jet black; but they differ from the black, stony, hard, compact masses so often found in the summit of the lung in the aged, in being more diffused, more pliable, and more easily torn or divided with the knife. They are generally found interspersed throughout the lung; but sometimes the greater part of a lobe is affected without the change being seen elsewhere. Rokitansky* has described them as a certain condition, distinct from chronic pneumonia, under which hepatization does not pass into a state of purulent solution. The red inflammatory product, he observes, becomes of a grayish-red tint, and finally gray; but instead of becoming dissolved, it becomes compact and indurated. Chronic pneumonia, according to this distinguished pathologist, is usually situated in the interstitial tissue of the lungs, although the walls of the air-cells are also often implicated in the inflammation. Dr

* Path. Anat., Syd. Soc. ed., pp. 81–91.

Stokes seems to think it likely that there are two forms of the disease, the one producing the iron-gray and indurated lung, and the other forming, or ultimately passing into tubercular solidity. Many cases of senile phthisis may perhaps, he thinks, be referred to the second variety, which he proposes calling scrofulous pneumonia. The indurations are liable to break down and disintegrate, like similar collections of tubercular matter. A form of consumption then occurs, hereafter to be considered, almost peculiar to the aged.

Symptoms.—Chronic pneumonia may thus be either the result of preceding acute inflammation, or be chronic from the commencement. The latter seems to be the more common history of the disease. In whichever way originating, it is slow in its progress; often, if not generally, entirely latent. When the indurated masses are numerous, or when the disease involves a considerable extent of the lung, the constitution sympathises. Emaciation and hectic fever occur with more or less distinctness, the countenance becomes pale, diarrhœa is frequent, and so is anasarca. The symptoms closely resemble those which present themselves in many instances of senile tubercular phthisis. Generally, however, they are more of a bronchitic character, with puriform or copious pituitous expectoration, the solidification of the lung being frequently accompanied, and as often preceded, by diffused chronic bronchitis.

Physical Signs.—On stethoscopic examination the usual signs of consolidation of the lung may be discovered at limited points, where the disease crops up or occupies a considerable portion of a lobe, and is unaccompanied by emphysema. Percussion then elicits a completely dull or slightly obtuse sound; the respiration is bronchial, and if the voice is strong there is increased thoracic vibration, or distinct broncophony. These signs are or are not accompanied with the moist râles, the variation depending on the degree of permeability of the lung, and the absence or presence of secretion in the bronchi. Not unfrequently, however, the disease eludes detection.

Treatment.—The treatment depends on the character of the accompanying symptoms, and differs in no respect from that which is applicable to chronic catarrh on the one hand, or chronic phthisis on the other. The tendency of the disease is altogether

very unfavourable, but I have known it last several years before terminating fatally. Indeed, I have seen reason to believe, that when it succeeds acute pneumonia, and is of limited extent, not interspersed throughout the lung, but confined, say to a portion of the lower lobe, ultimate recovery of health is perfectly possible; the consolidated parenchyma ever remaining impermeable, but entirely passive, and the individual long surviving without suffering inconvenience. I have in my recollection at least more than one case of this kind, occurring in sexagenarians. Persons less advanced in life are not so likely to escape as those of riper age, who are generally more tolerant of chronic lesions, impairing the efficiency of the lungs and other organs.

CHAPTER VII.

PLEURITIS.

ACUTE, subacute, chronic, and latent pleurisy, are all met with in advanced life, the two first much less frequently, and the others still more so than in youth or manhood. Altogether, however, it is more a disease of the earlier epochs of life; in its so-called idiopathic and simple form it is comparatively rare in old age. Generally it is at this period intimately associated with, if not dependent on, a granular state of the kidneys, senile cachexia, the rheumatic or gouty diathesis, and various pulmonary, bronchial, and cardiac affections. Frequently it originates with and accompanies pneumonia to its termination in resolution or death. M. Gillette, in his essay on the diseases of old age, in the "Dictionnaire des Dictionnaires de Médicine," says he has never met with it at the Salpêtrière without this combination.

Symptoms.—When acute or subacute, whether idiopathic or secondary, pleurisy in the aged runs its course rapidly with more or less febrile reaction, but often without any pain in the chest or initiatory rigor. There is general malaise, the usual dry cough at the beginning, ultimately attended with scanty catarrhal expectoration, loss of appetite, sometimes retching, scanty and high-coloured urine. If there is pain in the side, it is seldom of that acute, pungent character, cutting the respiration, and described as a stitch, often observed in manhood. Generally a sensation of soreness only is complained of. There are, however, numerous exceptions to this, even in far advanced life. In March and April 1851, two men, one aged ninety-five and the other seventy-four, were under my care with pleurisy, accompanied with severe racking pain below the posterior border of the axilla, and requiring prompt treatment. In many obscure cases pain may now and

then be elicited by coughing, by a deep inspiration, and by pressure between the ribs. In painless or ordinary attacks the respiration is little disturbed so long as the individual is at rest. The disease commences as a common cold, with chilliness, sometimes with a distinct shivering, a slight cough, and general discomfort, with aching pains "in the bones" and flanks. Some days usually elapse ere advice is sought, and this is solicited, not so much on account of the local distress, as on account of the accompanying lassitude, prostration, and want of appetite. The physician is apt to be deceived in many cases by their similitude to influenza, and by the absence of the usual functional symptoms, when, to his surprise, he may discover, on a physical examination, that effusion has not only commenced, but that there is already a considerable amount of fluid in the cavity of the chest. It is of the utmost importance to remember, that acute inflammation of the pleura may be going on, and much oftener does go on, in persons advanced in life, without pain in the side, and with little or no febrile excitement. By acute pleurisy I here mean pleurisy ending in the solid and fluid products of inflammation within a few days from its commencement. Effusion takes place much earlier in aged than in young subjects. Weakening of the respiratory murmur, dulness on percussion and ægophony, may occasionally be detected in a few hours from the onset of the disease. Without reference to any particular age, Laennec* states, that he has several times observed all the physical signs of effusion—ægophonism and absence of the respiration and sound on percussion—in the course of one hour after the invasion of the disease, and that he has seen the side obviously dilated at the end of three hours. Hasse† has remarked that in older subjects the most trivial pleuritic seizures frequently lead to a very copious discharge of fluid, although under circumstances the most favourable to absorption, namely, a trifling amount of plastic substance of a gelatinous kind. M. Beau says the pleuritic effusion is never considerable in the aged. I have frequently, however, seen it extensive enough to fill the cavity of the chest, and displace the heart and liver.

Rapid accumulation may take place at more advanced stages of the disease, at a period when it may well be supposed, from the

* Treat. on the Dis. of the Chest, translated by Dr Forbes, 3d ed. p. 432.

† Path. Anat., Syd. Soc. ed., p. 187.

abatement of the symptoms, that the individual is doing well, and likely to do well. As in senile pneumonia, so in senile pleurisy, a patient may be going about with a serious amount of disease, perfectly unaware of his danger, though the attack may be but very recent, and therefore more likely to be febrile and active. Cruveilhier* observes, that a great number of old females at the Salpêtrière, of eighty and ninety years of age, presumed to die of old age, die of latent pleurisy; and in them the pleurisy, as in pneumonia, especially occupies the dorsal region, to which it is often limited.

Physical Signs.—With regard to the physical signs of acute pleurisy in aged subjects, it may be remarked, that ægophony and the friction sounds are more frequently absent than at other periods of life: they occur, but are of limited duration, and several causes combine to prevent their full development; such are, feebleness of the voice, rapid effusion, old adhesions, imperfect expansion of the lungs from loss of inherent elasticity and ossification of the ribs, &c. For a few further observations on the physical signs, the reader is referred to p. 329, under the head of Latent Pleurisy.

Chronic pleurisy may be the termination of the acute or subacute form of the disease, but very frequently it is apyrexial and latent from the commencement. In the latter case, unattended with pain in the chest, and often without any notable embarrassment of the respiration, the attacked moves about an invalid, but without particular distress. The acceleration of the pulse, and the hurried breathing developed on any unusual exertion, are attributed to accompanying weakness and loss of health. Perchance a sufferer from chronic bronchitis or some old cardiac disease, the symptoms are traced to the one or other, or to both, and the true nature of the malady remains a mystery till a physical examination of the chest discovers it. Emaciation, debility, shortness of breath, and quickness of the pulse on exertion, are seldom absent in even the most chronic and latent forms of the disease; but percussion and auscultation are the only means of verifying the diagnosis in all cases, whether acute or chronic. Otherwise, again and again the disease escapes detection. It is needless to

* Dict. de Méd. in 15 tomes; tome xiii. p. 297.

give any illustration of so common an occurrence, familiar to every hospital physician; but the following cases may be selected out of many others, the first of which is extremely interesting:—

Case 1.—John Roberts, aged fifty-eight, was coachman to one of the medical officers of Chelsea Hospital for two years, during the whole of which time he enjoyed good health. In June 1850 he had an attack of what he supposed to be influenza,—so slight, however, that he did not seek advice, and he continued his employment, though suffering from an occasional cough, with some shortness of breath on over-exertion. At the end of six weeks his master observing, for the first time, that the man was looking ill, and had lost flesh and strength, interrogated him, when he was surprised to discover, on applying his hand to the chest, total absence of vocal vibration on the left side, which, on closer examination, was found filled with fluid, displacing the heart, which could be seen pulsating near the right nipple. Notwithstanding this amount of effusion, the man could not be persuaded to lay up. He was, however, a few weeks afterwards, obliged to do so by the supervention of phlegmasia dolens from adhesive inflammation of the left iliac vein, induced, no doubt, by purulent absorption. During the time he remained in bed for this affection, he was so free from pectoral symptoms, that not the slightest suspicion could be entertained of the existence of disease in the chest without the aid of auscultation. After recovering from this attack, he again moved about, and seemed to be getting rid of the pleuritic effusion, when he died of apoplexy from softening and cerebral hæmorrhage in November, six months from the commencement of his illness. The diagnosis of empyema was verified on a *post-mortem* inspection, by the existence of a large quantity of pus in the left side of the chest, with a thick coating of lymph on a highly vascular pleura.

Case 2.—R. N., aged sixty-four, came a long distance by rail, walked several miles afterwards, and was admitted into Chelsea Hospital in August 1846. He was weak, but seemed to be wholly unaware of any disease of the chest, being free from cough and dyspnœa, though the effusion was so great as to dilate the side and push down the diaphragm. The exertion on this occasion gave an impetus to the latent disease, and the patient was carried off by the occurrence of acute pleurisy with fever, eighteen days after coming under observation.

Case 3.—A medical officer on the staff of the army, fifty-six years of age, of a delicate constitution and of very temperate habits, was suddenly seized with faintness and some embarrassment of breathing, while suffering from an attack of diarrhœa in June, and with great difficulty reached his bed from the night-chair. I saw him immediately, and found him much agitated, though less alarmed than those around him. An anodyne draught at once relieved him. Next day he had an occasional hacking, dry cough, without any pain in the chest, and without notable change in the respiration; bowels relaxed, pulse 80, skin cool. On the third day he felt altogether better. Still the dry tickling cough, together with the diarrhœa, continued, both of which he was willing to ascribe to hepatic irritation, having been subject to attacks of looseness since serving in India twelve or fifteen years before. The skin was now warm, but only moderately; pulse 80, respiration free, twenty in the minute. The right side of the chest was doubtfully dull, and the respiratory murmur very feeble throughout. There was no ægophony, and no crepitation. In the opposite lung the respiration was unnaturally distinct and loud, though not exactly puerile. I cautiously told him what I had discovered, and expressed an opinion that he was either going to have an attack of pneumonia or pleurisy, more probably the latter. I had difficulty in persuading those about him of the threatened attack, or that he was at all seriously ill, and he himself was so free from pectoral distress of any kind, could so fully expand the chest without cough or pain, that I began to think that the physical signs met with might possibly be the result of former disease; but as throughout life the chest had "always been sound," and he was singularly exempt from colds, this notion was soon abandoned. All concerned thought I took too serious a view of the case. Next morning the diagnosis was fully made out by unequivocal dulness, absence of vocal and tussive fremitus, and by some fulness of the intercostal spaces; yet there was no pain, and in bed no affection of the respiration. Pressure produced no distress of any kind. Indeed, the only symptoms that would excite suspicion of the chest being implicated, were the occasional short dry cough, and some increased heat of the skin, with acceleration of the pulse. In six weeks this patient was convalescent. In six weeks more the side was much flattened. A temporary residence in the south of

France greatly improved his general health. He was able to walk towards the end of the sixth month five or six miles; but he has almost ever since been subject to bronchial catarrh, and nearly three years after the original illness, he remains an invalid with a shrunk lung and flattened chest.

Latent Pleurisy.—The frequency of latent pleurisy in elderly subjects is a strong reason for never neglecting percussion and auscultation whenever the least suspicion exists of disease in the chest. The diagnosis is chiefly founded on the physical signs of the disease, which are the same as in the adult, modified by co-existing or former disease, and the impaired elasticity of the chest. Dilatation of the side is less frequent, and so is bulging of the intercostal spaces, than in pleuritic effusion in young subjects or in middle life. The obliteration of the intercostal spaces only takes place, according to Dr Stokes, speaking of the disease generally, in cases of purulent effusion, and proceeds from a loss of tone, a paralysis of the intercostal muscles, and not from mere pressure of the fluid within the chest, so that it may coincide with a very limited collection of pus. The absence of vibration, or its marked diminution, is a most interesting and valuable sign of effusion.

Prognosis.—The prognosis of acute or chronic pleurisy with effusion at advanced periods of life is at all times unfavourable, and very different from what it is in youth and manhood, when the acute form of the disease, at least, seldom terminates otherwise than satisfactorily. Still, it is not so hopeless as M. Beau, quoted by M. Durand-Fardel, would lead us to infer; for in five uncomplicated cases that observer states absorption did not take place, and all died. I am perfectly satisfied that it is not unfrequently otherwise, even where the effusion is very extensive. In a recent recovery, occurring in a cachectic man above sixty-five years of age, there was not only effusion, but limited pneumonia (pleuro-pneumonia); and an old general officer, of eighty-four years of age, came to me lately quite well after the right side of the chest had been filled with fluid for many months.

Treatment.—In acute febrile pleuritis, however old the patient, we ought not to hesitate to perform venesection, with the precaution I have so often laid down, of placing him in a sitting posture, and marking the effects by the finger on the pulse. I have more than once seen the disease cut short, when thus attacked early, in

persons between seventy and eighty years of age and upwards. The relief in these cases was as decided as it usually is in adult life, and the patients themselves, in several instances, attributed their preservation to this measure, so conscious were they of the immediate relief it afforded. I do not recollect ever having had cause to regret its adoption; but on two or three occasions I have lamented that I had allowed the period to go by at which it might have been of service. Generally, however, local bleeding should be substituted for bleeding from the arm, unless the pain in the side is very acute, the dyspnœa great, and the pulse sharp, wiry, and firm. The antiphlogistic regimen must, at the same time, be enforced, but not rigorously. Calomel and opium, with or without antimonials, should be given, care being taken to avoid narcotism and salivation. Blisters may be earlier employed than in the active sthenic attacks of middle life, but they should not be permitted to remain too long on. In rheumatic or gouty habits, colchicum will be found a valuable antiphlogistic. A period soon arrives when it is necessary to support the system by nutritious diet and wine. Perfect rest and the recumbent posture should be maintained for a considerable time after the acute symptoms have subsided, whether effusion has succeeded or not.

If the disease has passed into a chronic apyrexial state, or is of a passive nature, and the evidences of effusion are conclusive, the patient may gradually be permitted walking, or preferable still, carriage exercise. By this means his general health may be improved. Whatever is conducive to this end will aid the absorption of the fluid from the pleural cavity, and arrest the evil consequences of continued pressure on the lung. Diuretics are now valuable remedies. Among these the infusion of digitalis with the acetate of potash, sweet spirits of nitre, and vinegar of squills, is one of the best prescriptions that can be given. To this mixture may be added the compound tincture of camphor, or tincture of henbane, with the view of allaying cough or irritation. The digitalis should be omitted from time to time, or immediately its specific effects begin to be observed, and a stimulating diuretic, such as the decoction of senega, substituted. The decoction of winter-green is highly esteemed by some practitioners. An occasional purgative dose of the compound powder of jalap, with the addition, where the strength will admit of it, of the sixth of a

grain of elaterium, will greatly aid the absorption of the effusion. If it can be accomplished, the system should at the same time be gently brought under the influence of mercury, and kept so for several weeks. Repeated flying blisters have a powerful effect in exciting absorption. Or the chest may be rubbed morning and evening with iodine ointment, or, what is less irritating and equally useful, the ointment of the iodide of lead. Very abundant effusions, even in very old persons, are sometimes removed by tonics, a generous and rather stimulating regimen, with a steady perseverance in diuretics and the external as well as the internal use of the preparations of iodine.

In this outline of the treatment of acute, subacute, and chronic pleurisy, with effusion, I have chiefly had in view the simple and primary forms of the disease unconnected with cardiac, catarrhal, or renal affections. In these common complications, the treatment must be modified, and in harmony with the nature of the accompanying malady. Mercury would be as injurious in the renal complication, as general bleeding might be in the catarrhal or cardiac association. Nor have I touched upon the important question of the operation of paracentesis thoracis, of which I have no experience in persons above fifty years of age. In order to be successful, this operation must be performed early, before the lung has become so contracted and condensed as to be unable to recover itself from the effects of long-continued pressure. I have more than once regretted the omission where, on *post-mortem* examination, in cases of inflammatory hydrothorax, the mischief appeared to be so inconsiderable, as to have left reason for believing, that had the fluid been drawn off recovery was probable. As absorption is not so active as in the adult, the operation would appear to be more necessary in the old than in the young, though hitherto very few old people seem to have undergone it, perhaps from an erroneous notion of its inefficiency and danger.

CHAPTER VIII.

PHTHISIS PULMONALIS.

THE opinion of Hippocrates, that the age most liable to this disease is from eighteen to thirty-five, in descending to our day, has often been misinterpreted. There are not a few who believe that after fifty years of age it is rare, and that at still more advanced periods it is hardly met with. Now, though we must admit with the accurate Louis, as a general principle, that the tendency to tubercles decreases with age, that, after a certain period, the older the individuals grow, the less are they exposed to the chances of their formation, pulmonary consumption is still far from unfrequent beyond fifty, and is occasionally observed in persons who have even passed their ninetieth year. Laennec once opened the body of a woman who had died of it, when upwards of ninety-nine years of age.* In 145 instances in which it was the undoubted cause of death in Chelsea Hospital, almost all occurred in persons above sixty; the youngest was fifty-six, the oldest over seventy, the mean of the whole 65 and a fraction. Thus no age is exempt; and it may be safely affirmed, that many die by consumption beyond seventy who, from the erroneous supposition of the extreme rarity of phthisis in old age, or from equally erroneous views of the pathology of the disease, and the not unfrequent obscurity of its symptoms in advanced life, are presumed to die from some other affection. "Old age," "Debility," and "Atrophy," cover immense numbers of deaths in persons above sixty, in the Returns of the Registrar-General, which have been caused by it. Beyond the middle period of life, Williams found tubercles in half the cases in which he thoroughly examined the lungs of subjects dying from various diseases in London and Paris.† M. Rogée, in opening the bodies of 100 females at the

* On Diseases of the Chest, Trans. by Dr Forbes, 3d ed., p. 336.

† Library Pract. Med., vol. iii., p. 183.

Salpêtrière, who had passed the age of sixty, and who were carefully examined, without selection, except for their advanced years, discovered in 51 out of this number cretaceous or calcareous concretions in the lungs, and other traces of cured or existing phthisis;* and in 160 of the aged females dying at the same hospital of other affections than tubercular consumption, M. Beau† found in all, with three exceptions only, various kinds of cicatrices in the summit of the lungs—"indications of former phthisical disease." Dr Guillot‡ also detected tubercles in four-fifths of the bodies examined there. At Chelsea Hospital, tubercles, tubercular concretions, chronic diffused gray consolidation, excavations, or traces of recent and ancient cicatrised cavities occur, in the lungs of about half the number of the men examined, whose age varies from sixty to eighty and upwards.

Anatomical Appearances.—In examining the lungs of subjects of advanced life, who have died phthisical, we meet with a form of disorganisation of the pulmonary parenchyma which is almost peculiar to the aged; and contrary to the opinion of Laennec, Louis, and others, who maintain that there is but one species of phthisis—the tuberculous—the examination of the lungs in these individuals shows that in them, at least, consumption may exist independently of tubercular development, that tubercles are not the essential anatomical character of senile phthisis, and that the most extensive destruction of the lungs not unfrequently occurs, accompanied with the usual symptoms of this disease, without a trace of tubercle.

This form of phthisis is usually a sequence of chronic bronchitis, terminating in indolent inflammation and partial induration of the lung. At a period more or less remote, the tissues adjoining these chronic diffused indurations, subjected to increased inflammatory irritation, break down, by a process analogous to what is observed in tuberculised lungs, and the indurations themselves, possessing a low degree of vitality, are disintegrated, leaving caverns and burrowing sinuses. Non-tubercular cavities of this description are generally characterised by the dark and sloughy aspect of their inner surface, and by the absence of any membranous lining.

* Archiv. Gén. de Méd., tome v., p. 183.

† Etudes Cliniques sur les Maladies des Vieillards, p. 19.

‡ Med. Times, vol. xii., p. 255.

Armstrong,* Graves, and Stokes,† have all referred to this form of consumption. It constitutes the *ulcerous* phthisis of Bayle, the *pneumonic* phthisis of Addison, and is far from unfrequent in aged persons, the victims of intemperance or chronic visceral disease. The absence of tubercles in the vicinity of these cavities, as well as in other portions of the lungs, and their limitation to the indurated textures, are the anatomical characters distinguishing this species of disorganisation from that produced by tubercular disease. More frequently, however, than otherwise, this, the pneumonic species of consumption, is accompanied with tubercular deposition, and is itself a truly scrofulous form of inflammation disorganising the lung.

Senile tubercular consumption mainly differs in its anatomical characters from the same disease in the adult, by the tubercular deposit being generally confined to the lung, and by the absence of the usual organic complications of the malady. The gray semi-transparent granulations of Bayle and Louis, the recent miliary tubercles of Laennec, are less frequent; the disease is also much more commonly limited to one lung, and to the upper and back portions of the lungs; frequently tubercles exist in the very apex or apices only, the remainder of the lung being healthy. The intervening pulmonary tissue, atrophied by age, is generally less vascular and less solid than in the child or adult. All stages and varieties, however, of tubercles present themselves, the small, granular, opaque, crude tubercle predominating. When agglomerated, the masses are very generally seated in the upper lobes, and the disease is often then entirely limited to one or two of these aggregations, generally not exceeding a pigeon's egg in size, the situation of which is marked externally by puckering of the lung, and, when near the surface, thickening of the pleura. These masses and the walls of caverns are often of an iron-gray colour, sometimes almost perfectly black, from the commixture of black pigment or carbonaceous matter.

Large caverns are generally found in the summit of the lung only, and the *pleuræ pulmonalis et costalis* are then and there usually very firmly adherent. These cavities are lined much more frequently than in the adult. When excavations of this character

* Lect. on the Pr. of Phys., p. 381. † Clin. Lect., Am. ed., p. 373.

are entirely limited to the apex of the lung, the disease is found to have existed, in many instances, for several years, and has perhaps, for an indefinite period, been unaccompanied with symptoms of a marked nature. Fistulous communications with the bronchi are also very common, and it is especially in persons advanced in life that the contraction and cicatrisation of tubercular excavations are observed, the summits of the lungs presenting cicatrices, indentations, and cellulo-fibrous formations, often associated with collections of tubercular matter or gray pneumonic indurations.

Emphysematous lungs, and lungs rarified by advancing years, preserve their general anatomical characters. They are light, dry, and woolly, and generally remarkably free from pleuritic adhesions. Externally they are extremely irregular, especially towards the summit—nodulated, puckered, and deeply indented—the tubercular deposits and pneumonic indurations tying down the different tissues, and preventing equable expansion of the air-cells.

Concretions of a calcareous or cretaceous nature, presenting various degrees of hardness, and shades of black colour, and usually regarded as the transformation of tubercles, are, moreover, oftener met with in the aged than in the adult. They occur in about one half of the bodies inspected, and are still more common in chronic phthisis of long duration.

The bronchi are almost always inflamed or congested, however limited the phthisical disorganisation, and death often appears to ensue more from the bronchitic affection than the partial destruction of the lung. They otherwise frequently exhibit signs of old standing disease; when dilated, the cavities observed on cutting into the dilated portions, filled as they generally are with muco-purulent matter, may be mistaken for vomicæ, and the lungs erroneously deemed to have undergone extensive tubercular or pneumonic perforation.

Causes and Pathology of the Disease.—It were idle to stop for a moment to inquire into the causes of consumption when originating beyond middle age; they are the same as at other periods of life, though the influence of the "phthisical diathesis" is less marked, and that of the "exciting causes" generally more clear in elderly subjects. The pneumonic variety of the disease, almost peculiar to the aged, is the consequence of a low form of inflam-

mation, of a strumous character, generally springing from the air-cells, and gradually involving the inter-vesicular tissue, but sometimes pursuing an opposite course. It, again, is usually preceded by persistent chronic bronchitis, and a cachectic state of the system, the result of senile decay, or of various organic lesions, impairing the efficiency of the different vital functions. The truly tubercular disease, commencing insidiously and progressing slowly, without any obvious cause, forces us to admit an original or acquired predisposition, as in youth and adult life, modified by the peculiar organism of declining years. Persons of a strumous habit of body, hereditarily disposed to consumption, sometimes escape its manifestation till advanced old age. Individuals thus seized have more commonly been in easy circumstances. The disease has thus been prevented showing itself, until elicited by inflammatory action of the lungs or bronchi, sustained and promoted by the natural decay of the reparative and nutritive functions, and silently terminating in tubercular deposition, or in partial indurations of the pulmonic tissue, scarcely, if at all, distinguishable from tubercular infiltration. The tuberculous disposition sometimes expends itself in early life on the lymphatic glands, to fall upon the lungs in a mitigated and limited form in old age.

A catarrhal form of phthisis, in which the chief morbid action is confined to the lining membrane of the bronchi, is very common in advanced life. Vast quantities of purulent or muco-purulent matter are then expectorated, and the emaciation is extreme. The stomach generally sympathises with the state of the bronchial membrane. A train of dyspeptic symptoms exist, the most prominent of which are flatulency, anorexia, and constipation. It is obvious, however, that the consideration of this form of phthisis essentially belongs to the subject of chronic bronchitis, of which disease it is in reality but an advanced degree. A fatal termination is commonly preceded by a more or less extensive pneumonia, but death often ensues from the mere exhaustion occasioned by the disease itself. On *post-mortem* examination, however, indolent indurations of the pulmonary tissue, or tubercles scattered through the lungs, are usually discovered.

The laryngeal species of phthisis is rare in the aged. Under this head Canstatt has described a form of the disease dependent on ossification of the cartilages of the larynx, and rings of the trachea,

which, "acting as a foreign substance, produces persistent irritation of the mucous membrane, ending in ulceration." I have myself never seen but one instance of this form of senile consumption, unaccompanied at least, as in the adult, with tuberculosis of the lung, so I think it must be uncommon.

General History.—Were it practicable to distinguish the pneumonic from the tubercular form of phthisis during life, an important pathological division of the disease would be established; but in general both forms are associated, originally or consecutively, and the constitutional and functional symptoms, as well as the physical signs, denoting either disease, are identical, whether in its early or advanced stages. The following observations relate, therefore, to the history and progress of senile consumption, without reference to the precise anatomical condition of the lung, or to any exclusive views of the pathology of the disease.

In this respect, we meet with three forms of phthisis in advanced life. These have been designated, when occurring in the adult, *acute, latent,* and *chronic* phthisis.

Acute Consumption.—The acute form is the least frequent of the three, corresponding with what is observed in middle age, and differs in no essential particular, in its history and symptoms, from the same disease in the adult. It is sometimes, though rarely, very rapid in its course, and we have then seen it in persons far advanced in years, attended with febrile symptoms of considerable severity. Such was the case with an in-pensioner of Chelsea Hospital, seventy-three years of age, who died in 1844 in less than three months, having previously to his admission into the Infirmary been in the enjoyment of good health, and free from pectoral symptoms of any kind. Rapid tuberculisation of the lung took place, with inflammatory irritation and consolidation; the chest speedily became dull; the tubercles softened; innumerable vomicæ formed in the upper lobes of both lungs; the patient dying in about six weeks from the date at which the stethoscopic signs announced the existence of cavities. Hasse* alludes to a similar instance of rapid consumption observed at the Leipsic Hospital, in a female aged eighty-nine; and Blakiston, in his work

* Path. An., Syd. Soc. ed., p. 338.

on the diseases of the chest, records another, occurring in a labourer, seventy-three years of age, previously in good health, who died in eight weeks.

In other instances, the disease having been proceeding very slowly, with symptoms scarcely indicating its existence, and perhaps become suspended in its course, is suddenly roused into action by the supervention of pneumonia, a catarrhal attack, or the suppression of an habitual discharge, such as the drying up of an old ulcer, or, in the female, the cessation of the menses; a period at which, according to Andral,* phthisis in women, after the ages between eighteen and thirty-five, carries off the greatest number of its victims—an opinion, however, not borne out by the reports of the Registrar-General, which distinctly show a progressive diminution of the number of deaths from phthisis after the age of thirty-five in the female as well as in the male, in nearly relative ratios.

Latent Consumption.—The latent form of senile consumption is as common as the last variety is rare. A very great number of old people, invalids without defined disease, supposed to be wasting away from mere debility of advanced age, or who are said to be labouring under "climacteric decay," are the subjects of this form of phthisis; and we are often surprised, on *post-mortem* examination, at the extent to which the lungs have become solidified by chronic pneumonic induration, or by the dissemination and clustering of crude tubercles, and even partially ulcerated and disorganised, without any material derangement of the general health, or without cough, expectoration, or dyspnœa, sufficiently obvious to have attracted attention. Cases of this description, especially those in which the anatomical appearances are partial and limited to the upper lobes, are much more frequent in the decline of life than at any other period, though it is well known that they are also far from rare in the adult. Various diseases incident to the aged mask the pulmonary affection, suspending, for a time at least, the symptoms by which it is usually recognised. Among these, chronic rheumatism and arthritic affections of the joints are not the least influential in disguising the actual state of the lungs. In some instances of this kind, I have known the

* Clin. Méd., trans. by Dr D. Spillan, p. 543.

sufferer for several years to remain entirely free from any pectoral ailment, when suddenly phthisical symptoms were developed, and a careful exploration of the chest left little doubt that the lungs must have long been solidified by clustering masses of tubercular deposit or chronic pneumonic consolidation. The passive condition of the respiratory function in old age, a blunted sensibility, and incapacity for bodily exertion, all favour the absence of pectoral distress, even where the lungs are much invaded by tubercular deposit or gray indurations, advancing towards softening and ulceration.

In many of these latent cases the patient complains of every conceivable ailment, without once alluding to the real seat of disease. He is by turns dyspeptic, hypochondriacal, rheumatic, impatient, never contented without taking plenty of medicine, seldom satisfied with the results, and always suggesting remedies for the alleviation of real or imaginary symptoms. Whether in hospital or private practice, there are few cases that try the patience of the practitioner more; and the domestic attendants are frequently harassed by the perpetual wants and querulousness of the unhappy sufferer. Insanity itself, with a suicidal tendency, sometimes accompanies the disease, and disguises the phthisical symptoms till dissolution approaches.

Chronic Consumption.—The usual form of senile consumption is of a chronic character, commencing insidiously, advancing slowly, frequently temporarily arrested, and sometimes altogether suspended for a lengthened period. Gradually and interruptedly disorganising the lung, and, in like manner, breaking down the general health and strength, it is occasionally prolonged through many years, scarcely, in some cases, appearing to abridge the ordinary term of existence. "In many instances," as Dr Williams has observed,* "it wears the garb of a pectoral catarrh, recurring frequently in cold weather, and in a great measure subsiding in the warm season." In the decline of years, however, these temporary improvements are usually of very limited duration. The patient is seldom without cough a few days at a time, the emaciation is progressive, and the least variation in the weather either confines him to the house or obliges him to be unusually guarded.

* Lib. Pr. Med., vol. iii. p. 182.

But on other occasions the invalid is surprisingly free from local suffering, the disease pursues an almost silent course, notwithstanding the indubitable existence of cavities in the lungs, and life gradually ebbs away without the harassing accompaniments more common in middle age. An attack of bronchitis, pleurisy, or pneumonia, hastens the progress of the disease, and these are among the most common causes of a sudden termination. It is usually under such a complication—a recent bronchitic, pleuritic, or pneumonic attack—that the aged invalid is induced to seek advice or admission into some hospital. The symptoms then assume an acute character, and death very soon closes the scene.

The rational symptoms of senile consumption present some modifications, which I shall briefly endeavour to point out :—

Cough.—Excepting under recent aggravations from exposure to cold or intercurrent attacks of acute bronchitis, the cough is seldom of a distressing nature. Very generally it is trivial, and unattended with the painful sensation of tugging or dyspnœa, harassing the life of the young consumptive, more irritable and liable to the acute forms of the disease. Its characters vary with the stages and states of the malady. Sometimes it is harsh and grating, coming on gradually, then terminating in a rapid succession of loud and violent expiratory efforts, without any particular suffering. From time to time it is entirely absent, or occurs only in slight paroxysms during the early period of the night and towards morning. When frequent, in the advanced stages, and when associated with its usual attendant chronic bronchitis, even before softening of the tubercular deposits has occurred, it is often of the diffused stuffing kind observed in that disease, and retains these characters throughout.

Expectoration.—In very many cases the tuberculisation of the lung having been long preceded by chronic bronchitis, or associated with it from an early period, the valuable information which we derive from an examination of the expectoration in the adult is usually wanting. We seldom have an opportunity of observing the marked difference presented on a change from the first to the second stage of the disease, the transformation from the clear white frothy mucus accompanying the first stage, to the greenish, opaque, ragged sputa, scarcely aërated, of the second stage ; for, from the beginning, the sputa are often purulent, opaque, or green, while

the tubercles are still crude, and, on the other hand, they sometimes are nummular, consisting of round, flattened, detached masses of greenish mucus floating on a turbid serum discharged with them, even when the physical signs point out excavations of large size. The quantity of the expectoration is equally variable, depending very much on the nature and extent of the accompanying bronchitis. With any improvement in the symptoms it greatly diminishes, and sometimes entirely disappears with a favourable change in the weather, showing that it chiefly proceeds from the associated catarrh, and not from caverns. The globular and ragged masses so often seen in the phthisical expectoration of the adult are less frequent in the old. Sputa of these characters chiefly occur in acute attacks; but we have met them at a very advanced age, and in cases decidedly chronic in their progress and nature.

Hæmoptysis.—The connection of hæmoptysis with phthisis has been commented upon from the time of Hippocrates to the present day; and the frequency of this symptom has attracted the attention which its importance merits. In the history of the pathology of this disease in the adult, it may be ranked as one of the most curious phenomena attending it, that spitting of blood, instead of being most frequent after the formation of caverns, after a breach of continuity in the lungs, is then comparatively rare; and it is chiefly at an early period, often before we can positively announce the existence of tubercles, that it is observed, and that the hemorrhage is in the greatest quantity. These results, however, have been principally derived from observing the disease in adults. In advanced age, the tendency to hæmoptysis in phthisis seems to decrease with the progress of years; and instead of appearing early in the disease, it is then chiefly encountered towards its close, pursuing a precisely opposite course to what usually occurs in the meridian of life. Sudden death from this cause is far from unfrequent in aged phthisical subjects who have never been suspected of being consumptive.

Dyspnœa.—In uncomplicated cases, and before the lungs have become perforated with vomicæ, and even in certain examples where the excavations are limited to their apices, the respiration is scarcely affected while the invalid is at rest. If the invasion of tubercles has been preceded by continued catarrh, and the

breathing been permanently disturbed or easily hurried, the dyspnœa generally increases in proportion as the physical signs discover the progress of the engrafted disease. Without any obvious change in the characters of the sputa, or the supervention of any other symptom indicating an aggravation of the original affection, we may, by a process of negative reasoning, accurately surmise the formation of tubercles, their softening, or their increased and rapid development, by observing a marked accession to the habitual dyspnœa of invalids of this class, in whom the existence of phthisis had previously remained doubtful. There is nothing peculiar, however, in this to the disease in aged people. Towards a fatal termination, and on the supervention of sanguineous congestion, or pneumonia, the breathing generally becomes greatly embarrassed, and very frequently assumes an asthmatic character.

Pain.—The neuralgic and pleuritic stitches frequently experienced by the adult, seldom occur in the phthisis of advanced life. The disease often proceeds for years without any pain in the thorax. A feeling of tightness and oppression, hardly amounting to pain, are occasionally complained of across the lower end of the sternum, and extending to the sides and loins; but this symptom is also common to simple bronchitis. As the disease advances, the oppressive sensation increases; but there are many instances in which this symptom never appears, and the invalid escapes without any painful feeling whatever affecting the chest, the cough being slight, the expectoration easy, and the breathing hardly if at all affected, till probably a few days or hours before dissolution.

Hectic Fever.—The various symptoms constituting this state are seldom present in a marked degree. Nor are we surprised at this, when we recollect the frequent exemption of the old from febrile excitement, under circumstances which, in the adult, would produce intense constitutional disturbance. Progressive softening of the tubercular depositions, or pneumonic indurations, with disorganisation of the lung, are not unfrequently observed to take place without the accession of fever, the disease pursuing a silent course and gradually breaking up the lung without constitutional reaction of any moment. This is especially the case the more advanced the age of the patient. Rigors and colliquative sweats are then very rare, and flushing of the countenance appears only to occur during intercurrent attacks of pneumonia or bronchitis.

The exceptional cases are those of an acute character, few and far between, formerly alluded to as imitating the disease in adult life.

The Pulse.—We attach much importance to the state of the pulse in the discrimination of the phthisis of old people. Tubercles may exist for a long time in the lung, for years, and increase in number and size, without obviously affecting the circulation. So long as they remain crude and isolated, and produce no irritation of the surrounding tissue, the pulse may continue unaffected; but if numerous, the obstruction they occasion to the pulmonary circulation produces increased action of the heart, with congestion and irritation of the lung. The pulse is therefore not unfrequently accelerated, even where the tubercles themselves are quiescent. When it ranges considerably above 70, and there are other symptoms of phthisis present, it is often a valuable aid to a correct diagnosis, sometimes indicating by its persistence the sudden invasion of the disease, where previously a chronic bronchitis only existed, the pulse in the latter generally preserving a natural, or nearly natural, character.

Emaciation.—There is no one symptom so constant in senile consumption as emaciation. The natural wasting of the frame is rapidly hastened by it, and long before any attention is directed to the chest, it is often present in a marked degree. Nay, as in certain cases of cancer of the stomach, it is sometimes almost the only symptom observed. In persons about the middle period of life, from 40 to 50, we have found it, says Sir James Clark, one of the earliest symptoms of phthisis, even when there was no frequency of the pulse, no cough, no marked dyspnœa, nor any other symptom to draw attention to the lungs, the derangement of the digestive organs, generally present, being regarded as the principal cause of this wasting. Its constancy is worthy of every attention, as, in the words of Louis, supplying the observer with some useful hints in respect to diagnosis in cases of latent phthisis.

Diarrhœa.—The aged consumptive is generally free from this distressing and exhausting accompaniment. In certain acute cases it sometimes exists from an early period; but after the meridian of life, and particularly towards the decline of life, diarrhœa is seldom a marked symptom. When present in a permanent form, it generally only occurs towards the termination. Until then, and even in very numerous cases up to the conclusion, the bowels are usually

rather constipated, or irregular, requiring the occasional use of laxatives. A persistent diarrhœa very speedily hastens the progress of the disease, rapidly reducing the strength, and prostrating the individual sometimes in a very few days.

Complications.—Among the most common associations of the disease, flatulency and other symptoms of gastric derangement are observed, but not oftener than in simple bronchitis of long duration. The fatty liver, so often present in the phthisis of youth and middle age, never occurs. Hepatic symptoms are not uncommon, but not more so than in chronic catarrh. Most of the symptoms other than those above-mentioned appear to be accidental. The frequency of organic alterations in the heart and genito-urinary organs in elderly people, occasions complications of this sort to be common, though unconnected as cause and effect. Chronic bronchitis almost invariably accompanies every form of the disease.

Diagnosis—Physical Signs.—In many cases the detection of consumption in the aged is exceedingly difficult, and in others wholly impossible. Where the pectoral symptoms have existed for years, and the organic affection is confined, as it often is, to the summit of the lung, perhaps situated in its very centre, the discovery of crude tubercles, or pneumonic indurations, or cavities of moderate size, cannot be made with any certainty. The disease then passes for chronic bronchitis, or catarrhal phthisis, according to its permanency and the amount of the attendant atrophy. The emaciation of the thoracic muscles, the rarefaction of the lungs, and the ossification of the ribs, all increasing the sonorousness of the chest in old people, add to the difficulty; while dulness under the clavicles is often produced by carbonaceous deposits, distinct from indurations of a tubercular nature, and common enough in persons advanced in life. Still, with all these drawbacks, the discrimination of phthisis mainly rests on the presence or absence of certain physical signs.

With the rational symptoms of the disease, slight dulness under one or both clavicles, or over the supra-scapulary spinal fossæ, should lead to suspicion. A very slight dulness is all that we can expect to discover, even where the tubercles are in considerable quantity, and aggregated. The gentlest tap on the clavicle, or scapular ridge, often renders this dulness perceptible, when stronger

percussion fails to elicit it. If limited to one side, as it often is, we have less difficulty in ascertaining the slightly diminished resonance, as we have then the advantage of comparison. Feebleness of the respiratory murmur, harshness and interruption of the first act, which is jerking, broken, as it were, into repeated inspiratory efforts; and also increased loudness, roughness, or prolongation of the expiratory murmur, are, individually or collectively, frequent phenomena of this stage of the disease. The latter sign, however, is not so pathognomonic of phthisis as its first discoverer, Jackson, nor its subsequent investigator, Andral, would lead us to suppose; it is certainly a very general accompaniment of senile phthisis, perhaps oftener present than absent, but is even less to be depended upon in old people than in adults,—prolongation of the expiratory murmur, with increased intensity, usually existing in advanced life, as natural phenomena incident to the rarefaction of the lungs at this period, and generally present in all diseases of the lung with supplementary respiration or dyspnœa.

Like the variation in the sonorousness of the chest, the slightest diminution of the natural exaggerated respiratory murmur in old people, may be taken as a sign of a pretty extensive solidification of the lung approaching the surface; but the value of this sign, as of the former, depends upon its localisation and permanence, and also on the coincidence of both: for weakness or absence of the respiratory murmur frequently exists in limited portions of the chest from other causes than obliteration of the air-cells and consolidation of the pulmonary parenchyma. When present, the phenomena of the voice are equally instructive as in the adult, but they do not invariably occur, even in extensive solidification. In a great number of cases the tussive and vocal fremitus are wanting, the feeble, shrill voice of the aged, and the equally feeble cough or diffused bronchitic one, being unfavourable to the production of these signs. Crumpling, or crackling, usually regarded as an important sign of the early stage of phthisis in adults, is comparatively of little value in old age. This phenomenon, apparently seated in the bronchi, is no other, as has been justly observed by M. Beau,* than a modification of the subcrepitant or mucous râle, the reality of which is evident from the fact, that in the catarrh of

* Archives Gén. de Méd., tome ix. p. 408.

asthmatic persons, usually general, there are frequently, under the clavicles, or supra-scapulary fossæ, râles which it is extremely difficult to distinguish from the supposed crackling of tuberculous solidification; and this description of catarrh is that of all others which presents the greatest resemblance to pulmonary tubercles. The sound of crackling is therefore really unimportant as a diagnostic phenomenon, when there already exists, as frequently happens in the phthisis of advanced life, a general mucous wheeze. The limitation of the sound with dulness on percussion would, however, with the rational symptoms, be a tolerably certain evidence of the presence of tubercles in a crude or incipient state of softening, particularly if situated beneath the clavicles, and if, in other portions of the lung, the respiration had acquired an exaggerated intensity, or lost any of its normal softness.

Similar difficulties not unfrequently exist in the advanced stage of the disease. The association with a general pulmonary catarrh, and an emphysematous condition of the lungs, present obstacles to the discovery of cavities, even of considerable size, which are sometimes insurmountable. A circumscribed, appreciable dulness, with increased vibration of the voice, together with the mucous or subcrepitant ronchus, are the well-known characteristics of softening of the tuberculous secretion; and when this combination of signs is observed under the clavicles, or in the apex of either lung, the probability is that we have to deal with phthisis in one or other form, however long the pectoral symptoms may have lasted, and however general may be the mucous or subcrepitant ronchus. Under the circumstances just stated, where there exists dulness in the summit of either or of both lungs, together with emphysema and chronic catarrh, the softening of the tuberculous accretions is often attended by a ronchus different from what is perceived in other portions of the lung, the bubbles producing it being larger or smaller than in the parts unaffected with tubercles; but little dependence can be placed on this variation, unless there exists other evidence of condensation of the lung, the mucous râles under the clavicles being frequently of a different character from those observed in other places in old asthmatic individuals. It is obvious that the signs of cavities are wanting when the cavities are no longer empty, or have ceased to contain fluid subject to be agitated by the air entering them. Now this very frequently

happens in old persons, in whom we find cavities of various sizes in their progress towards cicatrization, filled with cretaceous matter or a putty-like substance, incapable of displacement, and plugging up the fistulous openings into the bronchi.

These difficulties have been stated, as they frequently present themselves in advanced life. We are not disposed to overrate them; but the most careful exploration of the chest often fails to satisfy us that phthisis does exist; and in cases presenting the rational symptoms of consumption, the absence of the usual physical signs should not be absolutely relied upon as decisive of the absence of this disease in its early or advanced stage. Cavernous gurgling, cough, pectoriloquy, amphoric buzzing, and the other signs of excavations, are sometimes as obvious in aged persons as in adults; but cases are constantly occurring in which the ear fails to ascertain cavities of considerable size, owing to the causes and complications already specified.

Progressive emaciation, a slight cough, more or less difficulty of breathing, permanent acceleration of the pulse in the erect posture, paleness of the countenance, approaching a sallow hue, and general debility, increasing with the wasting of the frame, are the most frequent symptoms of the more obscure forms of senile phthisis; and when these symptoms cannot be clearly traced to other diseases, or are observed to advance notwithstanding an improvement in the malady supposed to originate them, the existence of organic disease in the lung is generally indicated, progressive wasting and general debility being the most constant attendants of consumption in the aged, in whom a protracted, weakly, and cachectic state of the body appear to be almost always associated with latent phthisis, tubercular or pneumonic.

The diagnosis of dilatation of the bronchi, with its usual accompaniment chronic catarrh, from phthisis in old people, is extremely difficult; but it is perhaps more curious than of practical importance. In the adult, the diagnosis is generally made out with more or less facility; but in old age the absence of nocturnal sweats, hæmoptysis, and diarrhœa—symptoms usually observed in the phthisis of adults—may lead to error, which is apt to be confirmed by the frequent want of appreciable dulness on percussion, and the equally common absence of the usual stethoscopic signs of this disease in the aged.

Duration.—It is exceedingly difficult to ascertain with any approach to accuracy the average duration of a disease, generally obscure in its origin, silent in its progress in the first term of its history, and usually preceded in elderly subjects by chronic irritation of the lung or bronchi, occasioning symptoms common to consumption and other pulmonary affections. This difficulty is increased by the circumstance, that in not an inconsiderable number of cases the invalid is cut off by intercurrent pneumonia, or bronchitis, or by some other disorder unconnected with the tuberculous malady. According to Morton, Portal, Bayle, Andral, Louis, and others, phthisis may be protracted almost indefinitely. Cases have been referred to by Portal, Andral, and Bayle, wherein the disease extended to twenty, thirty, and even forty years. Andral particularly alludes to the case of an old man seventy-six years of age who died of phthisis, and who had for the last thirty years and more all the symptoms of the disease.* We have ourselves repeatedly opened the bodies of men beyond sixty years of age, who had for upwards of ten or fifteen years laboured under catarrhal symptoms, and who had been under our observation for more than half the period, with the usual physical signs of phthisis, in whom, on *post-mortem* examination, we found the lungs here and there solidified with gray pneumonic indurations or tubercular deposits passing into various stages. In one instance there was reason to believe the disease had really existed for more than twenty-five years. It follows, from the observations of Louis on this question, that while the mean duration of consumption in subjects aged from fifteen to thirty years is eleven months and seventeen days, it is sixteen months and twenty days in those of from thirty to forty-five, and seventeen months seven days in those of from forty-five to sixty; but less reliance can be given to this statement the older the subject, since the disease is then not unfrequently entirely latent for years and years, and never discovered till after death.

Treatment.—We have few or no observations to offer on the treatment of senile phthisis, since, in reality, it for the most part resolves into that required in chronic bronchitis. The main indications are,—to sustain the strength, moderate the cough, and

* Clin. Médicale, by Spillan, p. 543; and Dict. de Méd., in 15 tomes, article *Phthisie*, p. 473.

preserve the digestive organs intact. The first and last of these objects are best attained by adhering to a regimen suited to the weakened condition of the stomach. This will usually be found to consist in a moderate supply of easily-digested animal food, with wholesome vegetables, the former twice or three times, and the latter not oftener than once or twice, daily. On no occasion should the stomach be overloaded. The best sedatives for allaying the cough are henbane or conium. Opiates should be abstained from as much as possible. When it assumes a spasmodic character, they are, however, usually demanded, and their effects will then be enhanced by adding to the mixture containing them chloric ether in doses of five or six minims, three or four times a day. Tonics, particularly the citrate of iron and quinine, or quinine itself, are generally serviceable. Cod-liver oil seldom disagrees, and of all articles it is that which most surely and effectually arrests emaciation. Gentle counter-irritation over the chest is generally beneficial in allaying most of the pectoral symptoms. It is unnecessary to add that warm clothing and a genial climate are, if anything, more necessary to the well-being of the aged consumptive than to the young. Much may be accomplished in this respect to save the patient from the necessity of going abroad in winter by thermal comforts, while there are many places at home that will suit him in summer and early autumn.

CHAPTER IX.

ASTHMA.

THE complicated structure of the lungs and bronchial tubes, with the several organs related to them and subservient to the function of respiration, renders difficulty of breathing, more or less permanent in its nature and degree, extremely common when, through advancing years, the various modifications and organic changes already alluded to have been progressively accumulating, and the vital endowments as steadily losing their former vigour. So constant is some form or other of breathlessness at the turn of life, that it constitutes one of the earliest indications of physical decline. Next to bronchitis, asthma (so called) appears in the returns of the Registrar-General as the most fatal of all the diseases of the respiratory organs in the aged, in whom it is very generally but an exacerbation of an habitual difficulty of breathing, a sympathetic disorder intimately connected with existing structural lesions, or pathological actions, of which dyspnœa is one of the most uniform attendants, and various shades of chronic bronchitis, with emphysema of the lungs, the most constant source.

Pathological and Exciting Causes.—That form of asthma, irrespective of organic disease, known by the various names of idiopathic, nervous, spasmodic, or dry asthma, is rarely met with in advanced life. In the course of twenty years, during which I have examined the bodies of at least 200 asthmatics, all above sixty years of age, I have never once failed to discover alterations in the organs of respiration or circulation sufficient to account for a great share of the previous symptoms, inasmuch as difficulty of breathing, permanent or otherwise, constitutes at all periods one of the most general and prominent phenomena of the anatomical lesions to which I allude, while, in the only instance of fatal asthma in adult life that ever fell to my lot, I was unable to

detect, on the minutest search, any change of structure, or any deviation from the normal state of the thoracic viscera.

It is important, therefore, to bear in mind the almost invariably complicated character of senile asthma, whatever views may be embraced of the intimate pathology of the disease; and it will generally be found that the group of symptoms by which it is recognised have long, in elderly people, been preceded by disordered respiration, or other phenomena denoting lesions of the lungs, bronchi, heart, or great vessels. So very generally do we meet with emphysema of the lungs in this disease, that if any one alteration of structure be regarded as its anatomical character, it alone is entitled to that appellation—all others appearing to be purely accidental, or the consequences of the original malady, promoting, perpetuating, and aggravating it, it is true, but not inducing it.

The immediate exciting cause of the attack is almost uniformly a recent bronchitis, or in chronic cases of disorder of the lining membrane of the bronchi, an increase of the inflammation, with corresponding irritability of the adjacent textures.

Bearing these circumstances in view, the unquestionable hereditary nature of the disease is readily explained; for emphysema of the lungs and structural changes in the heart and great vessels often run in families, while bronchitis is among the commonest of all affections in the aged,—so common that it fully accounts for many cases set down to descent.

The disease is apparently less influenced by locality than in middle age; but the singularly capricious nature of asthma is confined to no period of life, and many of the extraordinary, anomalous, and unaccountable cases, related by authors of themselves and others, have been witnessed in elderly individuals. In some instances, the sensitiveness of the bronchi is so much exalted or so easily excited, that the mere impression of cold air, especially if conjoined with moisture, exposure to certain effluvia, as of sealing-wax (case of Lord Chancellor Ellesmere, by Lord Bacon), or of the inhalation of the pollen of certain flowers or grasses, or of certain powders, such as ipecacuanha,—nay, the sympathetic irritation of gastric or intestinal infarction, occasioned by unwholesome and improperly digested food,—is sufficient to produce a paroxysm of the disease. Some asthmatics suffer agony in foggy

weather; others are never so well as then. Some cannot live in the pure air of the country; and men who have retired from business have been obliged, on this account, to return for the remainder of their days to the town they deserted. A filthy, densely-peopled locality, such as the purlieus of Westminster, or the Seven Dials, is preferred by certain asthmatics to the outskirts of the metropolis or the open spaces of some of its squares. One cannot stay a day in the place of his birth and the residence of his childhood without being attacked, while another can hardly live out of it. A friend of my own, now over sixty-five years of age, whose duties very frequently take him to Chatham in Kent, hardly ever approaches that town by road or rail that he is not seized with the complaint. The only two attacks another has experienced took place in visiting a spot in the North Highlands of Scotland, and, singularly enough, they occurred a week or two after his arrival there, precisely on the same day of the month, a fact which he was not aware of till he consulted his diary. Dr Graves, in his "Clinical Medicine," refers to two very opposite cases which fell under his observation in December 1834. Each individual was about forty-five years of age. Upon visiting the one, the severity of the paroxysm appeared to have been owing to a smoky bedroom; while he found the other patient surrounded by coal smoke, the paroxysm being relieved by it: turf smoke produced no benefit. It would be easy to adduce analogous cases.

The retrocession of gout and rheumatism, the sudden disappearance of chronic cutaneous eruptions, and the cessation of habitual discharges, are occasionally productive of an attack. The first link in the chain of morbid action, causing a paroxysm of the disease, appears, in one and all of these instances, to be some modification of the natural condition of the mucous membrane of the bronchi, a congested or inflamed state. The drying up of an old ulcer is very commonly productive of asthma in persons subject to the disease. I could adduce several well-observed cases of this description from the records of Chelsea Hospital, where nothing is more common than aged persons, inmates of the establishment, applying for irritating dressings, for the purpose of keeping open chronic ulcers, the healing of which they know from experience to be very generally followed by a recurrence of their asthmatic symptoms. Andral has related a fatal case of this kind in a man

forty years of age, subject to chronic bronchitis for the preceding six months.

History and Symptoms.—The various diseases or organic lesions with which asthma is usually associated in advanced life, render the mode of accession of a paroxysm as irregular as the co-existing states of the disorder are numerous. In more healthy subjects, and in the purer forms, appearing in the meridian of life, the attack is generally sudden. Among its most frequent premonitory symptoms are anorexia, flatulency, languor, drowsiness, and an abundant flow of pale urine, indicative of gastric derangement and a deleterious impression on the nervous system. In a large proportion of cases, the invasion of the disease in this manner will only be met with between the ages of thirty and fifty, if not earlier. Recurring from time to time at uncertain intervals, it ultimately brings with it organic changes, and at first, perhaps, purely of a nervous, convulsive, or spasmodic nature, it presents itself in more advanced years very generally in the complicated form alluded to, and in the following manner, the symptoms pursuing an irregular course, varying in severity and duration, according to the nature and extent of the existing organic lesions promoting and modifying them:—

The aged invalid, suffering more or less permanently from some dyspnœa, and very generally subject to dyspeptic symptoms, contracts a cold, accompanied or otherwise with violent fits of sneezing and running at the nose; or, walking out of the beaten path, eats and drinks heartily of articles which experience has shown him to be injurious, but which advanced years have not taught him to forego. An habitual cough is aggravated, his usual shortness of breath increases, a deep sense of suffocation, with wheezing, oppression, and constriction in the chest follow, till at length the difficulty of breathing rapidly or gradually attains great intensity, almost at times threatening immediate destruction; every muscle is exerted, and every position assumed that can by any possibility enlarge the capacity of the chest. The desire for pure air is excessive, and forces the exhausted sufferer to seek relief at the open window, and to throw off all covering even in the coldest and most inclement weather. A clammy perspiration bedews the face and upper extremities. The features are altered, the mouth and nostrils dilated, the lips livid, and the veins of the neck and

forehead turgid. In the meanwhile the pulse is nearly natural or only slightly accelerated, and is soft and compressible, sometimes small, weak, and thready. Amid much distress, painful to witness, and alarming to the uninformed, the patient, accustomed to the attack, has no apprehension as to the result,—he looks only to the present, earnestly seeking relief, and overcome by sleep, which is denied him. The expectoration, if previously copious, is often wholly checked during the height of the paroxysm, or much diminished in quantity, and expelled with great difficulty. With its return the symptoms gradually abate, the breathing becomes freer, the much wished-for sleep is procured, and the asthmatic awakes through a recurrence of the fit or a severe attack of cough, partially refreshed, but still suffering from increased dyspnœa, and enfeebled by the severity and duration of the paroxysm. Nights and days are thus passed till the attack wears itself out, leaving the patient exhausted, reduced in flesh and strength, suffering much from aching in his limbs, a sense of soreness or tenderness in all the respiratory muscles, and often depressed in spirits.

In the ordinary form of catarrhal, bronchial, or humoral asthma, the more abundant the expectoration, the greater and more certain, in general, is the relief; but the attack frequently terminates without any expectoration whatever, even in cases in which we are led to suppose, from the auscultatory signs of the disease, that there is copious secretion into the bronchi. The physical characters of the expectoration are greatly influenced by the previous state of the bronchial membrane; in general it is purely catarrhal, consisting of glairy, frothy mucus, but often muco-purulent. When of the former character, it is not unfrequently so very viscid and tenacious as to be expelled with the greatest difficulty; but sputa of this tenacity are not nearly so common nor so necessarily present in asthma as M. Beau* asserts. According to this writer, asthma is only a form of dyspnœa developed by bronchial catarrh with a modified secretion of thick, dense mucus, the expulsion of which terminates a paroxysm.

The severity, duration, period of accession and recurrence of the disease, are very variable, being greatly influenced by the habits of the individual and the nature of the existing organic and pre-

* M. Beau, Archives Générales de Méd., Oct. 1840, tome ix. p. 139, &c.

disposing causes. The attack is usually experienced in the night time, or between one and three o'clock in the morning; but, in this respect, there is the greatest diversity. In the slighter and less complicated cases, retaining the characters of the ordinary catarrhal asthma of middle age, the more acute symptoms may not last above half an hour, but we have seen the greatest difficulty of breathing, amounting to orthopnœa, continue for seventy-two hours in a man of eighty years of age, snatches of sleep being procured at long intervals only, and yet complete recovery followed. Less violent attacks may last longer, four, five, or six days, with scarcely any remission. In general, however, the paroxysm gradually abates, and finally ceases in three or four hours, towards morning, again to return the following night, or it may be the following day. In this manner the disease runs a variable course of a week, ten days, or a fortnight, or may cease after a single paroxysm, not to recur for a year or two. I have known it continue for nearly four months in a first attack, accompanied with emaciation and general debility, and protracted by constantly recurring attacks of coryza, gradually terminating in an extension of the irritation to the bronchi.

When associated with or dependent upon valvular disease of the heart, the asthmatic symptoms are of an aggravated form; and as in these cases there usually exists a variety of pathological changes or actions, frequently permanent engorgement of the bronchial membrane, with emphysema of the lungs, the dyspnœa is protracted, and the remissions are very imperfect. For nights and days the patient is often incapable of lying down. His anxiety is extreme,—hope, which in ordinary cases, without this serious complication, sustains him, gives way to despair, and death is earnestly prayed for as an end to all suffering; even in the less severe examples of cardiac complication, or cardiac asthma, as it is called, where the state of the heart, though predisposing to attacks of asthma, appears to exert but moderate influence on the disease, the phenomena of which are, in the cases alluded to, apparently directly attributable to catarrhal bronchitis, with exalted irritability of the bronchi, convalescence is slow, and the usual results of valvular lesions are expedited.

Physical Signs.—The physical signs of this disease are those observed in acute and chronic catarrh, with, in addition, great

prolongation of the expiratory murmur, sometimes as three to one of the inspiratory. The sound emitted on percussing the chest is clear. Auscultation discovers, in various portions of the lungs, all varieties of the moist and dry râles, with partial absence of the respiratory murmur, in different points, the result of spasm or obstruction, from accumulation of viscid mucus in the bronchus supplying the defective lobules. The vibratory dry râles predominate. Those accompanying the expiratory effort are longer and more intense than the inspiratory râles of the same order. Along the spine and between the scapulæ they are particularly loud.

Diagnosis.—The pure unmixed forms of the disease in early and middle life are easily distinguished from any other affection by the absence of fever, the regularity of the pulse in the midst of great distress, the periodical accession of the paroxysms, their sudden appearance and frequently rapid decline, followed by an interval of ease, in which the respiration acquires its normal character, and immediate restoration to health is all but perfect. A first seizure may deceive; but once the disease has established itself, all doubt ceases. The more complicated cases, however, occurring in advanced age, in individuals suffering from diseases impeding the healthy action of the lungs, and attended with persistent difficulty of breathing, are more obscure. The paroxysms appear then as exacerbations of the habitual dyspnœa, assuming various degrees of intensity according to the susceptibility of the patient, the state of the pulmonary mucous membrane, and the nature of the existing organic changes. To ascertain what these are becomes an important object of inquiry, as distinguishing the idiopathic from the sympathetic, or complicated form of the disease. Now, as previously observed, the most frequent associations are: emphysema of the lungs, chronic bronchitis, with its sequelæ, and all the various organic diseases of the heart and great vessels, to the discovery of which the attention of the observer should be mainly directed. There is scarcely any disease with which the so-called idiopathic asthma can be confounded, and in the intervals of the paroxysms there are seldom wanting obvious signs and symptoms indicating the nature of the organic complications generally present in advanced life.

Œdema of the lungs, and effusion into the cavity of the chest, are often attended by orthopnœa, assuming an asthmatic character;

but in either case the history of the disease and the physical signs are usually sufficiently marked, and the discrimination of these affections from asthma far from difficult. Nor is there much probability of an attack of angina pectoris being confounded with asthma, seeing that in the former affection the symptoms are so directly referrible to the heart, there being pain in the region of this organ of a plunging, lancinating character, extending down the arm, with faintness, and a feeling of impending dissolution—symptoms which are absent in asthma. Again, in the generality of cases of angina pectoris, the respiratory murmur is pure, whereas in asthma it is accompanied with various râles.

There is one disease which I have more than once seen mistaken for asthma in aged individuals, and that is latent pericarditis with effusion. When there is associated with this affection a chronic catarrh, or an emphysematous condition of the lungs, the difficulty of breathing becomes intense, and frequently assuming a spasmodic character, it closely imitates an attack of asthma by the suddenness of the dyspnœa and the absence of pain. But even in these mixed cases there are usually some symptoms and signs indicative of the true nature of the disease, which are rarely grouped in asthma; and among these may be particularly mentioned—feebleness and irregularity of the pulse, faintness, extreme anxiety, diminished impulse of the heart, obscurity of its sounds, and extended dulness in the præcordial region. In a few cases, however, with less obvious cardiac phenomena, and the existence of the complications above alluded to, the diagnosis is attended with considerable difficulties, only to be overcome by an attentive consideration of the whole of the circumstances. In every instance of asthma occurring in old people, the importance of studying the physical signs cannot be over-estimated in relation to a just diagnosis, a safe prognosis, and judicious treatment.

Prognosis.—It must be obvious that the prognosis is greatly influenced by the character of the associated maladies. The asthmatic is proverbially long lived; and although we do not, without some reservation, subscribe to the accuracy of this remark, we are constantly meeting cases wherein the disease has existed twenty, thirty, and even forty years. Floyer lived to the advanced age of eighty, and had suffered from asthma for thirty years. These are usually cases of humoral asthma, accom-

panied with bronchial flux, where the free discharge from the bronchi seems to have a salutary effect in preventing more serious consequences. The less complicated the disease, the more favourable is the prognosis as to the unfrequency of the attacks, or their entire suspension. A paroxysm of asthma, however severe, seldom terminates fatally; when death ensues, it is usually occasioned by effusion into the chest, or more frequently by œdema and congestion of the lungs. As regards the future, the disease once observed in advanced life is almost sure to return at no distant period with increasing frequency and severity.

Treatment.—During a paroxysm of the idiopathic, simple, or spasmodic form of the disease, rare at all times, but necessarily hardly ever observed in advanced age, the class of remedies known as sedatives and anti-spasmodics are principally to be depended upon. Opium, belladonna, stramonium, and henbane, singly or combined with assafœtida, gum galbanum, or gum ammoniacum, in the form of a pill, or in mixtures containing chloric or sulphuric ether, may then be employed with varying success. Of these, belladonna and stramonium are chiefly confided in by the majority. Either of these may be advantageously given with the compound galbanum pill, three or four times a-day. Opium in full doses has its advocates. Dr Watson and Dr Elliotson, in their respective works on Practical Medicine, speak favourably of it; but some of the most experienced authorities repudiate it as not only inefficient in relieving the attack, but as positively hurtful. I have certainly seen it beneficial, though not to the extent alleged by many; and it may easily be conceived, that when the paroxysm depends upon, or is aggravated by, extreme sensitiveness of the bronchi, it may prove serviceable, just as we see it act in other spasmodic diseases, such as in stricture from exalted irritability of the urethra, or retention of urine from spasm of the neck of the bladder, consequent to local irritation, or sympathy after operations connected with the rectum, &c. But whatever praise has been bestowed on these and like remedies, as, for example, the lobelia inflata and hydrocyanic acid, the candid practitioner will admit that they have all oftener disappointed than rewarded him.

Another medicine often prescribed by men of long and varied experience is nux vomica. On what principle it is given during

the fit I have never heard satisfactorily explained. If the proximate cause of the disease is spasm of the air-passages—and reasoning, analogy, and the physiological action of remedies confirm the theory—it is about the last substance, from its fully recognised effects as a nervo-muscular excitant, one ought to think of administering. I have known the extract and the tincture given in such doses that I am afraid to name them, with no other effect that I could see than to increase the difficulty of breathing, and add to the painful, constrictive sensation in the chest that so frequently attends severe attacks of the disease.

The inhalation of chloroform has of late years been resorted to in this and allied disorders with the most beneficial results. In a very severe case of bronchitic asthma, seen with me by Dr C. B. Williams and Dr Burrows, the relief it afforded was really astonishing. The extracts of belladonna, stramonium, and Indian hemp had entirely failed, as had everything else, though given in full and repeated doses. In this case, as in others, however, the relief was generally but temporary, though most effectual; and from what I have observed, I can safely assert with Dr Salter, in his late valuable work on this disease, that it arrests the paroxysm more speedily and certainly than any other remedy.

The benefit derived from hygiènic means is often more striking in asthma than in any other complaint, and one of our first cares in treating the paroxysm ought to be the selection of a lofty, airy apartment, admitting of thorough ventilation. Curtains and everything likely to prevent the ingress of pure air to the patient should be removed. Paupers who have for nights and days spent most of the time sitting breathless and sleepless in a cold, damp, confined room, frequently pass the first night of their sojourn in an hospital in comparative ease, and in a few days they are often capable of returning home with nothing but their habitual catarrh and its accompanying dyspnœa. So singularly capricious, however, is this disease, that in all cases the feelings of the patient must be consulted and respected. A confined room has been preferred, and the aspect which suits one individual adds to the distress of another. Cold fresh air generally gives relief; "but I have known," says Heberden, "more than one asthma, the fits of which were moderated by sitting before as great a fire as could be borne."

Bold attempts to cut short the attack by full doses of opium with sulphuric ether, stramonium, belladonna, hydrocyanic acid, or other powerful remedies, are reprehensible. They are almost sure to fail; and when they do, they protract it by delaying expectoration, while at the same time they increase the painful desire for sleep. Dr Uwins (on Indigestion, p. 141) refers to a case in which the fits were of such uncommon force as to induce him to prescribe grain doses of the extract of stramonium, and with such marked benefit that the gentleman who was in attendance with him increased the quantity to two grains at a dose. The disorder was checked, but the individual was paralysed immediately upon the cessation of the pulmonary affection, and was afterwards the subject of a maniacal attack. The safest and most efficacious plan is to treat the paroxysm as we would an attack of subacute bronchitis with exalted irritability. Seeing that a free expectoration usually puts an end to the fit, and is the index of approaching relief, whatever may be the remote contingencies, the means available for this purpose ought to be employed in addition to the indications which suggest themselves for relieving congestion of the bronchial membrane. An aged asthmatic, who has very frequently been under my care with attacks of humoral and spasmodic asthma these twenty years, finds benefit from gargling his throat with hot water, "as hot as he can bear it," by the encouragement it gives to expectoration. The application of diluted liquor ammonia to the tonsils, recommended by Trousseau, seems to act in like manner, promoting the secretion and its expulsion from the bronchi. Gulping tepid water has sometimes this effect, and with the same object emetics are much employed on the Continent. As opium and its preparations tend to check expectoration, they should always be combined with ipecacuanha and other expectorants. The following draught may generally be given every three or four hours with advantage in the beginning of the attack :—℞, Liq. Ammon. Acet., ʒij; Tinct. Hyoscyami, ʒss; Vini Ipecac., ℥v; Extracti Belladonnæ, vel Extracti Stramonii, gr. ½; Mist. Camph., ʒi. After a few days, and particularly if the cough is troublesome, the camphorated tincture of opium may be substituted for the henbane. In confirmed chronic cases with catarrhal symptoms, the addition of the acetum scillæ or the oxymel scillæ will be beneficial in modifying the action of the bronchial surface

and determining to the kidneys,—a very important indication. These or similar draughts should be persevered in at longer intervals, during the remission of the attack, while there remains any difficulty of breathing. In not a few instances, so long as there is much irritability of the bronchi, with superinduced congestion or inflammation, ether and other stimulants are hurtful. I have often seen a dose of ether and laudanum singularly and immediately increase the embarrassment of the breathing, while in other cases, apparently of a like nature, it has proved as remarkably beneficial. Indeed, most aged and infirm asthmatics prefer this combination to any other during the height of suffering; it is chiefly useful in protracted attacks and in confirmed cases. Congestion of the portal system, causing colicky pains, tenesmus, or a sense of fulness in the rectum, scanty and high-coloured urine, and a vitiated secretion of bile with uneasiness in the region of the liver, is a frequent accompaniment of attacks of this kind. It is best averted or overcome by mild mercurial purgatives, and in the intervals gentle exercise suitable to the condition of the patient.

Under all circumstances, the bowels ought to be relieved early by a mild aperient. Strong purgatives are positively injurious. Stimulating embrocations to the chest, warm turpentine epithems or sinapisms, relieve internal congestion, and sometimes thereby the difficulty of breathing. They are generally more efficacious if applied between the scapulæ than elsewhere. Dry cupping in this situation, on both sides of the whole of the dorsal vertebræ, has sometimes a most beneficial effect. The diet should principally consist of farinaceous articles; but where the pulse is feeble, animal food should not be withheld, neither should wine and other stimulants in moderation. Suppers are generally injurious. Flatulence is frequently a troublesome attendant, and is best relieved by abstaining from liquids, and the exhibition of small doses of stomachic cordials with the sesquicarbonate of ammonia and soda. To toast-water or lemonade, Floyer recommends to be added a little nitre and sal-ammoniac. The latter remedy is, at the present day, in high favour in Germany. Coffee is perhaps the best beverage. Without having found it so successful as Sir John Pringle, Dr Percival, and Sir John Floyer represent it, I have repeatedly seen a strong cup of coffee very beneficial in mitigating the severity of the symptoms, not only directly, but by facilitating expectoration.

Blood-letting, whether local or general, at one time much in vogue, ought never to be employed except where the heart labours violently, is oppressed, gorged, and struggling to overcome the resistance opposed to the circulation in the lungs through the extreme severity of the paroxysm. Under these circumstances dry cupping between the scapulæ should generally be preferred, though in a few instances, as in a case referred to at pp. 237–8, a small bleeding from the arm, if not imperatively demanded, occasionally saves the sufferer from impending suffocation. These attacks generally proceed from associated valvular or parietal disease of the heart, or a combination of both, constituting *cardiac asthma*, by far the most dangerous and distressing form of the disorder, the consideration of which, however, properly belongs to the subject of diseases of the circulatory system. They are usually best relieved as above directed, or by leeching the præcordial region, the exhibition of chloric or sulphuric æther with laudanum, and by sinapisms to the chest and lower extremities.

Most attacks of asthma generally decline gradually in the aged, and the remissions or intermissions are more or less perfect according to the nature of the co-existing and inducing pathological or organic lesions. On the subsidence of the more severe phenomena a certain amount of distress almost invariably remains, while the individual is subject to a renewal of a fit at any moment, through improper regimen or exposure to the more obvious exciting causes of the disease. In this intermediate state, between intense suffering and ordinary health, the same precautions and remedies, modified according to the diminished urgency of the symptoms, are requisite. Corporeal exertion ought to be avoided for some time, and the mind should be agreeably engaged, not burdened or harassed by too speedy a return to the cares and anxieties of busy life. The warmth of the surface must be preserved by flannel clothing next the skin, and the feet in particular protected. The asthmatic is peculiarly prone to cold feet. Few things are more injurious to him than sudden chills or long exposure to damp and cold. It is however during the decline of the attack that diuretics will be found serviceable, and are especially indicated in the very common cases of the triple complication of chronic catarrh with emphysema of the lungs and enlargement of the heart,—cases peculiarly liable to serous effusion, œdema of

the lungs or hydrothorax. From the time of Galen downwards, the vinegar and oxymel of squills have enjoyed a reputation in asthma chiefly due to their effects on the urinary organs, though they have also a specific and modifying influence on the pulmonary mucous surface in mitigating or removing the congestion and exalted susceptibility on which the disease so often depends.

An intimate knowledge of the history of the individual case, with its concomitant circumstances, will suggest the means by which the return of the attack is likely to be averted. The observing and skilful practitioner does not look to symptoms only,—he is not satisfied with merely prescribing for a name, and pursuing a routine method. Having carefully investigated the exact nature of the case before him,—having ascertained the existence of organic lesions or functional disturbances, and traced their relation to the symptoms or disease which he is about to treat,—he contends with causes, and not with effects, and by removing or alleviating them, he subdues or moderates the asthmatic disorder, and in like manner controls or prevents it. The function of digestion is usually much impaired in all cases of humoral asthma, accompanied with supersecretion from the bronchial mucous membrane. A most important duty of the physician in this combination is the regulation of the patient's diet. In a considerable number of these cases, the best effects are obtained by warm bitter infusions, with or without the liquor potassæ. Tonics are indeed among the best remedies in the intervals of the attack, and among them the ammonio-citrate of iron, and also the citrate of iron and quinine, are often peculiarly useful. The extreme importance of dietetic and hygiènic means in every form and combination of asthma can hardly be overrated. All practical writers, clinical teachers, and personal sufferers are agreed on these points. It was chiefly by regulating his diet that Dr Bree, whose treatise on asthma may even now be consulted with advantage, conquered in his own person an inveterate form of the disease; and it is by a "strict sedative and dietary system," a restricted and carefully managed diet, and the exhibition of three or four grains of the extract of conium, or hyoscyamus, gradually increased to five grains four times a-day, that Mr Pridham* has obtained peculiarly

* On Asthma. Churchill, London, 1860.

satisfactory results, even where the disease was of long duration, and presented in persons of sixty, seventy, and eighty years of age, labouring under chronic catarrh and emphysema of the lungs. He relates a case of this description, occurring in a clergyman above seventy years of age, who had always been desired to live generously on account of his extreme emaciation, and to make up for the copious expectoration of the disease, and who, on being treated on the above system, entirely lost his asthma, which had previously been constant, preventing him for years from lying down in bed at night. The whole of the cases related by Mr Pridham are deeply interesting; and should his plan of treatment prove half as successful in other hands as it has done in his, he will have earned the lasting gratitude of all asthmatics and all lovers of practical medicine. It is in private practice amongst intelligent sufferers only that the practitioner can carry it out; for in the asylums of the aged the difficulties are greater than may at first appear, and asthmatic patients are seldom long enough in general hospitals to give this or any other plan a fair trial. The following is the dietary alluded to:—Breakfast at eight o'clock: half a pint of green tea or coffee, with a little cream, and two ounces of stale bread. Dinner at one o'clock: two ounces of fresh beef or mutton, without fat or skin, two ounces stale bread, or well boiled rice; three hours after dinner, half a pint of weak brandy and water, or toast water *ad libitum*. Supper at seven o'clock: two ounces of meat, with two ounces of dry bread. The patient is not allowed to drink water within one hour of his dinner or supper, or till three hours after; at other times he is not limited.

Next in importance in preventing a return of the attack, and, excepting in dyspeptic cases, certainly not inferior to the regulation of the patient's diet, are the hygiènic measures above adduced or hinted at. Moderate exercise in the open air, warm clothing, and especially flannel next the skin, with worsted or woollen socks, great attention to cleanliness, and the frequent use of the flesh-brush, are of the utmost consequence in all cases of asthma. In the less complicated species of the disease, without serious organic mischief, where perhaps the only pathological action present is a slight chronic bronchitis, sponging the whole surface of the body, but especially the chest, with cold water, or vinegar and

water, followed by the use of the flesh-brush, has been found very advantageous in warding off the paroxysms, and reducing the susceptibility to the impression of atmospheric vicissitudes; it is clear, however, that this practice is better adapted to cases occurring about middle age, before important structural lesions have resulted. There can seldom, however, be any objection to occasional tepid bathing in the most complicated forms met with in advanced life, an attenuated or weakened condition of the heart offering almost the only reason against this otherwise salutary measure, a healthy condition of the skin being an especial object of attention. As already observed, as regards climate and locality, much depends upon peculiar idiosyncrasy. "Sometimes," says Heberden, "any change of air is beneficial;" and a change to what might *à priori* have been regarded as unfavourable, has often proved quite the reverse. As a general rule, a mild, dry, bracing climate, with an equable temperature, suits cases accompanied with bronchorrhœa; a more humid one where there is little or no expectoration.

PART IV.

DISEASES OF THE ORGANS OF CIRCULATION.

CHAPTER I.

ANATOMICAL CHARACTERS OF THE HEART AND ARTERIES IN THE AGED—WHITE SPOTS ON THE HEART AND PERICARDIUM—PERCUSSION AND AUSCULTATION—VENOUS PULSATION—ARTERIAL PULSE.

The heart of the aged differs in several respects from that of the adult. Contrary to what might have been expected, and to what has been asserted, it does not partake of the wasting so general in advanced life; it neither diminishes in bulk nor in weight with the individual, but, according to Bizot,* goes on increasing in all its dimensions—length, breadth, and thickness—up to extreme age. Cruveilhier† also observes that it escapes the atrophy of all the other organs, and is, even in many subjects of advanced life, hypertrophied. These important facts have been fully established by the subsequent researches of Hasse,‡ Neucourt,§ Durand-Fardel,‖ and others in Germany and France, and by the careful investigations of Dr Clendinning¶ in this country. With the single exception of the heart, this writer found every organ

* Mém. de la Soc. Méd. d'Obs. de Paris, t. i., 1836.

† Anat. Descrip., t. iii. p. 33.

‡ Pathol. Anat., Syd. Soc. ed., p. 157, 1846.

§ Arch. Gén. de Méd., t. iii. p. 1, 1843.

‖ Traité, Clin. et Prat., des Malad. des Vieill., p. 652.

¶ Med. Ch. Trans., vol. xxi. p. 52.

examined, including the brain, liver, kidneys, spleen, and pancreas of males sixty years of age, lighter than those of adult males below sixty years of age. The heart, instead of diminishing with the person and viscera, in the instances occurring to him, exceeded, on the average, the normal standard by about $\frac{1}{12}$th part.* Thus, while the viscera are diminishing in weight, and the muscles of animal life are wasting away, the heart is still increasing in size with advanced age, or it maintains the healthy, physiological volume which it had acquired before the atrophy of the various organs had commenced. The same law extends to the arteries, the thickness of their parietes and their calibre increasing indefinitely with age.

The average weight of 31 hearts of male subjects *under* sixty years of age, dying of various diseases, exclusive of phthisis and morbus cordis, examined by Clendinning, was $9\frac{1}{8}$ oz. avoirdupois; of 44 hearts of female subjects thus selected, 7 oz.; whereas the average weight of 37 hearts so selected, of males *above* sixty years of age, was $11\frac{9}{11}$ oz. avoirdupois; and of 33 hearts of females also thus selected, $9\frac{1}{2}$ oz.; leaving out 7 hearts above 11 ounces, it was 8 ounces nearly.† Nothing, however, is more variable than the size and weight of the healthy heart in old age. In emaciated subjects, with advanced senile atrophy or emphysema of the lungs, it is almost always reduced in size, sometimes scarcely larger than a cricket ball; in every series of years Bizot has remarked that it is smaller in the female than the male, a fact confirmed by the researches of Clendinning now quoted. The increased volume and weight of the heart are the result of progressive thickening of the walls, including both auricles, increased capacity of the ventricular and auricular cavities, and enlargement of the auriculo-ventricular orifices. The cavities become larger and the orifices correspondingly wider as the subject advances in age (*Bizot*). The ratio of increase in the capacity of the right and left ventricles continues equal at all ages; so that, according to Bizot, we are justified in rejecting as erroneous the opinion of Béclard, that at advanced age the right cavity undergoes a proportionally greater increase than the left. The progressive thickening of the walls is chiefly apparent in the left ventricle, the walls of the right re-

* *Loc. cit.*, p. 53. † *Loc. cit.*, pp. 59–64.

maining almost stationary. In the male subject, Bizot* found the maximum thickness of the right ventricle, from the fiftieth to the seventy-ninth year, $2\frac{1}{19}$ lines; and in the female, $1\frac{1}{4}$ lines only. Hasse† states that the gradual thickening of the right ventricle is sometimes not at all perceptible. In the female subjects examined by him, the average thickness of the walls of the right ventricle, between the thirtieth and thirty-ninth year, was $1\frac{3}{8}$ of a Parisian line; between the sixtieth and sixty-ninth year, $1\frac{3}{3}$; and between the seventieth and seventy-ninth, $1\frac{1}{2}$.

The thickness of the left ventricle varies considerably with the situation selected for measurement. From the base to the apex it rapidly diminishes. At the last point, the muscular structure is often entirely displaced, the tunica propria and endocardium coming in contact, or being only separated by a thin but strong fibrous texture, a transformation of the adherent surfaces of these membranes. At other times, the muscular structure of the apex of this ventricle has partially or wholly disappeared by fatty degeneration, and yet the heart has seemed to carry on its functions normally. In the male, Bizot found the base of the left ventricle measure, in persons between fifty and seventy-nine years of age, $4\frac{3}{3}\frac{7}{8}$ lines; the middle part, $5\frac{3}{3}\frac{9}{8}$; the apex, $4\frac{1}{2}\frac{1}{9}$: in the female, between fifty and eighty-nine years of age, at the base, $4\frac{1}{2}$ lines; at the middle part, 5 lines; and at the apex, $3\frac{3}{4}$ lines. Neucourt's measurements very nearly correspond with these.

The progressive enlargement of the two auriculo-ventricular orifices is tolerably uniform; that of the two arterial mouths differs. Both increase equally until the meridian of life; but the aortic orifice enlarges more rapidly in advanced age than that of the pulmonary artery, *so that in old persons the latter is still narrower* than the aortic orifice. Narrowing of the orifice of the pulmonary artery is not, however, so remarkable, nor so generally observed, as dilatation of the other orifices of the heart. The contraction is only relative, not pathological, the orifice retaining the normal diameter of earlier life, while the aortic orifice exceeds this.—(*Bizot and Hasse.*)

With respect to the arterial trunks themselves, general dilatation of the ascending portion of the aorta, with or without cal-

* *Loc. cit.*, p. 290. * *Loc. cit.*, p. 157.

careous formations, or horny, cartilaginous patches, is common beyond fifty years of age,—as common as this state of the pulmonary artery is rare. As observed by Hunter,* the aorta loses its elasticity as people advance in life, and being acted upon with great force by the impetus of the blood, it gradually yields. Perpetually subjected to this influence, it often attains double its ordinary calibre, and at the same time acquires a proportional thickness. It is chiefly in men that these pathological changes are seen. The dilatation generally commences above the sinuses, sometimes it embraces the mouth of the artery. In the latter case, and in simple dilatation of this orifice arising from old age, the semilunar valves are usually deficient in length, and permit some reflux of blood into the ventricle.

Calcareous or cartilaginous depositions on these valves are so frequent, that Bizot found them in twelve out of fourteen male subjects above fifty years of age. He states that they occur about three times less frequently in the female. The valves are also sometimes cribriform or net-like; very often thickened, opaque, and corrugated, contrasting with the thin, pellucid, pliant, and perfect valves of the pulmonary artery. Their efficiency is thus much impaired. Taking these various circumstances into consideration—the dilatation of the aortic orifice without corresponding elongation of the valves, the frequent imperfection of these valves from perforation, disease of their texture or analogous formations, interfering with their perfect closure,—perhaps it is fair to conclude that in the majority of old subjects they are inadequate, and regurgitation is inevitable. So very common are alterations of the valves and orifices of the heart in advanced life, that Durand-Fardel† found in 149 persons, above sixty years of age, dying from different diseases, 55 presented changes deserving notice,—not simple opacity or thickening. Of these, 23 were examples of ossification of the different valves and orifices.

The thickening of the left ventricle of the heart in old people is mainly due to the impaired elasticity of the aorta, and the obstruction which these changes in the valves present to the onward flow of the blood. It is a counterbalancing and conservative provision to overcome these impediments, and efficiently

* On the Blood, p. 162.

† *Loc. cit.*, p. 666.

propel the blood through the passive, inelastic, or rigid capillaries. Hence it increases, in an inverse ratio, with the decline of life, the thickening and loss of tone of the extreme vessels.

White Spots on the Heart and Pericardium.—White, milky, or pearly spots on the heart, are so very common in advanced life, that their entire absence is almost exceptional in persons beyond sixty-five or seventy years of age. They are still more common in the male than female. Their ordinary seat is the anterior surface of the right ventricle. They vary in size from a speck not larger than a millet seed to that of a five-shilling piece, and they are as irregular in shape as in extent. Usually they are easily dissected off as a false membrane; but at other times they seem to be a molecular transformation of the tunica propria. Bizot has recognised these two forms, the one produced by a morbid secretion, probably the result of inflammation, the other of a totally different nature and origin, apparently connected with the progress of age. Such would also appear to have been the opinion of Dr Baillie, though not positively expressed. In a short but interesting paper on the subject, in vol. xxiii. of the Med. Chir. Trans., Mr Paget has ably advocated the inflammatory origin of these spots, and I confess that the arguments he has adduced in favour of this opinion weigh strongly with me, though I still incline to the views entertained by Bizot and other observers, that there are two forms, the one of inflammatory origin, the other interstitial, non-inflammatory. The strongest proof that these patches sometimes originate in inflammation is, that we occasionally find bands of adhesion passing from them to the free surface of the pericardium opposite, a singularly striking instance of which recently fell under my notice. Dr Latham has adopted Mr Paget's view, and Rokitansky entertains no doubt on the subject. "These spots," he says, "are occasionally met with on the inner surface of the pericardium; but most frequently on the serous investment of the heart. There can scarcely be a question but that they are products of inflammation."* Whatever may be the true account, their extreme frequency, increasing with the advance of life, is the only reason for alluding to them here, as all agree that they are otherwise wholly unimportant.

* Path. Anat., Syd. Soc. ed., vol. iv., p. 135.

It is in advanced life that other changes in the pericardium and tunica propria cordis are also most commonly encountered, such as dryness, atrophy, thickening, and ossification.

In concluding these remarks, let me mention that in numerous cases in old subjects I have found the base of the aorta and pulmonary artery externally just as they leave the heart, and sometimes for some little way upwards, minutely injected. The reflected portion of the pericardium has then appeared looser, the sub-cellular tissue relaxed, and the arteries and veins ramifying in it larger and more tortuous than natural. Hitherto I have been unable to connect this appearance with any particular mode of dying, though it has generally but not invariably presented itself in chronic pulmonary affections. It has never been accompanied with any local signs of inflammation, and it has always appeared to consist in a varicose enlargement of the vessels, ramifying in the cellular coat of the arteries in the situation stated. Occasionally, it is limited to either artery. More frequently, it shows itself around the commencement of the aorta alone. It is just possible that it might be mistaken for inflammation of the cellular tunic of the vessel.

Physical Signs—Percussion.—The increased volume of the heart is generally indicated pretty accurately by extended dulness of the præcordial region, where the organ is not overlapped by an emphysematous or adherent lung. In either of these cases percussion fails; otherwise it requires much tact, the tact and experience of a Piorry, to discover its exact size through the interposed lung. Where such an obstacle does not exist, the dulness, instead of being limited, as in the young adult, to a space of about three inches in length along the left margin of the sternum, commencing from the inferior edge of the corresponding third rib, and extending about two inches and a half laterally towards the nipple, sometimes exceeds this notably, by half an inch, or even an inch, either way. The apex then beats somewhat lower down, nearly three inches instead of two below the nipple, and is farther removed from the sternum than the beat of the healthy heart in the adult. To ascertain the size of the heart accurately, the patient should be seated and somewhat bent forward, so as to bring the organ in contact with the chest.

Auscultation.—In the physiological state of the heart, the sounds

are unchanged. If altered, they are perhaps duller. The first sound, especially, sometimes appears to be prolonged and muffled, but there are no murmurs, the thickening of the ventricles and the enlargement of the different cavities, and that of the aorta, maintaining a relative proportion. When this is destroyed, M. Beau* has remarked, anormal murmurs arise, but the defective proportion necessary for their production exists less often in the aged than in the adult or adolescent. The moderate regurgitation proceeding from insufficiency of the aortic valves is usually unaccompanied with any bruit, though, when considerable, it is equally marked as in the young, and attended with the vibratory pulse so characteristic of patency of these valves.

There is a peculiarity in the valves of the right side of the heart, not, however, confined to the old, but, in the instance of the tricuspid valve, more remarkable in them, and deserving a moment's consideration. In the words of Hunter, the valves in the right side of the heart do not so perfectly do their duty as those at the left. Hunter was the first to announce this important fact, a fact which the subsequent observations and experiments of Mr Adams† and Mr T. Wilkinson King‡ have served to confirm. In the healthy state, the tricuspid valves admit of a certain amount of regurgitation, and these gentlemen regard them as thus exercising a kind of safety-valve function. Dr Blakiston§ conceives that this action has probably been over-rated, and appears to believe that it would not improve the chances of life did nature thus attempt to relieve arterial congestion by means calculated to induce venous engorgement. Dr Latham‖ coincides with the views of Hunter, Mr Adams, and Mr King, and regards the insufficiency of the valves of the right side as an admirable provision, coming into frequent exercise in health, and absolutely required to prevent the gravest injuries, and even to guard the continuance of life. But our only object is to direct attention to the fact of the insufficiency.

Venous Pulsation.—Consequent to this imperfection, so to speak, of the tricuspid valves and the greater dilatation of this orifice in advanced life, pulsation of the jugular veins is more

* Arch. Gén. de Méd., t. xiv.
† Cyclop. of Anat.
‡ Guy's Hospital Reports.
§ On Dis. of the Heart, p. 213.
‖ Ibid., vol. i. p. 278.

frequently seen then; and in many old emaciated subjects, any undue excitement of the heart is productive of undulation of the veins above the clavicle, sometimes extending beyond that. Occasional distention and tremor of the jugular veins may thus be regarded in general as of less serious import in the aged. When the vibratory motion extends beyond the neck, when it reaches to the veins of the extremities, and is permanent, the dilatation of the tricuspid orifice is abnormal, and the evidence of disease of the right side of the heart conclusive. Venous congestion, if not already urgent, is at hand, and hæmorrhages or dropsy not far distant. Tricuspid regurgitation is seldom accompanied with any murmur. Although mere hypertrophy of the heart may occasion undulation of the jugular veins, this is nevertheless the most direct sign of insufficiency of this valve, and, as might *à priori* be expected, the pulsation is more obvious on the right than on the left side. The veins here are often prominent and undulating, while those on the opposite side are not more than visible.

Heart's Action and Pulsations.—Contrary to pretty general belief, the action of the heart does not become less frequent with the advance of age, nor are its pulsations less powerful. The impulse is perhaps less generally visible. Partaking of the characters of hypertrophy, the walls of the organ in healthy individuals come more into contact with the chest, and the motion is heaving and diffused. The average number of its pulsations in the minute is, if anything, greater than in the young adult, or at the middle period of life. MM. Leuret and Mitivié were the first to ascertain this unexpected result, diametrically opposed to the views of preceding writers. These observers found the pulse of 34 sane women, in good health, whose medium age was seventy-one years, average 79 beats in the minute; in 27 men, also healthy, whose medium age was seventy-one years, it averaged 73; whereas in 110 young men, whose average age was twenty-one years, the medium pulse was only 65 per minute. MM. Hourmann and Dechambre,* investigating the subject in connection with the frequency of the respiration in the aged, confirm the general accuracy of MM. Leuret and Mitivié's conclusions; and as their observations were made on a larger number of persons, they are

* Arch. Gén. de Méd., November 1835, t. ix.

the more satisfactory. In 255 females, in good health, between sixty and ninety-six years of age, the average being 74·33 years, the medium number of pulsations per minute was 82·29; medium number of respirations per minute, 21·79. The ratio of the frequency of the respiration to that of the pulse was as 1 : 3·41. Dr Pinnock* of Philadelphia, regarding these results as highly interesting in a physiological and pathological point of view, instituted a series of observations of the same kind. Rejecting all observations of individuals in whom any rational or physical sign of cardiac, pulmonic, or other disease existed, the number of persons whose pulse was reported was 170 men and 203 women, being an aggregate of 373; the ages of the men being between fifty and ninety years, those of the women from fifty to 115 years. The medium age of the men was 64·09 years, the medium pulse 71·83 per minute, and the medium respiration 20·51,—the ratio of respiration to pulsation being as 1 : 3·51. The medium age of the women was 70·57 years, the medium pulse 78·02 per minute, the medium respiration 22·06—the ratio of respiration to pulsation being as 1 : 3·53. These observations appear to have been conducted with great care, and they closely correspond with the results obtained by MM. Leuret and Mitivié and MM. Hourmann and Dechambre. It follows, then, as Dr Pinnock has remarked, that the frequency of the pulse of the aged is much greater than that usually assigned to it; whilst that of the respiration is equal to what it is generally admitted to be in the adult. Nor are the facts vitiated by the limited observations of Rochoux,† who, surprised by the published statements of MM. Leuret and Mitivié, examined at the Bicêtre 14 old persons whose mean age was seventy-two years and a fraction, and the mean frequency of the pulse 60½ per minute. In support of the general opinion of the gradual diminution of the pulse with the progress of years, this author cites several instances of remarkably slow pulse in the aged: one seen by Richerand, of a healthy man eighty-eight years of age, whose pulse was 29; another, of a woman eighty years of age, in which it was 36. In a third case, witnessed by himself, presenting in a man eighty-five years of age, it was about 20 when he was admitted into the infir-

* Amer. Jour. of Med. Sc., vol. xiv. p. 68, 1847.

† Dict. de Méd., tome xxv., Art. *Pouls*, p. 613.

mary. After remaining at this rate for three or four days, it fell to 16 or 19 before death. From the symptoms, however, there seems to me reason to believe that this was a case of softening or fatty degeneration of the heart, and it ought therefore to be excluded from the present question, solely occupied with the physiological action of the heart in old age, not with the modifications induced by disease. "It is in old age," say MM. Hourmann and Dechambre,* "that the pulse presents extremes of slowness or of frequency; but the first case is the exception, the second is the rule; the error of past time has been to take the one for the other." My own investigations on a limited scale, exclusively occupied with old men, so nearly correspond with those of the above observers, that I have preferred putting the reader in possession of the results obtained by them. For several months together I noted the pulse of two healthy aged men—one eighty-two, the other of the age of one hundred and six years. In the first the pulse averaged 70 in the minute, examined in the forenoon, two hours after breakfast, in the sitting posture; and in the second, in precisely similar circumstances, it averaged 72. In both it became a little accelerated towards evening. As a general rule it may be stated, in healthy subjects, the number of the pulsations of the heart in the minute increases with the advance of life after sixty years of age, though slowly; in the aged female, as in the adult, it is quicker than in the male of the same age, and in both it gains four or five beats or more when the person is standing. In this respect, change of posture seems to have as much influence, if not more, on the heart's action in the old.

Of themselves, habitual, or as it may be called, constitutional frequency or slowness of the pulse, affords little or no information as to the anatomical state of the heart, or the general health. When the one or the other deviates considerably from the average standard, disease may be suspected; but the heart itself may be sound, and the health may be good, with a pulse daily and steadily beating 40 or 80 times in the minute, and that in individuals who have reached ninety years of age. Variations in the rhythm and strength of the pulsations of the heart, are more characteristic of disease. Permanent quickness is sometimes

* Arch. Gén. de Méd., tome ix., 1835, p. 357

connected with the gouty diathesis—permanent slowness occasionally depends on cerebral disease; both often proceed from structural change in the heart; but with these cases we at present have nothing to do. It may, however, be remarked, that insufficiency of the aortic valves is the most frequent structural lesion of the heart, occasioning acceleration of its action; and that fatty degeneration is perhaps the principal inherent cause of diminution in the number of its pulsations, as well as of irregularity in the strength of its beats.

But irregularity in the rhythm of the heart, and strength of its beats, are far from uncommon in persons of advanced life, irrespective of structural lesion of the organ, and, like habitual frequency or slowness of the pulse, are compatible with good health. They may exist separately or conjointly. Of the two actions, independently of disease, intermission is the more frequent. Every one has met with old persons in the enjoyment of health, and possessing vigorous constitutions, in whom these variations have long been manifested. Gradual in their development, the system has accommodated itself to the anomaly; and though persons thus circumstanced are liable to attacks of dyspnœa on sudden exertion, they are usually quite unconscious of the modifications in the heart's action by any sensation in the chest. Changes in the orifices of the heart are so frequent, however, in the decline of life, that intermission in its action or variations in the strength of its pulsations are often but the signs and effects of these alterations. When associated with palpitation and shortness of breath, they are more than suspicious; and when there is added to these symptoms a murmur with the first or second sound, they are evidence of the existence of lesions of the valves and orifices. Nor does the converse always hold good: palpitation and murmurs may be absent, and yet extensive structural changes be present. It is well known that murmurs often cease with the progress of organic disease of the heart.

It is an interesting and remarkable circumstance that the habitual irregularities referred to, occasionally disappear under the influence of acute inflammatory diseases remote from the heart itself, and return with their cessation. They would thus seem in certain cases to depend upon deficient stimulus or nervous excite-

ment, were it not equally well known that intermission of the pulse sometimes ceases during the administration of digitalis, a medicine which has a powerful sedative effect on the heart, retarding its action and diminishing the energy of its contractions.

Arterial Pulse.—In the normal state of the heart and blood-vessels, the arterial pulse of the adult is in general a fair index of the tone of the system, and of the strength and frequency of the heart's action. In advanced life, it is modified by the lesions developed in the coats of the arteries, their impaired elasticity, and by the changes in the heart itself. It is, therefore, a less safe guide than in earlier years. Dr Williams has justly observed, "The hard wiry pulse is connected with small arteries with rigid coats; and the same rigidity or deficiency of elasticity in the coats of the arteries of large size gives that unvarying hardness and strength to the pulse which we so often meet with in old people, and which renders it so uncertain a sign in these cases. We may often," he adds, "in the radial artery, feel the permanent thickening and hardness of its coats, which thus, like a tube of glass or metal, rigidly transmit the heart's pulses, without tempering them by any yielding or spring." The radial artery is frequently extensively studded with calcareous formations which under the finger feel like so many grains of shot, and which are rendered very perceptible by gliding the integuments over the vessel. The hypertrophied condition of the radial arteries, and arteries of the same calibre, appears to commence about the age of fifty; calcareous depositions somewhat later; but in several instances the radial artery is granular in persons who have not reached that age, and in whom the force and hardness of the heart's action, when judged of by the pulse at the wrist, are apparently great, but in reality, when examined at the heart itself, not more than natural. The rigid, inelastic artery, not only conveys a fictitious firmness, but receiving the full impress of the heart's action on any undue excitement, the pulse is at the same time hard and jarring,—such a pulse as might encourage the incautious practitioner to bold and dangerous practice.

The modifications of the arterial pulse, chiefly dependent on the state of the coats of the vessels, are greatly influenced by the peculiar changes in the heart itself. The increased thickness of the left ventricle, its enlarged capacity, and the greater diameter

of the aortic orifice, powerfully affect the circulation, and modify the radial pulse even in those cases in which the artery preserves its normal elasticity. The wave of blood sent through the aorta is larger; and where no impediment exists, the pulse at the wrist is often fuller and stronger in vigorous old persons than in the adult in ordinary circumstances. Bizot* ingeniously accounts for the force and hardness of the pulse in old subjects, by observing that a great part of the arterial system, having lost its elasticity in individuals of advanced age, from the development of organic changes, the entire force of the heart's action, which would be partly spent in dilating the whole system of arterial tubes, had they been all elastic, is transmitted to whatever vessels remain sound. Now, as the radial artery (we are still quoting that excellent observer) is among the latter, it is perfectly natural that the pulse should be stronger in the old than in the young.

In irregularity and intermission of the heart's action, associated or otherwise with disease of the organ, the arterial pulse occasionally fails to represent the number as well as the strength of the heart's pulses, some of the more feeble contractions inefficiently influencing the column of blood in the remote arteries. The radial pulse may thus be still more irregular in the equable succession and force of its beats than the heart itself; it may be intermittent—while there is no unusual prolongation of the period of repose in the heart's action, but only feebleness of the ventricular contraction, failing to render itself perceptible at the wrist. Cold exercises a powerful influence in diminishing the volume and strength of the arterial pulse, and it is not unimportant to remark that this effect of cold is particularly striking in old people. In feeling their pulse, the hand which has been longest under the bed-clothes should always be selected.

It follows from these various circumstances, that, as advised by Laennec, and subsequently by Prus, we should not be satisfied with merely examining the pulse at the wrist, but should attentively explore the condition of the heart itself. The pulse at the wrist in old age is deceptive, often unsatisfactory. Frequently it seems firm and wiry, while at the heart it is so weak as to be counted or detected with difficulty.

* Brit. and For. Med. Rev., vol. vi. p. 48.

CHAPTER II.

PERICARDITIS.

Though chiefly prevalent in youth and manhood when acute rheumatism, its great source, is rife, pericarditis is far from uncommon at advanced periods of life, and there seems reason to believe that it is then less rare than is generally imagined. Statistical inquiries on this head give very different results. Out of 55 cases noted by Hache, as quoted by Hasse,* 6 only referred to individuals beyond the fortieth year. From an analysis, however, of 36 cases, wherein adhesion of the pericardium to the heart existed, Louis† had previously arrived at the conclusion that this affection occurs most frequently between the ages of seventeen and thirty, and after that between fifty and sixty. Among 500 in-pensioners of Chelsea Hospital, almost all of whom are above fifty-five years of age, and several between eighty and ninety, scarcely a year passes without two or three cases presenting themselves, the disease occurring in the so-called idiopathic form, independently, but much more frequently in connection with some acute or chronic malady, often with pleuropneumonia, organic disease of the heart itself, chronic gout, or granular degeneration of the kidneys. In the thirteen years ending 31st December 1859, it carried off 24 of these men, the youngest of whom was sixty, the oldest eighty-four. The average age of the whole was a little over seventy-four. According to the reports of the Registrar-General,‡ the deaths from pericarditis in the two years 1840–41 in the metropolis, out of 1,000,000 living at the respective periods of life, was in the proportion of 16 at and under fifteen years of age; 20 at fifteen and under sixty; and 13 at sixty years of age and upwards. Without, therefore, entirely agreeing with the opinion

* Path. Anat., Syd. Soc. ed., p. 119. † Recherches Anat. Path., p. 292.
‡ Fifth Ann. Rep. Reg.-Gen., 1843, p. 456.

of Louis, derived from *post-mortem* examinations, there can be no reasonable doubt that the disease is sufficiently common in advanced life to merit, from its importance, the attention of the student of senile pathology, seeing that in a *population* of 500 old persons, whose age varies from fifty to ninety and upwards, two and sometimes three instances occur annually, and that the ratio of mortality from this cause in the metropolitan districts, at the two extremes of life, approaches so nearly as to be represented by these figures, 16 and 13 ; indeed, at the three different periods referred to, it is so close as to be somewhat remarkable. It is needless, however, to observe that, as the disease is more fatal in advanced age, correct inferences cannot be deduced as to its relative frequency at the different periods of life, from the reports of the Registrar-General, which only record its destructiveness.

It is impossible to reconcile these results with those arrived at by certain careful inquirers. Acute pericarditis and endocarditis, says M. Durand-Fardel,* are very rare in the aged. M. Bouilland, he observes, has but a solitary example of acute pericarditis, in his treatise on the diseases of the heart, in a person beyond fifty years of age ; and a single case of endocarditis, and that doubtful and undiagnosced, in a female dying of pneumonia at sixty-four years of age. M. Beau and M. Gillette (men of large experience in senile diseases) had not met a single instance during many years at the Salpêtrière.

Causes.—Pericarditis may be occasioned by any of the ordinary causes of inflammation. A certain "epidemic constitution" appears now and then to exist, during which the disease is more common, just as pleurisy and pneumonia are occasionally prevalent. The aged are then not exempted. The year 1846 was peculiar in this respect ; for out of at least five cases, three men died from it in Chelsea Hospital, whose age averaged seventy-five. But of all the causes of this disease, predisposing and determining, the rheumatic diathesis, and acute articular rheumatism especially, is assuredly the most remarkable. Or, it would be more correct to say, that the causes which produce rheumatism are its most frequent and undoubted source, knowing, as we do, that the pericardium is occasionally, though rarely, in the order of accession

* Traité, Clin. et Prat., des Malad. des Vieillards, p. 647.

the first affected, and the articulations afterwards. So common is the coincidence of pericarditis with rheumatic fever, that some have regarded it as almost exclusively a rheumatic affection. A learned and accomplished physician, to whom medical science is much indebted, has declared in his valuable work on the diseases of the heart, that his own experience of acute, rapidly progressive pericarditis is mainly derived from what it is as an accompaniment of acute rheumatism. Fully aware that it may occur independently of this disease, he observes, "I have seen it under other circumstances, but it has been very seldom,—so seldom, indeed, that I have little acquaintance with other conditions, external or internal, conducing to it. . . . Separate from acute rheumatism even the practice of a large hospital does not present me with more than an instance or two of it in several years."* Now, it is precisely under other circumstances that pericarditis, when it does occur, occurs in advanced life; for acute rheumatism is especially a disease of youth and manhood, and is so rare beyond sixty years of age, that it is then hardly ever encountered. Nor does chronic rheumatism, the frequent accompaniment of old age, explain the difficulty. In 109 cases of that disease collated by Dr Taylor, taken indiscriminately, two only had acute pericarditis, and even of these one was doubtful.† The elaborate and philosophical memoir of that lamented author on some of the causes of the disease affords valuable information on this portion of its history; but, as regards the pericarditis of the aged, it is unavoidably imperfect, nearly all the cases referred to having appeared before the meridian of life. The result of Dr Taylor's labours may however be stated with advantage, as materially aiding the inquiry. Next to acute rheumatism, he found Bright's disease the most influential cause of pericarditis. Dr T. K. Chambers's subsequent researches lead to the inference that diseased kidneys cause it in the proportion of two to one of rheumatism, judging only, however, from fatal cases; and Dr Barclay states that in 16 fatal cases, the cause of the disease was rheumatic fever in 5 of the cases, diseased kidneys in 8, and other causes in 3. Dr Taylor‡ found that acute rheumatism and Bright's disease caused *acute* pericarditis in an equal proportion of cases. Here again, however,

* Latham on Dis. of the Heart, vol. i. p. 136.

† Med. Ch. Trans., vol. xxviii. p. 504.

‡ *Loc. cit.*, p. 558.

a similar remark may be made respecting Bright's disease as of acute rheumatism: it is generally met with below sixty, and is therefore not so common a cause of inflammation of the pericardium in old age as earlier, though undoubtedly it occasions it then more frequently than rheumatism. It is the prevalence of other diseases conducing to it, and particularly of chronic gout and organic disease of the heart itself, that makes up the difference.

In advanced life, it is often developed in the course of other diseases of an acute or chronic nature, affecting especially the thoracic organs. It is then not unfrequently associated with acute bronchitis, acute or recent pneumonia, pleuritis or pleuropneumonia, and proceeds from the same causes inducing them, rather than by an extension of the inflammation, as Chomel* has already observed, towards the pericardium. A former attack predisposes to a return of the disease, some old people being carried off by it who appeared to have suffered in youth, and long outlived the rheumatic tendency. Occasionally it shows itself, as in adults, during the progress of scurvy or purpura, and in very low states of the system, as the last link of a long chain of morbid action, and may then immediately precede dissolution. Thus, it now and then occurs without any external or exciting cause in feeble, bed-ridden old subjects, worn out by exhausting discharges or a complication of organic maladies of long standing, impairing the vital energies and vitiating the blood. It is in all these cases almost always of a low form, entirely latent, or only to be discovered, if at all, by its physical signs. Endocarditis does not appear to be a common accompaniment of the disease in the old. I have not seen it more than twice in nineteen fatal cases. The following is a case of latent hæmorrhagic gouty pericarditis, occurring during convalescence from acuto-chronic gout with bronchitis:—

Case.—A thickset, stout built, clear and ruddy complexioned German, aged seventy-six, was admitted into the Infirmary of Chelsea Hospital on 10th December 1859, with an attack of acute gout in his feet and hands, grafted on the chronic form of the malady, to which he had been a martyr for upwards of thirty years, and by which he was completely crippled, his toes and fingers being distorted and chalky. Along with this attack he

* Dict. de Méd., in 30 tomes, article *Pericardite*.

was suffering from vesicular bronchitis and doubtful pneumonia. He was fast convalescing, when suddenly his breathing became more embarrassed, his appetite, hitherto good, declined, and there was a slight accession of febrile movement, with pallor of the countenance and feebleness of the pulse. He continued perfectly sensible, and free from pain in the chest, though he had a constant dry cough. He was so much debilitated by his previous illness, and now so prostrated, that a satisfactory exploration of the thoracic organs could not be instituted. The action of the heart and its sounds were drowned by different bronchial râles. Wine and tonics were administered, and the compound tincture of colchicum, with the bicarbonate of ammonia and camphor mixture, exhibited every three or four hours. In about three weeks from the period of his relapse he died, on the 16th April 1860, sinking slowly but progressively from day to day. On inspection, the whole of the pericardium was found distended with almost pure blood, and, together with the surface of the heart, covered with a thick coating of fibrine, evidently recently deposited. All the valves were perfectly healthy. The heart itself was large, but sound. Both kidneys were much contracted and nodular, without any trace of granular degeneration. The lungs were emphysematous, and the bronchial tubes much congested.

General Symptoms.—The acknowledged obscurity of this disease in very many cases, occurring at a time of life when the phlegmasiæ are generally announced by decided symptoms, is greatly increased in old age. We here too, in a great measure, lose the advantage afforded by an acquaintance with the etiological and pathological relation of the malady in the adult. In a large proportion of cases, known as an accompaniment of acute rheumatism, the practitioner is ever on the watch for its approach when he has to deal with that disease, and he is frequently rewarded for his pains by discovering it at a period when, without this knowledge, he would fail, and without which the disease might advance to a fatal result unsuspected. The mere suspicion of the probable advent of the disease suggests the means of its detection. We anticipate it in acute rheumatism, seek for it, and often find it; but even in youth, apart from that disease, it is frequently so insidious and silent in its progress as to escape observation. Dr Taylor has remarked, that "non-rheumatic pericarditis is, in a

large proportion of cases, quite latent, in the ordinary acceptation of the term;" and as that is the form of the disease met with in advanced life, it then still more frequently eludes discovery. It is also, in numerous instances, masked by some associated disorder. Nevertheless, when sought for, I believe it may be detected in the majority of cases, where the physical signs are not interrupted or marred by previous adhesions of the pericardium, preventing the development of the friction sounds and limiting the effusion. It is to the habit of looking to acute rheumatism as the chief cause of the disease that we are in some measure to ascribe the supposed immunity of the old, as well as its frequent latency at this period of life.

Pain, it is well known, is far from a constant accompaniment of pericarditis. Dr Addison affirms that it is not present unless the pleura is engaged. The most intense and rapid forms of the disease now and then pursue their course without it. If this be the case in youth, it is much more common in advanced life, and in enfeebled old subjects pain in the region of the heart is exceptional. Occasionally, however, though rarely, it is of the most severe character, stretching to the shoulder or through to the scapula. A man, aged fifty-seven, described it to me as burning and excruciating. At times he felt as if the heart was being squeezed as in a vice, and too large for the chest. The symptoms simulated angina pectoris. The sufferings of the celebrated Mirabeau, who died of this disease at the age of forty-four, were equally intense. Much more frequently, when at all present, the pain is dull, occasionally intermittent and lancinating. In many cases—and it is important to remember this—as first pointed out, I believe, by Dr Sibson, it can be elicited by steady pressure with the palm of the hand over the region of the heart, by pressure in the intercostal spaces, or by pressure directed upwards beneath the left false ribs. Dyspnœa is almost always a prominent symptom; but, like pain, it is extremely variable, and in uncomplicated cases moderate, or entirely absent. It is influenced by the degree of pain, the nature of the associated diseases, and the amount of effusion into the pericardium. A sensation of tightness or fulness across the chest or at the pit of the stomach is also generally present. There is usually some slight cough, aggravating the pain when it exists, and greatly embarrassing the breathing. Faintness, or a sensation

of sinking, is still more common than in early life; it is met with in rather more than half the cases. The pulse is rapid, feeble, and irregular; the action of the heart tumultuous and jogging, at other times weak and fluttering. This irregularity of the heart's action and state of the pulse, together with some oppression of the chest, are occasionally the first symptoms that direct attention to the inflammation. Towards the end of March 1851, in an obscure attack—obscure from the total absence of præcordial pain, and the complicated nature of the case—occurring in a man labouring under albuminuria with chronic empyema of the *right* side, it was this fluttering and palpitation of the heart, appearing suddenly, that suggested the invasion of the disease, the existence of which was, however, only verified on *post-mortem* examination, the inflammation being limited in patches to the posterior segment of the sac. Hope mentions, in the article on Pericarditis in the Cyclop. of Prac. Med., that from similar phenomena Chomel correctly diagnosed the supervention of the disease in a case of typhus.

Along with these symptoms, there is more or less febrile reaction; but the disease may rapidly advance to suppuration and the copious deposition of lymph, with scarcely any heat of skin or thirst. The countenance is usually pale and anxious; the strength is prostrated early; and in the most obscure and complicated cases it is evident that the patient has been seized with some serious disease. When cerebral symptoms occur, they are almost uniformly of a low type, such as are observed in uræmic poisoning in the aged, or in the last stage of many of their exhausting diseases.

Physical Signs.—The physical signs of pericarditis are of the utmost importance. Without a thorough appreciation of them, the diagnosis is, in very many instances, impracticable. The existence of the disease may be, in the language of Laennec, "divined" or guessed at by the functional symptoms when strongly marked and grouped, but it is only by the aid of the physical signs that the diagnosis can be satisfactorily established; by them alone can we distinguish it from pleurisy or inflammation within the heart itself.

These signs do not materially differ from what we are accustomed to observe in adults. Effusion takes place more rapidly in

advanced age. Dulness on percussion is consequently earlier present; but the value of this sign is somewhat diminished by the frequent coincidence of enlargement of the heart in old people. Bulging of the intercostal spaces, and general fulness of the præcordial region are seldom witnessed. Notwithstanding the attenuation of the aged, and the favourable state of the chest for the detection of the phenomenon, the wave-like undulating motion sometimes seen in cases of effusion into the pericardium in youth and manhood has escaped my observation. In only one instance did it at all appear to exist, and then it was doubtful. The attrition sounds are also less distinct and more evanescent; indeed they sometimes never occur, or are now and then but very faintly if at all audible. Since these sounds do not cease with the occurrence of effusion, but according to Dr Latham,* are generally left unaltered, and since, to borrow the words of Dr Walshe,† "no conceivable amount of fluid will of necessity totally annul them," their shorter duration, more frequent absence, and more obscure character in advanced life can only proceed from a weaker and more irregular action of the heart, unfavourable to their high development. As above observed, the existence of old adhesions interfere with the production of friction-sounds, and, by limiting effusion, diminish the area of the præcordial dulness. But another and not unfrequent source of difficulty, also alluded to in speaking of the senile heart, is occasioned by the overlapping of an emphysematous lung, eliciting preternatural clearness on percussion, and by the accompanying cooing râles, entirely masking existing pericarditic dulness and rubbing. In an instructive and remarkable case, presenting in a man seventy-five years of age, admitted into the infirmary of Chelsea Hospital on the 27th March 1851, with acute bronchitis and, as it afterwards turned out, hæmorrhagic pericarditis, the disease was suspected but not diagnosed, owing to these causes, though the pericardium was greatly distended with almost pure blood, and both it and the heart covered with fibrine. It may be easily conceived that the degree of the friction-sound may vary with the character of the effusion in respect to fluidity; when it wholly or mainly consists of blood, it is likely to be less sharp and distinct than where it is simply serous. The thicker

* *Loc. cit.*, vol. i. pp. 130, 131.

† On Diseases of the Lungs and Heart, first ed., p. 441.

the coating of lymph on the heart also, the more obscure is it usually. In all cases it is essential to distinguish between old-standing sounds from persisting organic lesions, sometimes imitating, and that very closely too, pericardial friction.

Prognosis.—The mortality from this disease is very considerably higher in advanced life than at other periods. In the young and middle-aged it appears to be "neither more dangerous nor more difficult of cure than pleurisy" (Graves); and it has been computed that, taking the severe and mild forms together, 5 per cent. would probably be a near approach to an accurate estimate of the fatal cases.* Rheumatic pericarditis is much less dangerous than the non-rheumatic form of the disease, and the more simple the attack, the less is the risk of life. It is altogether under opposite conditions that the inflammation commonly presents itself in the aged. Hence its greater fatality—a fatality which may be not inaccurately estimated from the fact that Dr Ormerod found in all ages 91·6 per cent. of the non-rheumatic cases were fatal, whereas of the rheumatic form 18 per cent. only were fatal; but Dr Gairdner's experience enables us to give a still more favourable view of this variety of the disease, since he states that during upwards of six years of almost constant attendance at the Edinburgh Royal Infirmary as physician, he had not had under his own personal care a single fatal case of rheumatic pericarditis, and of pericarditis without any previous disease acute or chronic.† No doubt slight or limited attacks, eluding discovery, are frequently recovered from; but it is perhaps fair to conclude, that above sixty years of age, nearly all the cases that come under observation perish, not so much from the disease itself, as from the attendant circumstances of shattered health, the co-existence of pleurisy, pneumonia, and structural disease of the heart itself, or of the kidneys. Out of 24 cases terminating fatally, the youngest of whom was fifty-one, the next sixty-two, and the oldest eighty-four, that came under my observation, death happened at various periods between two days and twenty-eight or thirty days. The majority were carried off within a fortnight. Only in one or two instances did the period extend to four or five weeks, so that in old age it may be inferred the disease very seldom assumes a chronic form, either *ab initio* or consecutively.

* Gerrhard on the Dis. of the Chest, 3d ed., p. 293. † On Pericarditis, p. 29.

Treatment.—Generally the result of impaired health, seldom idiopathic, often an accompaniment of pectoral, renal, or cardiac disease, sometimes a consequence of acute or chronic gout, occasionally of so mild a form or of so low a type as to require the utmost penetration to discover it, at other times of so acute a character as to obtrude itself on the most inattentive, now attended with high febrile reaction, now by asthenic symptoms—it is obvious that each individual case must be managed according to its peculiarities, its associations, and the degree of inflammatory action or vital power.

Except in vigorous constitutions and acute attacks, venesection ought very rarely if ever to be practised. In no instance occurring in advanced life have I ever had occasion to employ it. Under the circumstances adverted to, however, topical bleeding by leeches ought seldom to be omitted. Mercury, so very generally regarded, until recently at least, as a most important if not an essential remedy in the treatment of acute pericarditis in youth and middle age, especially in the rheumatic form of the disease, is more frequently injurious than beneficial in advanced life. It is then often contra-indicated by the nature of the attack, and the character of the associated maladies. In cachectic states of the system, whether scorbutic or the result of protracted exhausting diseases, as albuminuria, no other remedy is so likely to prove hurtful, and it is exactly under such circumstances that the disease not unfrequently occurs in the aged. Still, in the more simple forms of the disease, occurring in healthy subjects, and originating spontaneously, without renal complication, gout, or a depraved condition of the blood, its mild administration sometimes appears to avert the consequences of the inflammation, and, together with local bleeding, it constitutes one of the chief means in all severe attacks of this kind. In ordinary seizures, we must trust to supporting the powers of life, the internal and external use of sedatives, and counter-irritation. Stimuli are usually required from the very onset, sometimes unsparingly; but whatever tends to unduly excite the heart's action must be eschewed. Wherever this is excessive and unsubdued by the local abstraction of blood, smearing the region of the heart with the extract of belladonna has occasionally an excellent effect. Opium is the chief remedy on which we may rely in mitigating pain, whether it be continuous or of a neu-

ralgic character; and in cases where this is a prominent feature, we should not hesitate to prescribe it, short of narcotism. Nothing is more exhausting in this complaint than violent pain, and to alleviate it we must run many risks. Opium will not only mitigate it, but will support the strength, and is a valuable antiphlogistic in these cases. So is colchicum, and it may often be employed with advantage where neither blood-letting nor mercury is advisable. A blister should be placed on the chest a short distance from the region of the heart, so as not to interfere with the subsequent exploration of that organ, and to admit of the application of leeches should this be deemed requisite. Gouty attacks should be encountered by leeching, occasional calomel purgatives, Dover's powder, with the acetous extract of colchicum, and vesicatories to the neighbourhood of the heart. If the kidneys are affected, we can hardly look for recovery; still we should not despair, nor omit such means as the degree of the pericarditic inflammation requires and suggests. Blistering, occasional diuretic purgatives, and digitalis, with tonics, are then the principal remedies.

CHAPTER III.

ENDOCARDITIS.

Causes.—This disease is less frequent in advanced life than the former, but, like it, it is often overlooked, and still more obscure and more generally latent. As an acute affection—and Rokitansky seems to regard it as only occurring as such—it is almost always met with engrafted on chronic lesion of the heart, particularly of its valvular apparatus. These are predisposing causes, and are in themselves very generally consequences of a persistent form of the disease, or of repeated acute attacks, each still further altering the normal condition of the affected membrane, and destroying or impairing the integrity of the valves.

In declining life, endocarditis is generally met with in gouty subjects, or in people whose constitutions have been damaged by habits of intemperance. I have seen it, or, to speak more accurately, I have suspected it in several instances when I had every reason to believe the attacks were independent of previously existing structural change, occurring in aged individuals perpetually under the stimulus of fermented liquors, who, on being removed from situations exposing them to temptation, ceased to exhibit the supposed phenomena of the disease, leaving no doubt in my mind that in these cases at least the exciting or perpetuating cause was drunkenness. As endocarditis is seldom fatal in the acute stage, this must rarely be susceptible of proof, but, in the cases referred to, and in others in which the disease was either primary or secondary, the following were the symptoms which in my opinion authorised the diagnosis.

Symptoms.—A sudden attack of palpitation of the heart, with irregular action or intermission, and a sense of oppression about the organ seldom amounting to pain ; much difficulty of breathing, slight febrile reaction, prostration exceeding what the local dis-

tress might indicate, quickness, sometimes with irritability of the pulse;* a soft, obscure blowing, with the first sound limited to the præcordial region, or but very faintly heard in the aorta, diminished sharpness of the second sound, and the absence of the rational and physical signs of pericarditis. Still the diagnosis is often incomplete and very perplexing. Where the endocordial murmurs are sufficiently developed to follow the current of blood, the difficulty may be considered removed.

Like pericarditis, endocarditis is occasionally coincident with acute bronchitis, but oftener with pneumonia. Dr Taylor† has clearly established its very frequent dependence on Bright's disease of the kidneys. In old persons, the circumstances under which it appears are very similar, if not identical, with those producing pericarditis at this period of life. I shall perhaps return to this question in considering valvular disease of the heart, and speak of the connection of endocarditis with gout. Gout and intemperance appear more frequently to conduce to it than to pericarditis. Generally the inflammation assumes a sub-acute or chronic form, and ends in fibrinous vegetations, or thickening and puckering of the valves engaged. On other occasions the endocardium ulcerates, and the ulceration sometimes extends into the substance of the heart, giving rise to true or partial aneurism, or the valves are perforated and their efficiency completely destroyed. In a case of this nature falling under my care several years ago, occurring in a man seventy years of age, there seemed reason to believe that the disease was not of more than ten days' duration. One of the aortic valves was found entirely destroyed at its base by a well-defined erosion. Excessive difficulty of breathing, with palpitation, were the principal symptoms on admission into the Infirmary, and lasted till the end. The man had previously been apparently in good health, and free from any cardiac disorder. He died in a fit of intense dyspnœa. No bruit was discovered in this case. Perhaps the rupture of the valve coincided with the attack in his breathing which caused him to seek advice; and a

* Dr Taylor (Med. Ch. Trans., vol. xxviii. p. 496) has observed the pulse to become *decidedly less frequent and tardy*, and this is perhaps occasionally the case where the heart is greatly oppressed and obstructed in its function by the formation of polypi. At no period of life, however, have I observed this slowness of the pulse at the beginning of the disease, nor does Dr Walshe appear to have met it.

† Med. Ch. Trans., vol. xxviii. p. 547.

further opening in the diseased valve may have induced the last paroxysm, which carried him off. The endocardium adjoining the aortic orifice, and part of the lining membrane of the aorta itself, were faintly but visibly injected. The rest of the heart seemed healthy.

Treatment.—This differs in no wise from that of pericarditis. Perfect repose of mind and body, the occasional application of leeches to the præcordial region where there is pain or marked dyspnœa, the cautious administration of mercury where it is not contra-indicated, counter-irritation around the vicinity of the heart, and in gouty cases the use of colchicum, constitute the chief means of treatment. Violent palpitation and rapidity of the pulse must be met by friction with the belladonna ointment and moderate doses of digitalis. Present danger to life is less to be apprehended in recent attacks than the damaging effects of the disease on the valves. Mercury or the iodide of potassium offers the safest guard against these effects; but, generally speaking, a bellous murmur remains behind even in the most favourable cases.

CHAPTER IV.

ORGANIC DISEASE OF THE HEART.

CHRONIC organic diseases of the heart and great vessels are notoriously common to the old of both sexes. In their immediate or remote consequences, the former cause the death of a vast number of men and women between fifty and seventy years of age. Aneurism seems to be chiefly prevalent between forty and fifty, but is occasionally observed in very old people. With the advance of life, after fifty, a perfectly normal state of the walls, valves, and orifices of the heart is the exception, though structural changes often exist without compromising the health or declaring themselves by any of the physical signs of disease. Nay, it is indeed wonderful how often we find, on *post-mortem* examination, evidences of extensive organic alterations in the heart of the old, where, owing to the entire absence of the usual symptoms of cardiac disease, dyspnœa, palpitation, &c., their very existence had remained unsuspected.

The prevalence of serious disease of the heart with the advance of life is very clearly shown in the reports of the Registrar-General. Exclusive of pericarditis and aneurism, the deaths in the metropolis from "diseases of the heart," &c., during the year 1855,* at different periods of life, were as follows :—

Above	25	years of age and under		35	.	.	.	187
„	35	„	„	45	.	.	.	267
„	45	„	„	55	.	.	.	387
„	55	„	„	65	.	.	.	487
„	65	„	„	75	.	.	.	448
„	75	„	„	85	.	.	.	176

Thus, with a decrease in the number living, there appears to be an absolute and steady increase in the mortality from heart-disease from the thirty-fifth to the sixty-fifth year of age. This fact is

* Eighteenth Ann. Rep. Registrar-General, p. 126.

rendered still more obvious by a table at page 456 of the fifth annual report, calculated with reference to the population at the different periods of life. In that table, it is shown that out of 1,000,000 living under the age of fifteen, there died annually in the metropolis, in the two years 1840–41, from diseases of the heart, 183; at fifteen and under sixty, 491; and at sixty and upwards, 2136. Considerable as the mortality is from cardiac disease between the forty-fifth and the seventy-fifth year, there is reason to believe that it is still greater than stated in these reports, many persons dying with hydrothorax and asthma, and returned under these heads, who, were greater precision observed, ought undoubtedly to be classed under diseases of the heart, the effusion into the chest and the difficulty of breathing being often merely symptomatic of the cardiac affection.

It is not my intention to describe the various lesions met with in the heart of aged persons, whether situated in the orifices or walls of the organ. The limits I have assigned to myself even hardly admit of an outline of this vast, intricate, and difficult subject, comprising, as it does, every variety of structural disease, from mere thickening of the valvular apparatus, or simple hypertrophy of the ventricles, to the most complicated alterations in the various textures of the heart, and obvious deviations in the relative capacity of its different cavities and apertures. Nor, in strictly adhering to nature, does it admit of very clear exposition. It suits the purpose of lecturers and systematic writers to describe these changes and their physical signs with distinctness, apart from each other; but at the bed-side the practitioner generally encounters them combined in various degrees and conditions, so interwoven as hardly to admit of methodical arrangement without violence. The best work on the diseases of the heart in the English or any other language—the best, because it truly depicts things as they arise and exist—is nearly devoid of this, as nearly as it could be without confusion, and without the certainty of bewildering and repelling the reader.

To return to our subject. It is in advanced life especially that we meet with chronic changes in the orifices, valves, and parietes of the heart in their most marked forms. Calcareous depositions on the valves, cancerous degeneration, primary and secondary, softening and fatty degeneration of the muscular structure, partial

aneurisms and rupture of the heart itself, are almost peculiarly diseases and accidents of old persons; while it is in them that we most frequently encounter that still obscure but singularly severe and interesting malady, depending apparently upon a variety of organic and accidental causes, long known under the name of angina pectoris.

Origin and Causes.—For the most part, the structural diseases of the heart occurring in advanced life are cumulative, slowly arising, and progressing with age. The foundation of many of them is no doubt laid at an early period, in adolescence or in manhood, and is the immediate consequence of the rheumatic diathesis. The retention of morbid products in the circulation, from senile imperfection of the excretory functions, is also a fruitful source of cardiac irritation and disease of the various textures of which the heart is composed. An albuminous state of the urine, with its usual accompaniment urea in the blood, dependent on granular degeneration of the kidneys, seems in many cases the primary and conducing cause of endocardial inflammation and of hypertrophy. The frequency of these sources of a vitiated condition of the blood has, on various occasions, been alluded to, and they undoubtedly powerfully influence the heart —slowly but effectually.

In numerous instances it is difficult or impossible to assign any cause, and we are forced to ascribe the changes observed to a modification of the nutrient function induced by the progress of life, and independent of inflammatory action. We account for the acknowledged and frequently hereditary origin of cardiac disease, by similarity of constitution or similarity of the original organism, transmitting the same liability to disease under exposure to the ordinary or exciting causes eliciting it. The connection between gout and valvular disease of the heart, especially that chronic form of gout, with nodosity of the smaller joints, called rheumatic gout, appears to be more than accidental, though, from the chronic character of both diseases, this is less susceptible of proof than the more striking connection of acute articular rheumatism with endocarditis and pericarditis, the very frequent forerunners of organic disease of the heart. The latter association is necessarily very rarely observed in advanced life, for acute rheumatism belongs to youth and manhood, but chronic gout is a disease of

that period, and calcareous deposits in the valves closely resemble in their chemical properties the tophaceous formations found in the joints of gouty subjects. Both are also very frequently transmitted diseases, individually or combined. Of the existence of functional arthritic disorder of the heart no one entertains any doubt, whatever may be the opinion of the precise nature of the affection. Nor is there any question as to the occasional metastasis of gout from the extremities to the central organ of the circulation; but does there exist a chronic subacute form of gouty inflammation attacking more especially the endocardium? Various authors have attributed the calcareous and atheromatous formations met with in the arterial system of the aged to the gouty diathesis, and this opinion is especially supported by German pathologists. Dr Wardrop* has also very ably contended that calcareous or cretaceous deposits on the valves of the heart are the result of gouty inflammation. Without entirely subscribing to the views and opinions of this author regarding the very great frequency of arthritic pericarditis and endocarditis and their consequences, there seems strong evidence for believing that endocarditis especially is a common disease in gouty subjects; and I am further of opinion, that, in not in a few instances, anomalous cardiac symptoms occurring in gouty habits, irrespective of physical signs, or rather of murmurs, and therefore generally regarded as functional, depend upon a low degree of inflammation attacking especially the valves and orifices of the left side of the heart. On no other supposition can we so satisfactorily account for the temporary attacks of palpitation with breathlessness and febrile disturbance to which gouty subjects are liable, and this supposition gains further confirmation by the cardiac symptoms being occasionally accompanied by a bellows murmur disappearing on the cessation of the fever, on the restoration of the normal action of the heart, and especially on the supervention of gout in a joint. In a certain number of old gouty subjects, calcification of the valves without permanent derangement of the heart's action is observed. The cretaceous or calcareous masses, however, predispose to functional disturbance, and, acting as so many thorns, no doubt are occasionally the centre around which partial inflammations spring up.

* On Diseases of the Heart, p. 491, &c. London, 1851.

Valvular Disease, and its Consequences on the Heart itself.—From whatever source originating, and whatever may be the precise anatomical lesion of the valves, whether it consists in thickening, corrugation, perforation, or calcification, so long as they remain efficient, neither obstructing the onward flow of the current of blood, nor permitting its retrogression, the evidence of these changes are wanting. Now, very frequently the changes adverted to are so situated as to leave the valves in every way fitted for the discharge of their function. This is more especially true in regard to calcareous formations, which are generally found, more particularly in the semilunar valves of the aorta in the angle of reflection, more rarely at the free margin. Another reason why these masses often fail to produce any murmur, is that they are generally limited to the upper aspect of the valves, which consequently present a smooth surface to the advancing wave of blood, and thus audible vibrations in the stream are effectually prevented.

A heart thus affected may continue its action and office, as far as we can tell, with regularity up to the time when the changes impair or destroy the efficiency of the valves, and no evil consequences may be observed. But a heart thus damaged is liable to functional disturbance from trivial causes; and though abnormal sounds may be absent, the walls and cavities of the organ sooner or later become altered, so that in almost all cases of chronic valvular disease, the substance of the heart itself is ultimately affected. It is, however, after the valvular injury has proceeded the length of impairing the efficiency of the valve or valves that disease of the muscular structure of the heart is usually observed as a consequence of that lesion. The same pathological law applies to this organ as to the rest of the hollow viscera, with some variation consonant to its structural peculiarities and function. Commencing at the right side, is there an impediment or contraction at the tricuspid valve, the corresponding auricle is then thickened and dilated. Does it, by chance, exist in the pulmonary artery or its branches, the right ventricle then assumes the same changes. Is the mitral orifice contracted, then the left auricle is hypertrophied and perhaps dilated. Is the obstruction in the aorta, we have then hypertrophy, perhaps with dilatation of the left ventricle. If the alteration in the valves is of such a

nature as to allow free regurgitation, similar variations in the walls and cavities ensue; for the heart itself is nearly in the same predicament, whether the disease of the valves is obstructive or regurgitant and embarrassed in its action, it is called upon for unwonted exertion to maintain the equilibrium of the circulation. Narrowing of the orifices leads to hypertrophy, insufficiency to dilatation. In the former case the contraction of the auricle or ventricle is prolonged by the impediment; in the latter it may be of natural duration, but the cavity behind the imperfect valve is never thoroughly emptied, or being emptied it is immediately refilled, during the diastole, by the return of a portion of the blood which it had sent forward, and by receiving, at the same instant, the natural supply from the venous trunks if the auriculo-ventricular are the valves affected, or the ventricles, if it is the arterial valves that are insufficient. Thus subjected to the pressure of two opposite contending waves, the cavity behind the imperfect valve usually becomes dilated and hypertrophied, both abnormal deviations being provisions to counteract the effects of the valvular disease,—the thickening of the walls of the cavity augmenting their power, and the enlargement of the cavity accommodating the increased quantity of blood which the inadequacy of the valves forces it to receive. The hypertrophy is very obviously, at least, a conservative effort.

Hypertrophy and dilatation of one or more of the cavities are then ordinary accompaniments of chronic valvular disease of the heart, such as we encounter in advanced life. Attenuation, with or without dilatation, is also observed, but the opposite state of the parieties,—viz., dilated hypertrophy—is what is usually present, and we have already stated that general enlargement of the heart is so common that it may be regarded as a physiological attribute of old age.

These states of the heart, accompanying valvular imperfections, may be, and often are, associated with flaccidity of the muscular substance, greatly weakening the ventricular or auricular contractions, and disposing to passive congestion and dropsy. Of the diseases of the substance of the heart, apart, and unconnected with valvular injury, I do not here speak. Hypertrophy, with dilatation, is so generally associated with valvular disease in elderly persons, that where it is found the other is seldom absent. According as

the walls are hypertrophied or attenuated, the propulsive power of the organ is increased or diminished. The union of either of these conditions of the walls of the heart, with dilatation of its cavities, modifies its action, and this is still further affected when softening co-exists. A large flabby heart, where, with hypertrophy and dilatation, or attenuation with dilatation, the muscular structure is in a state of fatty degeneration, is nearly unequal to its function. If, in addition thereto, valvular impediment exists, the complication is formidable and hopeless. The ventricular contractions are then excessively irregular and feeble. A mere fluttering, if any, is perceptible. The symptoms of cardiac disease are indubitable and distressing. Death is earnestly prayed for, and happily it is seldom far distant.

The mitral and aortic orifices are singularly prone to disease, and, as a consequence of this, the walls and cavities of the left side are more generally affected where disease is limited to one side; but with the lapse of time, disease originating in the left side involves the right walls and cavities, and *vice versa*.

Disease of the mitral or aortic valves, or disease of the aorta itself, is assuredly the most frequent primary lesion in disease involving the walls and cavities of the left half of the heart. Disease of the right side, limited to this side, is more frequently due to chronic affections of the lungs, especially emphysema and chronic bronchitis. Emphysema, it may here be remarked, is very often hereditary, and thus we have another source, and a frequent one, too, of hereditary cardiac disease. Gout may be regarded as affecting the left side of the heart especially, emphysema the right; the former by developing valvular disease, the latter by impeding the circulation in the lungs. Emphysema and bronchitis are usually combined. Both obstruct the pulmonary circulation and demand undue action of the right ventricle, which sooner or later ends in thickening with dilatation of its cavity, and a corresponding alteration in the auricle, perhaps mainly attributible to regurgitation through the tricuspid valve. Individuals thus circumstanced afford unequivocal evidence of cardiac disease at all times, but it is on the supervention of acute attacks of bronchitis that they suffer intensely, and scarcely a winter passes that life is not in great peril.

Pulmonary disease is not, however, the sole cause of disease of

the right side of the heart, any more than are the causes I have enumerated the sole causes of disease of the left side. The exciting cause of the former is usually, nevertheless, a persistent bronchitis, aggravated by atmospheric changes, and is therefore more generally observed or intensified in the winter season. The exciting causes of disease of the left side are as uniformly such as influence the circulation mainly, and it appears with almost equal frequency at any season (Ritchie).

The tricuspid valve is comparatively, with reference to the mitral valve, exempt from disease of its structure, but, as has been shown, it appears to be a natural attribute of this valve to permit a certain amount of reflux. If from any cause, as for example, shortening of the cordeæ, tendineæ, or, as Rokitansky conjectures, lost or diminished power of the muscular columns from rigidity, softening, &c., the valve is rendered still less efficient, engorgement of the auricle follows, and the inadequacy becomes at once a source of dextral disease of the heart. Inefficiency of this valve, however, is more generally an effect of gradual dilatation of the right ventricle. Blackiston found dilatation of the tricuspid orifice in 91 out of 105 cases of dilatation of this ventricle, and in 10 cases without that of the latter; in 4 cases it was also joined with a diseased state of the valves. The dilatation was not noted unless the circumference exceed five inches in the male, and four and a half in the female.* The same author observes that disease of this orifice is often over-looked, and that, contrary to the generally received opinion, it is as liable to disease as the mitral orifice.† A large number of the cases from which he drew this inference appear to have presented in persons advanced in life. Widening of the auriculo-ventricular orifices, it should be observed, is a common consequence of old age, and is one of the peculiarities of the senile heart.

Signs and Symptoms of Valvular Disease.—It has been supposed that valvular disease in advanced life is more difficult of detection than similar disease occurring at an earlier period. For this opinion there seems to be no foundation. Valvular disease can only be discovered when it is of such a nature as to cause abnormal vibrations in the current of the blood. It is obvious that the physical signs may be entirely absent, even where the valves are

* *Loc. cit.*, p. 212. † *Loc. cit.*, p. 211.

greatly altered, provided they still discharge their office with tolerable regularity. As the lesions adverted to are generally of very slow growth, years may elapse ere the valvular function is damaged; once destroyed, the physical signs of disease are as clearly developed in advanced life as at any other epoch. Mere weakness, however, of the heart's action from general debility, attenuation, flaccidity, softening, or fatty degeneration of its parietes, will prevent the evolution of abnormal sounds, or suspend them for a time. It is also well known that these signs are not always present in confirmed valvular disease, even with hypertrophy and augmented power of the heart, that after a time, and up to a certain time only, are they evolved. They occasionally entirely cease with the progress of the lesion, and never return, or return only during undue action of the heart, or with unrecognised vital conditions, thus imitating, in their intermission, functional disorder of the organ with temporary abnormal sounds. Dr Latham,* alluding to the frequent absence of physical sounds in obstructive valvular disease, has well observed, "when endocardial murmurs result from diseased valves, there are two agents engaged in producing them, viz., the mechanical obstacle which the blood encounters, and the blood itself. It is from unusual vibration among the particles of the blood that the unusual sound immediately proceeds; but it is the obstacle which sets the conflict agoing. Now the sound must be in proportion to the vibration, and the vibration is in proportion to the amount of the obstacle and the quantity of the blood and the rate at which it circulates taken together. Thus the endocardial murmur becomes louder and louder while the valvular disease is upon the increase, as long as the heart, by its increasing thickness, is still able to force a large current of blood through a moderately contracted orifice. But the endocardial murmur becomes fainter and fainter, and at length ceases altogether as the valvular disease, by its further increase, goes on still to narrow the orifice, and the ventricle, with all its increasing thickness, can only force the blood through it in a more and more slender stream."

When organic valvular murmurs exist, the differential diagnosis is usually far from difficult. Occasionally, however, it is impossible to pitch upon the valve affected, and to assert with confidence

* On Disease of the Heart, vol. i. p. 50.

the mechanical effect of the lesion. Nor can the precise anatomical alteration be ascertained by any peculiarity in the tone or quality of the murmur—we cannot announce by the nature of the bruit, whether this is rasping, sawing, soft, or blowing—what the lesion consists in, whether in calcareous or osseous deposit, warty vegetation, adhesions, perforations, &c.; though, as life advances, it is safe to conclude, where the normal sounds are permanently displaced by murmurs, that the valve or valves engaged in their production are calcified, more especially if the seat of the lesion is at the mouth of the aorta, for that is by far the most common alteration. But nicety in diagnosis, as regards the exact seat and essential nature of the valvular disease, is, after all, of less importance to the practical physician than the more readily acquired knowledge of the strength or weakness of the heart's action, and the remote effects of the disease upon various organs. Practically it matters not whether it is situated in the mitral or aortic valves, or in both; or whether it is in the tricuspid or pulmonary valves, or in both. The treatment is uninfluenced by this accuracy in diagnosis. We are guided more by the accompanying symptoms, and the condition of the walls of the organ, than by the associated valvular lesion, which is virtually ignored in the selection of remedial means, and having ascertained which half of the heart is chiefly affected, whether this mainly consists in hypertrophy or dilatation, and whether the contractile power of the ventricle is augmented or diminished, we have arrived at much more important information in relation to the medical treatment. In these views I find myself supported by various clinical teachers and practical writers, more especially by the lamented Dr Richie, in his valuable papers on Diseases of the Heart in the "Glasgow Medical Journal," and Dr Blakiston, in his work on the "Diseases of the Chest," has, very nearly in the same language I have employed, pointed out the inutility of over-refinement in diagnosis. It would, moreover, be out of place, however laudable or successful the attempt in this general outline of the diseases of the heart, to detail the physical phenomena characterising the lesions of the different valves and orifices, more especially as they do not essentially vary from what is observed in the adult. As a general rule it may, however, be stated, in order to refresh the reader's memory, that a bruit with the first sound is indicative of obstructive disease of the aortic or

pulmonary valves, or, secondly, of regurgitant disease of the mitral or tricuspid valve. In obstructive disease of either arterial orifice, the bruit follows the course of the vessel; in regurgitant disease of either auriculo-ventricular orifice, it runs along the walls of the heart, and is chiefly discernible at its apex; a systolic murmur, running from between the second and third rib on the right side, up behind the sternum, sometimes audible in the carotids, point out contraction of the aortic orifice: a systolic murmur, proceeding from the same point on the left side, and propagated towards the left axilla, indicates contraction of the pulmonary orifice, more especially, if, as Dr Latham observes, it be not heard at all in the carotids. The greater strength of the left ventricle is a chief cause of systolic murmurs, being more distinct when proceeding from disease on this side of the heart. A bruit with the second, or diastolic sound, is indicative of regurgitant disease of either arterial orifice, or of obstructive disease of either auriculo-ventricular orifice, and is propagated in the course of the vessels, or, when caused by tricuspid or mitral contraction, towards the apex of the heart. Mitral regurgitation is immediately productive of engorgement of the left auricle, and obstruction to the pulmonary circulation, by preventing the free return of blood from the lungs. Permanent congestion of the bronchi, occasional hæmoptysis, pulmonary apoplexy, pneumonia, and severe paroxysms of difficulty of breathing (cardiac asthma), are common consequences; but mitral regurgitation frequently exists in a marked degree without bronchial irritation and râles, and in its simple state the disease may last for years without inducing dropsy. The respiration is nevertheless almost always somewhat embarrassed. A period more or less remote arises at which the right ventricle becomes dilated, perhaps at the same time hypertrophied, through the persistent obstruction to the pulmonary circulation. Tricuspid regurgitation ensues, and with it engorgement of the systemic capillaries, dropsy, and hæmorrhages. The pulse is usually frequent and irregular in strength, as well as in the number of its beats. Pain, sometimes of a dragging kind, is occasionally present, but often this symptom is wholly absent. The supervention of bronchitis is a most serious complication, though a copious secretion from the bronchi affords signal relief, and is the mode nature frequently adopts to remove the distressing fits of shortness of

breath to which the patient is very liable. The insufficiency of the mitral valve is generally accompanied as a consequence with simple or dilated hypertrophy of the left ventricle, and is often associated with stricture of the aortic orifice, in which case, with a strong impulse, we have a systolic murmur at the base of the heart, generally propagated up the sternum, and also systolic murmur at the left apex.

Stricture of the aortic orifice, from calcification and hypertrophy of the valves, is the most common valvular lesion in the aged. More or less insufficiency usually accompanies this state, the rigid valves fitting inaccurately, and permitting regurgitation, but generally so partially that it is murmurless, the first sound alone being abrogated or altered, the second retaining a normal character: at the same time, it fails to produce that peculiar, vibratory, jarring, hammering pulse, with vermiform motion of the superficial arteries, so characteristic of aortic incompetency in its completeness.

Tricuspid constriction and regurgitation chiefly affect the general circulation. The former is rare, the latter common. Imperfection of this valve occasions venous obstruction and engorgement of the extreme capillaries, with their consequences, hæmorrhages, and dropsy of different organs and tissues remote, perchance, from the respiratory system. Jugular pulsation or distension, when present, is a valuable sign of this lesion. Dilated hypertrophy of the corresponding ventricle usually co-exists. It is in these cases especially that the countenance is bloated, the lips tumid and livid, and the eyes congested. Generally associated with pulmonary or bronchial disease, we have superadded the signs and symptoms of these diseases, which almost always assume a prominent character, masking the cardiac affection, and demanding the immediate aid of the physician. The insufficiency of this valve is usually unattended by murmur.

Prognosis.—Although, as already mentioned, large numbers of old people are carried off by disease of the heart, still the prognosis is, upon the whole, more favourable in the aged than in the adult. We do not look for cure where the valves are changed in structure, the orifices dilated or contracted, or where the walls and cavities are altered; but organic disease of the heart in advanced life is almost always of slow growth, sometimes stationary, and many years often elapse ere it tells upon the system or affects particular

organs. Old age brings with it an amount of security which is not the lot of the young; and not unfrequently the lesions which in youth would be accompanied with continued suffering, are now, owing to their passive nature, the diminished activity of the organism, and a blunted susceptibility, less severe in their consequences. Simple enlargement of the heart, with or without disease of the aortic valves, or aorta itself, is not inconsistent with the prolongation of life to advanced old age. It would even be easy to adduce numerous instances of confirmed valvular disease, with hypertrophy and dilatation, generally speaking an unfavourable combination, in persons above fifty and sixty years of age, who survived many years, still enjoying life, and dying of some other affection. Dropsical symptoms from cardiac disease are usually regarded, and justly, as indicative of approaching dissolution. Old people, however, occasionally recover from them in their highest degree, and escape again and again for several years. As a general rule, obstructive valvular disease of either arterial orifice is less serious than regurgitant valvular disease. Littré, however, thinks quite the reverse.* In both, hypertrophy of the corresponding ventricle is a common result, and, within certain limits, a beneficial change. If we take, for example, stricture of the aortic orifice, the hypertrophy is obviously advantageous, by increasing the power of squeezing the blood through the narrow passage; but supposing the mitral valve patulous and the left ventricle hypertrophied, unless the aortic orifice is perfectly free, this augmented power becomes a source of mischief. Contraction of the aortic orifice, with associated hypertrophy of the ventricle, and insufficiency of the mitral valve, constitute a series of lesions frequently met with in the aged, of the most important character, accompanied with permanent dyspnœa from engorgement of the lungs, and usually terminating speedily. Stricture of the aortic orifice frequently exists in old people, as already observed, for many years without dyspnœa or dropsy, or without any impairment of the general health. Examples of this kind have been recorded or referred to by Andral,† Neucourt,‡ Blakiston,§ and others. The last-named writer has given a most interesting case of a lady in

* Dict. de Méd., tome viii. p. 344.

† Clinique Méd. Trans., by Dr Spillan, p. 240.

‡ Archives Gen. de Méd., tome iii. p. 18. § *Loc. cit.*, pp. 204 5.

her eighty-fifth year, in which the physical signs of aortic obstruction, without dyspnœa or dropsy, had lasted for fifteen years at least. She was then well, having lost palpitation, which had formerly existed, and she was free from dyspnœa or œdema of the feet. In August 1841, I attended, with Mr Williams of Bromley, a general officer, sixty-six years of age, of a full and gouty habit, and in early and middle life a martyr to acute rheumatism. He was then suffering from angina pectoris. The heart was enlarged, a loud bruit de scie replaced the first sound, and ran up behind the sternum into the carotids. Being partially paraplegic, he had not for many years taken exercise such as was likely to affect his breathing. He was not, however, supposed to have any affection of the heart. The signs of aortic constriction, with hypertrophy of the ventricle, were then, for the first time, discovered. How long they had existed is uncertain, but fifteen years before that he had experienced temporary symptoms such as he now complained of. On recovering from the attack of August 1841, he remained free from dyspnœa, or dropsy, or any symptom of cardiac disease, though there was no change in the physical signs. He died six years afterwards, from a complication of maladies unconnected with the state of the heart. In this instance, it is thus very probable that latent obstructive valvular disease of the aorta had existed for about twenty years. In another instance, also occurring in a general officer of robust form, now eighty years of age, there is a permanent rasping bruit with the first sound at the base of the heart, distinctly heard several inches up the sternum. To my knowledge, this murmur has existed seven years. His former medical attendant had accidentally discovered it five or six years before; yet he enjoys perfect health, has never had dyspnœa, and is capable of walking several miles without discomfort or fatigue. I am sure he is perfectly unaware of the state of his heart, and long may he be kept in happy ignorance. Examples of the same kind are far from unfrequent; and though we more rarely meet with regurgitant disease of the aortic valves or of the mitral orifice unaccompanied with cardiac symptoms, years sometimes pass away where these lesions are present, and yet the individual, under favourable circumstances, continues healthy. From the difficulty of establishing the existence of mitral constriction during life, there has been less opportunity of testing the time it

may endure without serious consequences; but, theoretically, it is perhaps at an early period productive of much pulmonary distress. Tricuspid constriction is also, very probably, accompanied from an early period by the signs and symptoms of venous obstruction. Andral conjectures that in persons of advanced age affected with obstruction of the aortic orifice and hypertrophy of the left ventricle, the greater slowness of the circulation, and the diminution of the entire mass of the blood, prevents injurious consequences, and preserves the freedom of the breathing.* The immunity referred to has, however, been observed, as in the cases above alluded to, in plethoric individuals as well as in young persons, and slowness of the heart's action is not a necessary accompaniment of these alterations, nor characteristic of old age. We must rather seek for it in their slow progress, where progress is made, the gradual accommodation of the system thereto, and the compensatory effect of the associated enlargement of the ventricle.

It should be observed that, as in the adult, so in old age, murmurs more or less permanent occasionally occur independently of organic valvular disease, a very remarkable instance of which I have detailed in volume xxxi. of the "Medical Gazette." In advanced life, however, much more frequently, a persistent bruit is a sign of existing structural alteration, which may generally be depended on, for the exceptions are rare in which it is then not positively associated with valvular disease.

Treatment.—The several diseases adverted to—viz., chronic textural changes of the valves, widening or constriction of the orifices, alterations in the substance of the heart, including hypertrophy or attenuation, with or without dilatation of the cavities,—almost all come before us in advanced life, at a period of their history when they have nearly or fully attained their maximum development. Their early commencement generally passes unobserved; insidious, often entirely latent in their progress, they are not unfrequently first discovered on the supervention of a catarrhal attack, on the occurrence of asthmatic symptoms, or on the appearance of œdema with slight breathlessness arresting attention. Old men who have been known to me

* *Loc. cit.*, pp. 240-250.

for years, who have seldom or ever been on the sick list, and have passed with their comrades, and in their own estimation, as healthy, have thus presented themselves with advanced, latent, or unsuspected valvular disease of a marked stethoscopic character. Cases have already been alluded to wherein constriction of the aortic aperture, with hypertrophy of the left ventricle, have existed for many years without local ailment or derangement of the general health; but I now also allude to a much more formidable and unfavourable class of cases, characterised by dilatation of the right cavities with venous obstruction; changes and effects which, in middle life, soon occasion unequivocal distress, but which in the quiet repose of old age may exist for a long period without serious consequences, until a pneumonic or bronchitic inflammation further impedes the action of the heart, and throws back upon the various organs such an amount of blood as deranges their functions, ruptures their vessels, or ends in dropsy. It is thus, I repeat, very frequently for some malady apparently unconnected with the heart that the victim of its diseases first solicits advice, and then we find these diseases complicated in themselves, and connected with various affections more or less important.

The treatment of chronic structural disease of the heart itself, taken isolatedly, is necessarily palliative. We cannot repair ruptured or damaged valves, remove degeneration, or restore the walls of the heart or its cavities to their normal dimensions; but something, nay much, may be effected by proper management in arresting their progress and averting their consequences. The age has passed when every one labouring under organic disease of the heart was condemned to a life of anxious misery, or his days were numbered as necessarily brief and uncertain. Hope then gave way to despair, and the fears of the physician were too often realised by well-meant but injudicious advice and caution, where already the unhappy sufferer, keenly alive to every new sensation, ever dreading the worst, too readily caught any discouraging observation from such a source, and impressed him with tenfold danger. In by far the greater majority of these cases, medicinal treatment must give place to hygiènic measures, and among the latter, not the least important is a cheerful assurance based on practical experience. "The effects," says Stokes,* "of injudi-

* On the Diseases of the Heart and Aorta, p. 147.

ciously communicating to the patient that his heart is organically diseased, in conjunction with those of an ignorant and destructive medication, produces that very condition the absence of which has been the patient's chief safety. The heart becomes irritable, irregular, perhaps excited, and it is then no wonder that the *symptoms* of disease are superadded to the *signs*." The sufferer should not only be encouraged, but every measure adopted to preserve or improve his general health. Where the vital energies are failing through natural decay, or the signs and symptoms of diminished power of the heart prevail, a generous diet, with a moderate allowance of wine, are indicated. Tonics, especially quinine, and the new preparation of iron, are frequently of great service in improving the condition of the blood, in sustaining the strength, and enabling the enfeebled heart to maintain the vigour of the circulation. They may occasionally be advantageously conjoined with sedatives when the action of the heart is irritable. Passive exercise is generally to be preferred, but where the breathing is not embarrassed, and the heart's action is not excessive, moderate walking is more beneficial in equalizing the circulation and preventing congestion of the abdominal viscera, often a source of great discomfort and positive mischief.

If, instead of diminished power with general debility, the opposite states are observed, if with a constitution and habit of body still possessing some of the attributes of earlier life, the signs and symptoms of hypertrophy predominate over those of attenuation or dilatation, abstinence from stimulating beverages, together with the avoidance of all causes of undue excitement of the circulation, are to be enjoined, but not rigidly enforced. Any attempt to reduce the hypertrophied heart would not only be futile but hurtful, though the means advised may keep its action within just bounds, and ward off injurious consequences. It should ever be remembered, that hypertrophy with increased power is almost invariably a conservative change, seldom to be interfered with, except in emergencies, and then cautiously. As a general rule, valvular insufficiency contra-indicates all lowering measures, and constriction seldom requires them.

In the above outline, a broad principle is laid down for the general management of structural disease of the heart, *when it obtrudes itself on our notice by some of its rational symptoms*

and effects. Where the action of the organ is feeble, a sustaining regimen with tonics is advisable; where it is still vigorous, moderation in diet and abstinence from stimulants are recommended. This rather Brunonian, but sound and convenient, rule may be carried further in the treatment of cardiac disease, in various states of combination and circumstances, though it is not universally applicable.

General blood-letting is never advisable in chronic organic disease of the heart, except as a purely temporary expedient, demanded by the urgency of particular symptoms, aggravated by, if not arising from, the state of the central organ of the circulation, as in certain attacks of congestive apoplexy. It is seldom safe, and can hardly ever be ventured on in cases of attenuation with or without dilatation, usually declared by diminished power; but local bleeding may sometimes be employed, even in very old people, with advantage when the action of the heart is fluttering, and so feeble that neither its impulse nor sounds are perceptible. Stimulants, again, are occasionally hurtful, or not borne, where, under these circumstances, the indications for their exhibition appear to be pressing. A flabby or weakened heart is often overpowered by the labour it has to perform; its nutrient and efferent vessels become congested, and unable to discharge its contents with its usual force, weak though that may be, a universal venous stagnation ensues. Relieve this by appropriate means, by a few leeches to the præcordium, by mustard cataplasms, or dry cupping between the shoulders, warmth to the surface, and perhaps a hydrogogue purgative, such as the compound powder of jalap,—then stimulants, previously prejudicial, are now, if cautiously administered, frequently of great service. These are, indeed, as all know, among the most difficult cases in medicine to deal with. If we bleed, we run the risk of depressing the heart's action and augmenting the general congestion; and if we do not obtain ready relief, such relief as powerful means can alone procure, the patient dies asphyxiated, and on examination the lungs and heart, and all the great viscera, are found loaded with dark blood. But whatever may be the anatomical condition of the heart, bleeding, and above all, general bleeding, is only admissible on emergencies, such emergencies as are accompanied with great distress or immediate danger; and while we unload the heart by letting lose one,

two, or more ounces of blood, we must often at the same time maintain nervous powers by administering cordials liberally.

While due attention is paid to these general principles of treatment chiefly referable to the heart itself, the effects of its lesions on the system, or on the different organs, require special consideration; for, in a large proportion of cases, the remote affections, whether primary or secondary, are of great moment, and on their judicious management depends the comfort, if not the safety, of the patient.

Foremost among the symptoms of disease of the heart, urgently calling for relief, stands dyspnœa, often assuming the severest form and perilling the life of the sufferer. Paroxysms of this nature are generally occasioned by an increase of the permanently congested state of the respiratory organs accompanying mitral regurgitation, or are the consequence of an aggravation of the bronchial affection which, with an emphysematous condition of the lungs, usually coexist with disease of the right side of the heart, and of which it is as frequently the sequence. The persistent, passively congested state of the lungs predisposes to inflammatory attacks either of the substance of the lung itself or of the mucous tract. More frequently it is the bronchial membrane that is attacked, but pneumonia, generally interlobular, is common. The line of demarcation between congestion and inflammation is in these cases often faintly marked. In either state, however, our chief resources are local bleeding, sinapisms to the chest, dry cupping, antispasmodics, saline diuretics, and hydrogogue purgatives. But the treatment of cardiac asthma, of which this forms a part, has already been considered. Flatulency in these and other cases is frequently troublesome, and is to be met by great attention to diet, counter-irritation to the epigastrium, and the exhibition of mild carminatives.

Paroxysms of palpitation are to be allayed by similar measures to those recommended in dyspnœa, with which this symptom is frequently combined, but more especially by leeching when the muscular contractions are powerful, and by sedatives externally and internally. Digitalis is then sometimes of great service. In anœmic cases, in which the action of the heart, though violent, is generally feeble and fluttering, steel is the remedy. Not unfrequently attacks of palpitation proceed from some obvious cause,

such as indiscretion in diet, attention to which mitigates or removes the palpitation; but in several instances they are ascribable to partial endocardial or pericardial irritation from associated renal disease, or the gouty or rheumatic diathesis.

Dropsy, the end of almost all the organic diseases of the heart, peremptorily requires the steady employment of diuretics, and occasional hydrogogue cathartics. If the action of the kidneys can be maintained, and no other organic lesion exists, life may be prolonged, and with comfort, for years, in what otherwise may seem very unfavourable cases, an instance of which I have above related; others could be referred to in which dropsical symptoms have appeared and disappeared repeatedly, in the same person, after longer or shorter intervals. Every hospital physician must have met with many such, but it is especially in asylums for the aged, and among individuals in easy circumstances, who have not damaged their constitutions by intemperance, that they are observed.

Every practitioner has his favourite diuretic in cardiac dropsy; but digitalis is, *par excellence*, the *one* diuretic to which almost all give the preference. And undoubtedly it possesses great influence over the heart itself, as well as over the kidneys, staying and lowering the action of the one, and promoting the functions of the latter organs. Bouilland calls it the "true opiate of the heart." This very quality renders it, in certain cases, an unsafe and inapplicable remedy. Loss of tone and diminished power are occasionally at the very root of the evil. Whatever, then, still further lowers the action of the heart encourages congestion, and with it serous effusion. Polypi have also not unjustly been attributed to its incautious exhibition. We must therefore guard against its depressing effects, wherever the action of the heart is enfeebled, by a generous regimen, and by combining it with stimulants and tonics, which experience has shown enhance its diuretic properties. So great is its sedative influence on the heart dreaded by some physicians, that they generally conjoin it with stimulants, even in hypertrophy with violent action; but such extreme precaution is only necessary where the remedy is continued without interruption for weeks and weeks. The infusion is the best preparation, and it may be variously conjoined with the decoction of senega, and the nitrate or acetate of potash, the

vinegar, tincture, or oxymel of squills, and the sesquicarbonate of ammonia, &c, The iodide of potassium may occasionally be substituted for the preparations of potash, especially in rheumatic habits, or where there may be reason for suspecting an indurated state of the liver; but this remedy should not be long persisted in in old subjects, reducing, as it does, nervous power, and occasioning prostration. The efficacy of the digitalis is greatly augmented by the administration of two or three grains of blue pill at bed-time. When the infusion disagrees with the stomach, the powder of digitalis with squills and blue pill in the usual form may be substituted. Few diuretics have greater influence than the ordinary "imperial," prepared from the bitartrate of potash, of which the patient should be encouraged to drink freely. Once or twice a week a dose of the compound powder of jalap should be administered, and in weakly constitutions its depressing effects averted by cordials. It may be observed that few medicines are more variable in their operation than diuretics, and that, from some peculiar idiosyncrasy, it may be necessary to try several before success is obtained in pitching upon the one best adapted to the individual. When the flow of urine is steadily augmented, care should be taken not to check the action of the kidneys by exposure to cold. It occasionally happens that a diuretic purgative has this effect. If the dropsical symptoms are not urgent or increasing, and the diuretic seems to be doing its work, we should be chary of interfering with it by determining to the bowels. We may maintain increased action of the kidneys for months without injury, nay, with benefit; but watery motions cannot be persisted in safely. Wherever a congested state of the kidneys exists, diuretics will fail to act until this is relieved by dry cupping, sinapisms, or warm turpentine epithems to the loins, and change of position. Individuals confined to bed with cardiac dropsy are peculiarly prone to renal congestion, which is sure to be aggravated by stimulating diuretics, without appropriate means have previously been employed for its removal. In almost all cases a sustaining and invigorating regimen is required, with a moderate allowance of wine or gin.

Where active hydragogues can be borne, their efficacy in removing dropsical effusions is sometimes very remarkable. Elaterium is so powerful, that it requires to be given with caution

to old subjects; but that it may be employed in very old persons with benefit I am quite sure. During its operation, it will generally be prudent to have recourse to the bed-pan, and to administer from time to time warm soups, with wine or brandy. Sleep is of so much consequence, that an anodyne should be given every night. Here again it will be advisable, where the action of the heart is feeble, to combine opiates with stimulants. The ordinary laudanum and ether draught is generally well adapted to such cases. Laudanum is safer than solid opium, or the muriate of morphia. The practitioner will hardly require to be cautioned of the danger of large doses of these medicines in chronic structural disease of the heart, with impaired vital power. I feel certain that many an unfortunate has been hurried into the other world by a dose of morphia, which under other circumstances than reduced power of the heart, through impairment of its nervous energy by long existing organic disease, would have hardly had any effect on the system.

CHAPTER V.

SOFTENING AND FATTY DISEASES OF THE HEART.

I HAVE already incidentally alluded to softening of the walls of the heart as frequently accompanying valvular imperfections, as well as hypertrophy or attenuation, in advanced life. Various degrees of this condition of the heart, from simple deficiency of its natural firmness, to pulpy friability, occur. In many instances, the minor degrees are post mortem, or the result of that general loss of tone and cohesion, especially of muscular structures, accompanying chronic blood-diseases, a cachectic state of the system, or some of the numerous exhausting maladies to which the aged are liable, and simultaneously affecting the heart, with other organs. This state is generally evinced by feebleness of the heart's action and sounds, languor of the circulation, pallor of the countenance, coldness of the extremities, and local congestions, requiring generous diet and a free use of stimulants.

Fatty Degeneration.—Simple diminution of the consistency of the heart, without actual disorganisation of its structure, and solely limited to it, is occasionally seen, apart from any of these local or general causes, and is then often associated with, if not dependent on, a diseased state of the nutrient arteries. In the majority of cases, however, loss of cohesion, and loss of the natural firmness of the heart, are the immediate consequence of wasting, and fatty degeneration of its muscular fibres. To this transformation is attributable the more marked forms of chronic softening, with decoloration of the muscular fibres.

Fatty softening is either general or partial. More frequently it is confined to a single ventricle, to a small portion thereof, and often to the apex only. Occasionally it involves in a greater or less extent both ventricles. A heart thus affected is flabby or doughy, and when removed from the body collapses on the table.

It is pale, of a dirty drab colour, resembling whity-brown paper, or it is mottled, and of a grayish hue; it is easily torn, greases the scalpel, and produces grease-stains on paper. What M. Blaud* called *senile softening* of the heart, and which Chomel† has referred to separately from the consideration of fatty degeneration, appears to have been of this nature. Except as the immediate consequence of inflammatory action, softening and fragility, with decoloration of the parietès of a ventricle, are perhaps invariably of fatty origin, and are then usually accompanied with attenuation and dilatation, though not unfrequently with hypertrophy, with or without enlargement of the corresponding cavity. The volume of the heart is very generally increased, rarely diminished; but in some cases it falls much below the ordinary standard remarkably so.

Obesity of the Heart.—Fatty degeneration of the muscular fibres of the heart is generally associated with an excessive accumulation of fat on its surface, but not necessarily. Obesity of the heart may exist alone, or fatty degeneration may exist alone. They are distinct affections, though usually conjoined. Of the two, fatty transformation is unquestionably the more serious and the more important; but an excessive deposition of fat on the heart impedes and disturbs its action, the more so if the muscular fibres are at the same time atrophied, which is very frequently the case.

Fat may accumulate *beneath* the endocardium or pericardium, in the subjacent areolar tissue, or *external* to the pericardiac covering. Its most frequent seat is at the origin of the large blood-vessels, and around the base of the ventricles, in the line of junction between them and the auricles. From these situations it often spreads to a greater or less extent. Following the track of the coronary arteries, the right ventricle is always found first, and most abundantly covered with fat, the distribution of these branches being more superficial here than over the left (Quain). Internally it is usually limited and granular, appearing in little pellets, the size of a pin-head or a pea. Externally it may involve the whole of the heart, enveloping it in a layer of fat, more or less thick, deeply fringing the edges of the auricles and ventricles down to the apex. Insinuating itself between the muscular fibres, it occasionally penetrates from without inwards to the columnæ

* Bibliothèque Méd., t. xviii. p. 364. Juin 1820.

† Dict. de Méd., art. Cœur, t. viii. p. 282.

carneæ. The substance of the heart is then somewhat atrophied, and often at the same time metamorphosed more or less completely into fat. The largest accumulations take place at the base, to which place they are sometimes limited, the fat being little if at all in excess in other parts of the heart.

Causes.—Fatty growths on the heart, and fatty disorganisation of its muscular fibres, occur most frequently in corpulent persons, and in sedentary habits. That they are not necessarily, however, accompanied with or dependent on constitutional obesity every day proves. Some of the most remarkable cases that have come under my observation have occurred in extremely emaciated old men. They are peculiarly diseases of advanced life, few cases occurring under forty years of age, and the great majority presenting in persons of sixty and upwards. Males are more subject to both than females, and the intemperate more so than the temperate. Both are generally connected with a morbid state of the lungs, or liver, or of both organs, whereby the functions of these organs are impaired, and the elements of fat are retained, and accumulate in the blood, to be deposited in an elaborated form on the heart alone, or simultaneously in other parts. On *post-mortem* examination Hasse found the liver invariably diseased in 13 cases of fatty degeneration of the heart's substance.* Quain's researches show that it was so in about half the cases he collated, *i.e.*, in 15 out of 33.† Fatty disease of the arteries is also a frequent accompaniment, and the *arcus senilis*, which the microscopic discovery of Mr Canton‡ has shown to be of this nature, is perhaps still more commonly associated with it, for in 25 cases in which the symptoms afforded reasonable grounds for suspecting fatty degeneration of the heart, the *arcus senilis* existed in no less than 23 out of the number.§ Hypertrophied hearts, which have been the seat of endo or pericarditis, are often affected with fatty degeneration.

In corpulent people, or where other organs are simultaneously affected, the fatty condition of the heart is referable to the same constitutional causes inducing the general accumulation or infiltration of this matter; where the individual is thin, and the disease is limited to the heart, other organs and tissues remaining void of fat, a local influence has been at work modifying or

* *Loc. cit.* p. 169.
† *Loc. cit.* 195.
‡ Lancet, Ap. 1850.
§ Williams, Lancet, Dec. 1850.

impairing the nutritive function. Irrespective of fatty disease of the vessels themselves, an obstructed state of the coronary arteries, from calcareous or fibrinous deposition, appears commonly to be the immediate source of fatty accumulations, and especially of fatty degeneration.

Symptoms and Signs.—The symptoms and physical signs of softening of the heart vary with the degree and extent of softening, the associated change in the thickness of the walls of the organ and the capacity of its cavities. Feeble impulse and feeble action are the characteristic phenomena of diminished consistence or flaccidity, from whatever cause. In extreme cases, the impulse is invisible and intactile, or the beats are only occasionally perceptible. Both sounds may also be wholly inaudible, or only much reduced in tone and distinctness. The first sound, especially, is altered; it is weak, brief, and flapping; the second is equally weak, often extinct. The pulse is irregular in rhythm and feeble, never strong. If the left ventricle is hypertrophied some of its contractions will be stronger than others, and the pulse at the wrist will be correspondingly affected; but even then the pulse is weak: it is oftener slow than quick, and frequently deceptively slow, the weaker contractions of the heart failing to influence the more distant arteries. In general, whatever may be the anatomical state of the valves, there is no murmur. Percussion only tells us the size of the organ, and the extent of dulness will be commensurate with the coexisting condition of the walls and cavities. As dilatation is frequent, so the area of dulness is usually enlarged.

Such are the chief physical signs of softening of the heart, and especially of softening from fatty degeneration, to which, almost exclusively, I now refer. Shortness of breath, pain over the heart, generally intermittent and limited to the præcordial region, but occasionally extending to the arms; faintness, sometimes syncope; giddiness, tinitus aurium, coma, and other phenomena, accompanying deranged cerebral circulation—are among the most prominent symptoms of this disease. The countenance is usually sallow or pale, and of a livid hue, from venous stagnation. The extremities are cold, sometimes œdematous. There is general debility, unfitting the individual for exercise. His breathing is easily embarrassed, and fits of palpitation, with acute pain and faintness imitating, if

not actually representing, angina pectoris, are easily induced. These increase in frequency and severity with the progress of the disease.

Prognosis.—Though instances have been recorded to the contrary, and strong opinions maintained of its curability, it is very doubtful whether fatty degeneration of the heart is ever recovered from. It seems wholly improbable that in a molecular change, so complete that the striæ of the muscular fibres are no longer recognisable, but are replaced by fatty matter, the texture of the organ can ever be restored to its normal character. Sooner or later, the disease proves fatal; sometimes slowly, by a lingering illness, in which the patient gradually sinks and dies; at other times, and very much more frequently, suddenly from syncope, rupture of the heart, or coma. Thus, in 33 cases of fatty degeneration 28 died suddenly—13 by syncope, 4 by coma, 8 by rupture of the heart, 7 by other diseases; in 1 the mode of death is not stated. Of 83 cases of fatty disease of the heart, including mere fatty growths and fatty degenerations, 68 died suddenly.*

Diagnosis.—Where the prognosis is so very unfavourable, and the probability of a sudden termination so great, the diagnosis of fatty disease of the heart is important, perhaps more important in these respects than as regards the treatment, the indications for which are sufficiently obvious from the general condition of the patient and the state of the circulation. The distinction between simple obesity of the heart and fatty degeneration of its substance is anatomical, not clinical. In the present state of our knowledge of these affections, the differential diagnosis is not to be drawn during life. Fatty degeneration is unquestionably of the two more easily suspected if not diagnosed; for assuredly it cannot exist but to a limited extent without enfeebling the heart's action and otherwise deranging it; whereas considerable accumulations of fat on the surface of the organ are frequently seen in individuals who have appeared to enjoy excellent health, and who have never suffered from cardiac symptoms. Nevertheless, an excessive amount of fat around the heart seems, in many instances, to produce the very train of signs and symptoms observed in fatty degeneration, and though less frequently fatal, the modes of death

* Dr Quain, *Loc. cit.* pp. 162–194.

are similar—viz., suddenly, by syncope, coma, or rupture. Then it is also to be observed that both states of the heart frequently coexist, and that fatty accumulation alone, without transformation, is often in advanced stages accompanied with wasting and softening of the muscular fibres, whereby the contractile power of the heart is diminished, and the organ virtually placed in the same condition with regard to its function as in fatty degeneration.

The diagnosis of this change in the texture of the heart mainly hangs upon the feebleness of its action; the slowness, weakness, and irregularity of the radial pulse; the absence, brief duration, or toneless character of the sounds; the absence of murmurs in ordinary states of the heart's action; and the extension of the normal præcordial dulness from frequently associated dilatation or hypertrophy. If to these signs, in a person above fifty years of age, of corpulent and sedentary habits, there are added shortness of breath, occasional attacks of syncope and of pain in the region of the heart (assuming the absence of other more obvious causes of these phenomena), the existence of fatty disease of the heart, and more probably fatty disorganisation, may generally be inferred. The diagnosis is still further strengthened should the *arcus senilis* be present: for, as already observed, this is a true fatty degeneration of the cornea, and may be regarded as an outward sign of the probable existence of a similar molecular change in other textures or organs.

The disease of the heart with which fatty degeneration of its substance is most likely to be confounded, is attenuated dilatation, with which, it has already been remarked, it is often associated.

Treatment.—If the detection of this disease is considered difficult, it is fortunate that few mistakes are likely to be committed in the management of a person labouring under the phenomena that usually accompany it. The enfeebled action of the heart, the advanced age of the patient, his general weakness, and, it may be added, his cachectic condition, with other indications of reduced vital power, peremptorily forbid lowering measures, while they as certainly suggest and demand a tonic, invigorating plan of treatment. The first endeavour should be to improve the general health, and thereby the nutrition of the heart. This may be attempted by a generous diet of easy digestion, a moderate allow-

ance of good old wine, residence in a pure atmosphere, passive exercise, and the regulation of the alvine discharges. Associated disorders must receive due attention. Various bitter tonics, combined with alkalies, the liquor potassæ especially, may be given with advantage; so may the different preparations of iron, particularly the citrate of iron, or the citrate of iron and quinine, the ammoniated tincture of iron, or the tincture of the sesquichloride of iron,—either of these tinctures being administered simply in water, or in the infusion of quassia, or with small doses of the sulphate of quinine in solution, combined with an aromatic. Paroxysms of pain may be relieved by mustard sinapisms, or by friction with the belladonna or opiate ointment. Narcotics require caution in their administration, and ought always to be combined with ether or some other stimulant. The treatment, upon the whole, is palliative; but if judiciously conducted on sound and enlarged views, a fatal issue may for long be arrested, and life enjoyed with comparative comfort. The risk of rupture of the heart clearly forbids violent exercise in riding or walking; any undue exertion, granting the individual still fit to attempt it, is almost sure to occasion syncope, or an attack of angina pectoris.

CHAPTER VI.

ANGINA PECTORIS.

WHATEVER views may be entertained of the precise seat and nature of this extremely severe, interesting, and dangerous disease, there exists but one opinion as to its being almost exclusively limited to the male sex, and to advanced life. "Of 88 cases related by different authors, only 8 occurred in females, being exactly $\frac{1}{11}$ of the whole; and of the total number, 12 only were under fifty years of age."* Heberden, who, though not the first to notice the disease, was the first who accurately described it, and gave it the name it generally bears, states that in nearly 100 cases 3 were women, and 1 was a boy twelve years of age, while all the rest were men near, or past the fiftieth year of their age. In a supplementary table of the causes of death in England in 1855, given in the Fifteenth Report of the Registrar-General, 162 males and 113 females are returned as having died by this disease, the greatest number occurring in the decennial period 55–65, and notwithstanding the great reduction in the number living, the advanced decennial periods, 65–75 and 75–85, give a greater proportion of deaths than before the forty-fifth year of age. There is throughout these epochs a greater number of deaths in the male than female, though not nearly in the proportions above indicated.

Generally regarded as rare, especially in its severe forms, by some it is considered as not unfrequent. Attacking for the most part persons of luxurious habits; sudden in its accession, and equally rapid in its decline or departure, it is seldom or ever met with in hospitals. The paroxysm has ceased before presentation, and we can only guess at the disposition to the disease; yet the phenomena accompanying it are usually so characteristic, that the

* Dr Forbes' Cyclop. Pract. Med. vol. i. p. 83.

sufferer seldom fails to convey an exact impression of them. Often, however, the disease comes and goes, and we do not hear of it; for in the intervals the usual health may be enjoyed, and, in not a few instances, it is only when the disease has suddenly proved fatal that inquiry into the past history of the individual leaves no doubt that he has been the victim of angina pectoris. Thus, almost entirely limited to persons beyond fifty years of age, and to the male sex—chiefly attacking those in easy circumstances; sudden in its seizure; leaving the individual in his usual state of health between the paroxysms; absent from hospitals—there are practitioners who have been long engaged in the active discharge of their professional duties who have never witnessed it, and have therefore formed an exaggerated notion of its rarity. Besides three or four doubtful cases, not seen during life, there have been during the last twenty years four cases among the five hundred in-pensioners of Chelsea Hospital. In the same period, four others have fallen under my observation, one in a male aged eighty-three years, the second in a female of sixty, the third in a well known physician of sixty, and the fourth in a general officer of sixty-six years of age. It may be remarked, in passing, that these four were all inclined to corpulency.

Symptoms.—The characteristic symptoms of angina pectoris are—sudden pain in the sternum, or region of the heart, accompanied with a sensation of stricture or suffocation, faintness, and a feeling of impending dissolution. The pain is usually of the most violent kind, forcing the most resolute to scream out, and is variously represented as cutting, tearing, crushing, or stabbing. In a case falling under my observation, the sufferer felt as if the ribs were being forcibly driven in upon the heart. A patient of Dr Watson experienced the same sensation, and Dr S., whom I saw in a fit, felt with each pulsation as if the heart must burst. The pain can only be compared to the pain attending the passage of a renal or biliary calculus, or the pain of an intense neuralgia, while there are superadded the apprehension of approaching death, and a sense of strangulation, forming altogether a group of symptoms of the most severe and alarming nature. From the sternum it darts across the left breast, or through to the scapula or spine, down the left arm; sometimes terminating at the insertion of the deltoid, or at the elbow, but more frequently passing along the inner side

of the arm, it reaches to the ring and middle fingers, following the course and distribution of the ulnar nerve; in other instances it extends to the right arm and fingers, occasionally to the nerves about the lower jaw, or to one or other of the lower limbs. More rarely, it affects all the extremities simultaneously. Instead of shooting from the chest to these various parts, it appears in some cases to pursue the opposite direction. This peculiarity may be observed in different paroxysms in the same individual—the pain sometimes commencing, as it were, at the extremities, and centering in the sternum, or region of the heart, in others, originating here and darting to the distribution of the affected nerves. Notwithstanding the sensation of choking, there is really no difficulty of breathing in pure angina. A deep inspiration can be drawn, and relief is occasionally obtained by retaining the breath, or fully expanding the chest. This was particularly remarkable in the severest case I have ever witnessed, and yet the breast felt as if it were forced upon the spine, and the respiration appeared to be greatly embarrassed. The countenance is pale and anxious. A cold sweat gathers over the frame. If the patient speaks, he hurriedly asks some pertinent question, begs hard for relief from his torture, and often exclaims he is dying. Vomiting frequently attends severe cases, and in general there are eructations, which appear to bring partial relief.

Percussion and auscultation furnish but negative information. In severe attacks, the action of the heart is feeble, and both sounds are equally weak or inaudible. The arterial pulse is generally feeble, irregular, and frequent: in some cases it is normal. Amid so much distress apparently mainly affecting the heart, it is indeed wonderful how calm the circulation often is in pure uncomplicated attacks of the disease. The mind retains its clearness to the last.

Causes.—The attack is usually brought on by mental distress, a fit of passion (such was the case in the fatal attack that carried off John Hunter), violent bodily exercise, and especially by ascending a flight of steps, or a hill, or by walking against the wind, and is more apt to occur under one or other of these circumstances immediately after a hearty meal, when the descent of the diaphragm is abridged, and the action of the heart impeded. If the person is seized while walking, he is instantly forced to stand still, and gladly catches hold of the nearest object to prevent himself from falling. In the course of a few seconds, perhaps, the attack

ceases, and he is enabled quietly to pursue his journey. The first paroxysms are usually slighter and of shorter duration than those occurring subsequently, but not always so. After a first attack, the symptoms may not return again for months or years. There may be three or more paroxysms in the course of twenty-four hours, lasting from a few seconds to ten or fifteen minutes or longer, followed by entire exemption for an indefinite period. In aggravated cases there is frequently a succession of paroxysms, with hardly any intervals of ease, extending over two days. In one case under my care, presenting in a man upwards of eighty years of age, there was a succession of paroxysms for fifty-three hours, when the disease at length proved fatal. When the attacks are frequent, and the predisposition to the disease is strongly marked, they often occur from the most trivial causes. A slight error in diet, straining at stool, a sudden bodily effort, lifting a weight, or the mere act of turning in bed, has been the cause of the paroxysm in many cases.

The disease is very frequently preceded for a long time by gastric and enteric disorder, occasionally by sharp neuralgic pains in the stomach and colon, with flatulence. Gastrodynia had been a prominent symptom for several months in an extremely severe and fatal case which Dr Latham saw with me in 1846, and for which symptom the patient had on various occasions consulted Dr Paris and others. The connection between gout and angina pectoris has long been contended for by some of the best practical writers on the disease, and in numerous examples not without good reason. Very many cases could be adduced wherein the supervention of gout in an extremity was immediately followed by a cessation of the anginous symptoms, and some others wherein the two diseases coincided or alternated. In a paper in the seventh volume of the "American Journal of Medical Sciences," 1830, Dr Chapman of Philadelphia has related no fewer than six cases of the former description occurring in his own practice, and he has subsequently, in his work on the "Diseases of the Thoracic and Abdominal Viscera," published in 1844, reiterated his opinion, that the disease is in many instances at least derived from irregular gout. A case related by Dr Parry,* presenting in a gentleman seventy-seven years of age, seems to have been of this kind,

* Parry on Syncope Anginosia, p. 28.

two distinct attacks of the disease subsiding on the occurrence of pains in the knees. A general officer, sixty-six years of age, subject to lumbago and rheumatic gout, was seized in August 1841 with violent paroxysms of pains in the region of the heart shooting through to the scapula, accompanied with faintness and momentary suspension of respiration. The left ankle-joint was slightly swollen and painful. These symptoms had existed for two or three days when I saw him at Beckenham with Mr Williams of Bromley. During several of these paroxysms which I witnessed, the anguish of the patient was such as to draw from him loud screams. The pain seemed to stop short at the spine of the scapula. As the ankle became more inflamed and puffy, the paroxysms grew less severe and frequent, and entirely subsided after a few days, though for ten days afterwards he "felt as if the least bodily exertion would renew the attacks." The joint long remained swelled and œdematous. There was no return of the anginous symptoms at the distance of six years, when the patient died from a complication of other diseases, and in the meanwhile he was exempt from gout.

Anatomical Appearances, Pathological Causes.—There is scarcely an organic disease of the heart, or of its appendages or adjacent structures, to which angina pectoris has not been ascribed, and with which it is not occasionally associated. Perhaps it more frequently co-exists with calcification of the aorta, calcification of the coronary arteries, obesity of the heart, or fatty degeneration of its substance, singly or combined; but every one of these changes, and all the pathological causes which have been set down as conducing to the disease, or occasioning it, are constantly met with independently of the phenomena characterising angina pectoris, and in numerous instances occurring in earlier life, the most careful examination has failed to discover any abnormal condition whatever to which it could with any justice be attributed. Chiefly showing itself in advanced age, we should naturally expect it to be accompanied with structural disease of the heart or its vessels, and accordingly we very uniformly find evidence of anatomical changes in these parts; but it would be unphilosophical to infer, because the coronary arteries are occasionally diseased, the heart fatty, or the aorta dilated and rigid, that to one or other of these lesions are due the pain, anxiety, and faintness

coming on and passing off, peculiarly characteristic of angina, not but that there are several diseases of a paroxysmal nature, temporary in their duration, and with intervals of perfect health, which, under peculiar circumstances, seem to arise from permanent organic causes. The alterations alluded to are mere coincidences, and can be only regarded as so many predisposing causes of the disease. Among them there seems reason to believe that fatty degeneration of the substance of the heart, with its frequent accompaniment, ossification of the coronary arteries, is the most common. The disease may, it appears, be induced by any influence capable of unduly exciting or irritating the heart. Dr Corrigan* has shown that inflammation of the lining membrane of the mouth of the aorta may produce it; and I have seen the pathognomonic symptoms, in a very severe form, usher in an attack of fatal pericarditis. In some of Dr Corrigan's cases, however, there co-existed organic disease of the heart, and in my case the aorta was ossified and dilated. Heberden, and more lately Dr Latham, have attributed the phenomena to spasm of the heart; but if by spasm be meant a rigid contraction of its substance, such as we perceive in the muscles of a limb affected with cramp, it is difficult to conceive how the action of the organ proceeds with the regularity which it often does in even the severest cases of the disease. Whatever may be the exciting or predisposing causes, the peculiar phenomena characterising it find their readiest explanation in the assumption, that it is a species of neuralgia affecting the pneumogastric nerve, and the cardiac plexus especially. The severity of the pain, the mode of its invasion and decline, together with the effect of remedies, countenance this supposition. Dr Watson† has, however, opposed the following objections to this theory:—"First, that the paroxysm is excited by such causes as are 'especially calculated to disturb the natural action of the heart, bodily exertion, and mental emotion;' and, secondly, that the disease is so very frequently, and so suddenly *fatal*. This is not at all," he adds, "the character of mere neuralgic diseases in general." But these objections do not appear to have much weight when we consider the vital importance of the organ affected and the co-existing organic lesions which are generally found in fatal cases.

* Dublin Medical Journal, Nov. 1837.

† Prin. and Prac. of Physic, 3d ed. vol. ii. p. 267.

Diagnosis.—The only diseases with which angina pectoris is liable to be confounded are asthma and intercostal neuralgia. From asthma it is distinguished by the severity of the pain in the sternum or region of the heart, radiating to other parts, the absence of cough or dyspnœa, in pure cases, and the facility with which the breath can be retained or a deep inspiration accomplished, together with the feeling of impending death,—symptoms which are not observed in asthma. In intercostal neuralgia the pain affects all parts of the chest indifferently, and is unaccompanied with the anguish and faintness of angina pectoris, nor does it in general prevent motion, though in severe cases it occasionally checks respiration.

Prognosis.—The prognosis is most unfavourable in advanced life, for then it almost always coincides with structural changes in the heart, which, though perhaps not actually the cause of the disease, predispose to attacks, and add to their severity and danger. Severe attacks, however, are occasionally followed by long intervals of health, even where, from the existence of physical phenomena, no doubt can be entertained of the presence of organic cardiac disease. I have already alluded to one instance coming under my own observation, of a gentleman sixty-six years of age, and in whom there was evidence of obstructive aortic disease with hypertrophy of the corresponding ventricle, having, after repeated severe paroxysms, appearing in the course of three or four days, entirely escaped a return of the symptoms up till the period of his decease six years afterwards, when he was carried off by other diseases independent of the one in question. Such cases are rare. Persons subject to the disease generally die suddenly. They are often found dead in bed, or in a sitting posture, with the head resting on some near object. They have fainted and died in this state. In other cases, the paroxysm or paroxysms appear to occasion death by exhausting quickly, but not so suddenly, the vital energies. Death may take place during a first attack, after a few minutes of pain and suffering, or there may be a succession of paroxysms so closely following upon each other as to appear but one, and after lasting from thirty to fifty hours, recovery may take place; but more generally, in these aggravated attacks, death ensues. The prognosis ought to be extremely guarded, and the friends, if not the patient himself, should be apprised of the dangerous nature of the disease and its frequently sudden termination. In three cases

referred to by Dr Latham* death took place, "in the first case, in a fortnight; in the second, in ten days; and in the third, in less than three hours from the first seizure." I have reason to believe that in the case of a gentleman of vigorous constitution, though upwards of eighty years of age, already alluded to as having been seen by Dr Latham and myself, but which is not one of the number he has referred to, death happened during the first or second paroxysm. If the second, in about ten days from the first seizure. The fatal attack was severe, and prolonged fifty-three hours with scarcely an interval of ease. In the case of an in-pensioner of Chelsea Hospital death happened from syncope almost instantaneously, while in the act of sitting down to breakfast, about three weeks from the first-known attack. He had had three seizures of great severity, but of not more than a quarter of an hour's duration, and with an interval of several days between each.

Treatment.—The nature and severity of the symptoms characterizing a paroxysm of this disease, render it very unlikely to be mismanaged during the seizure. There is no room for temporizing. We are imperatively called upon to attempt immediate relief. Sedatives and antispasmodics naturally suggest themselves as appropriate remedies, and they are our chief resources during the attack. From twenty to forty minims of laudanum, with half a drachm or a drachm of compound sulphuric ether, or twenty minims of chloric ether, in camphor mixture, should be given without delay; and repeated, if necessary, according to the intensity of the symptoms. In urgent cases, accompanied with violent pain and great prostration, a still larger dose of laudanum may be given with compound sulphuric ether, and a tablespoonful or more of brandy. Except an equivalent dose of the liquor opii sedativus, all other sedatives are comparatively valueless in angina pectoris; and unless there is vomiting, laudanum is to be preferred to solid opium. It is, in general, essential to combine even laudanum in this disease with a stimulant, as above advised. Bloodletting, both general and topical, has been recommended, but the cases are extremely rare, indeed, where this measure can be resorted to with benefit or safety. The very frequent association of the disease in advanced life with organic changes in the heart or great vessels, and especially with flaccidity or fatty

* On the Diseases of the Heart, vol. ii. p. 379.

degeneration of its substance, suggests the utmost caution in the employment of so powerful a remedy. That bloodletting has been productive of relief I am fully sensible, and I have myself witnessed its good effects in at least one example of the disease. To authorise it, however, not only should the constitution still be possessed of considerable vigour, but there should exist some evidence of unimpaired contractile power of the heart. Where, on the contrary, the physical signs announce an attenuated or dilated condition of the walls, or feebleness of action, bleeding in any shape is unsafe, and ought not to be attempted. A large sinapism should be applied to the region of the heart or pit of the stomach, or warm turpentine epithems may be substituted with advantage. In one case the greatest relief was obtained from flannel stupes as hot as could be borne. The lower extremities are at the same time to be immersed in a warm, stimulating pediluvium. If the prostration is great, brandy must be administered from time to time with sulphuric ether, or the aromatic spirit of ammonia, and, if practicable, the recumbent posture maintained.

In protracted paroxysms, besides opium, other sedatives and antispasmodics may be administered, alone or in combination, such as the cannabis indica, the tincture of lobelia, musk, the ammoniated tincture of valerian, &c. These may be administered in the infusion of valerian with or without the spiritus ammoniæ fætidus and spiritus ætheris sulph. comp. Dr Elliotson places great reliance on prussic acid, but in the majority of cases its administration in this disease must be hazardous. I am not aware that chloroform has ever been resorted to in angina pectoris. The same and more powerful objections would apply to it in many cases as to bleeding. Death has frequently ensued from its exhibition when cardiac disease has existed, and it appears to be peculiarly unsafe in fatty disease of the heart, perhaps the most common condition of the organ in angina. Still, where pain is the most prominent symptom, and the action of the heart is vigorous, its cautious inhalation seems to offer advantage. In facial neuralgia, I have seen it act almost miraculously in entirely and almost instantaneously removing the most intense pain, which had resisted enormous doses of opium; and if angina pectoris is a species of neuralgia, there seems reason to infer that in some cases it might be beneficial.

Emetics have been recommended. In an extremely severe case, attended with retching, I was induced, by the earnest solicitation of the patient, to try the effects of an emetic of ipecacuanha. Full vomiting was excited, but no impression was made on the symptoms, certainly none to encourage a repetition of the remedy in a similar instance. Perhaps emetics are only advisable when the attack immediately follows a full meal, or arises during a period when the stomach is loaded with irritating injesta. Eructations frequently afford relief, and should always be encouraged by the usual means, especially by sulphuric ether with the essence of peppermint, or by a few drops of cajeput oil on sugar.

Such is an outline of the treatment required during the paroxysm. If it occurs in a person of gouty habit of body, or in one hereditarily predisposed to gout, colchicum should not be omitted, and stimulating pediluvia containing mustard and salt should be perseveringly resorted to, in the hope of determining an attack of the disease in the foot. In several cases recorded by Dr Chapman, gout was elicited by sinapisms, and by the administration of wine whey and carbonate of ammonia, with signal relief to the anginous symptoms.

The prevention of a return of the paroxysm constitutes a most important part of the treatment of this disease. For several days after an attack, the patient should be especially careful to avoid all causes, moral and physical, capable of unduly exciting the heart. Exercise, if indulged in at all, should be moderate and passive, and the greatest attention should be bestowed on the diet, which should be light and nourishing, and in every respect adapted to the powers of the stomach and actual wants of the system. The return to old habits should be gradual. Whatever may appear to have been the source of the attack must especially be guarded against for ever afterwards. This is a disease not to be trifled with. No attack is free from danger, and a second has often proved fatal though the first was slight. All associated, functional, or organic diseases must receive due attention. Dyspepsia is a frequent concomitant, and severe paroxysms of angina are often preceded by such evidence of derangement of the functions of the stomach and bowels, as then to leave no doubt of the connection of the diseases, nor of the necessity of resorting to such means as are likely to restore the digestive organs to a healthy

condition,—means which must vary agreeably to the nature of the symptoms. The precise condition of the heart should be ascertained by careful physical examination, and a plan of treatment, including diet and regimen, pursued which is suited to the individual case. Tonics and a moderate allowance of wine will be advisable when there are signs of deficient power, whether from attenuation and dilatation, or from fatty disease of the organ ; while these may be inappropriate remedies under other circumstances, perhaps requiring moderation in diet instead of a sustaining treatment. In gouty subjects, the means required for this habit of body must be enforced.

There are, perhaps, few diseases so much influenced by dietetic measures as angina pectoris, for there are few less frequently unaccompanied by disorder of the digestive organs. Even when the functions of the stomach and bowels appear to be discharged normally, and the appetite and digestion are in every respect healthy, due regard should be paid to the quantity and quality of the food. I am satisfied that attention to diet has warded off many an attack, and irregularities have occasioned, in numerous instances, sudden and fatal seizures. In the case of Mrs F——, of Sloan Square, Chelsea, a person of corpulent habit of body, sixty years of age, who had evidently hypertrophy of the heart, with, very probably, fatty accumulation on its surface, and who first consulted me in September 1846 on account of very frequent, though slight paroxysms of the disease, the most beneficial results ensued from regulating the diet and discontinuing the use of fermented liquors. She had been taking medicines without end. Six weeks after commencing this system the attacks became less frequent, and in six months she was enabled to take more exercise than she had done for two years. Though for twelve months before commencing the system the paroxysms were nearly of weekly occurrence, and were often brought on by the slightest exertion, and always by quick walking or by ascending a flight of steps, she now remained free from the disease for three years, when she suddenly expired in bed after a few seconds of acute suffering from "cramp in the stomach," before she could be seen by any medical man. On inquiry, I have no doubt that she was carried off in a violent paroxysm of the disease from which she had been so long exempt.

PART V.

DISEASES OF THE DIGESTIVE ORGANS.

CHAPTER I.

GENERAL ANATOMICAL CHARACTERS OF THE STOMACH AND BOWELS IN OLD AGE—COMMON DISEASES.

PARTICIPATING in the general wasting of the organs and tissues, the stomach and intestines lose bulk and become thinner in old age. Their glandular apparatus is also atrophied. Many glands seem to have entirely disappeared. The wasting of the tunics composing the stomach and intestines is more obvious in the duodenum, jejunum, and ilium. In some cases it is carried to such a degree as to admit of the contents of the intestines being distinctly seen through the attenuated structures. In striking contrast, the larger intestines occasionally preserve their natural thickness, chiefly through a compensating hypertrophy of the muscular coat. The mucous membrane is usually paler than in the adult, and generally acquires an ash-gray colour as life advances. In the stomach it is often traversed by enlarged veins, assuming a varicose character, which become more numerous in the lower portions of the intestinal canal, and are particularly conspicuous towards the termination of the colon and rectum. The glands, both in the stomach and intestines, are occasionally impregnated with melanin, giving them a punctated aspect, closely resembling the effects seen after accidents from gunpowder.

The various disorders familiarly known under the generic name

of dyspepsia are now far from unfrequent; yet dyspepsia in its acute forms is not so common as in manhood, nor do we then so often encounter those obstinate cases of cardialgia, gastrodynia and pyrosis, with fulness and tenderness at the scrobiculis cordis, too frequently long resisting our best directed efforts. The chronic and symptomatic forms of the disease are now what are usually met, and some of the persistent organic lesions of the stomach, with their train of intractable symptoms, are, in their aggravated states, peculiarly obnoxious to the old. Cancer of this organ is almost always a disease of advanced life; and the numerous chronic maladies of this period affecting the brain, the lungs, the liver, the heart, the genito-urinary tract, &c., are very often associated with dyspeptic symptoms of more or less severity, while gout, lithiasis, cachexia, and senile anœmia are so frequently preceded by, and so intimately connected with, chronic functional derangement of the stomach that they appear in many instances to be its effects. The bowels also are not less subject to chronic functional and organic disease than the stomach, some of which shall presently be considered.

CHAPTER II.

DISEASES OF THE MOUTH AND GULLET.

SECTION I.—DISEASES OF THE MOUTH AND TONGUE.

Chronic inflammation and ulceration of the gums, with fungous growths, from the irritation of decayed teeth and stumps, are a frequent source of annoyance to the aged, and are only removable with the cause which induces them. A spongy condition of the gums, accompanied with tenderness and lividity, and a disposition to bleed on the slightest touch, is also not uncommon, even where the teeth are sound and perfect, but detached from the gum by ulcerative absorption and the accumulation of tartar round the crown of the teeth. In many instances this scorbutic or inflammatory affection is but a local manifestation of a depraved state of the blood, the result of impoverished or improper diet and insufficient vegetable nutriment. It is not unfrequent in aged individuals long confined to farinaceous food and to the impure air of ill-ventilated apartments. A change of diet, the use of potatoes and succulent vegetables, from which the individual has been debarred by accident or by his own choice, which is frequently the case, will then speedily effect a cure, if aided by pure air and tonic and astringent washes, among which a solution of tannic acid may be mentioned as most useful.

Aphthous Ulcerations of the tongue and lining membrane of the mouth are also far from unfrequent in aged persons. In general these are connected with an unhealthy state of the digestive organs, attention to which is an object of the first importance. In recent cases, soothing applications and cooling aperients are useful. Stimulants must be avoided, and the food should chiefly consist of farinaceous articles and soups thickened with bread, vermicelli, arrowroot, or ground rice. When the ulcers have

assumed a chronic form, the tannic acid wash above recommended in a spongy condition of the gums will be of great service, so will borax and honey; but the application chiefly to be depended upon in this stage is a solution of the nitrate of silver, three or four grains to the ounce. Equal parts of the tincture of the sesquichloride of iron and distilled water is also an excellent remedy, applied like the caustic solution. A lady now in her seventy-fifth year, and who has for many years been subject to aphthous ulcers on the edge of the tongue and lining membrane of the cheeks, derives more benefit from a wash consisting of a weak solution of alum in water with a small quantity of port wine and vinegar than from anything else she has tried. In several of these cases, the general health is indifferent, the stomach and bowels deranged, and the patient complains of languor and debility. Under these circumstances, tonics, including wine, are serviceable. In all these affections it is advisable to vary the local application from time to time.

Ptyalism is another affection which we often see in old people, not mere drivelling of the salivary secretion from unfrequent and inefficient attempts to swallow it, but a morbid increase of this fluid from over-excitement of the salivary glands. The saliva thus evacuated is sometimes very acid, and occasionally exceeds a pint in the twenty-four hours, besides what is swallowed. The complaint being usually of a chronic nature, is productive of exhaustion and general debility. A more or less congested state of the lining of the lips and cheeks is now and then observed to accompany it. On the other hand, this membrane is sometimes preternaturally pale. Undoubtedly the complaint is occasionally the result of diseases of the gums and teeth; but in not a few instances nothing local is discovered to which it can be ascribed. Sometimes it appears to be connected with disorder of the digestive organs. I have seen it occur when the brain was the seat of irritation, and probably to this circumstance may be ascribed the apprehension, not unfounded, of its being occasionally a forerunner of paralysis or apoplexy.

Perhaps some caution should be exercised in attempting to check this affection, lest it might be followed by more serious disease. Remedies, however, appear to have little effect over it: and in more than one case astringent washes have seemed to me

rather to increase the secretion than abate it. Occasional purgatives, the application once or twice a week of one or two leeches to the parotid and sublingual glands, have been serviceable. Where the secretion is more acid than usual, alkaline washes and the internal use of alkalies are indicated. Gentle counter-irritation over the glands by means of the tincture of iodine offers advantage. It is obvious that when the inordinate secretion proceeds from sympathy with a remote organ, little good can be expected from local remedies. In certain cases, the exhibition of the tincture of the sesquichloride of iron would very probably be of great benefit.

Fissures and Chronic Ulcerations of the Tongue are far from unfrequent in advanced life. The former are seldom of a malignant character, but the latter are too often of this nature. I have no observation to offer on the subject of cancerous disease of this organ.

A form of ulcer on the tongue is occasionally met with in elderly subjects, which, from its site, duration, and general appearance, is no doubt sufficiently alarming, but which every one accustomed to the treatment of old persons must often have seen get perfectly well. The ulcer alluded to is generally situated on the edge of the tongue, midway between the apex and base, and has usually existed for two or more months before consultation, being accompanied with little inconvenience during the early stage of its progress. It is now of an oval shape, the long axis following the form of the tongue, proceeding from before backwards, and in extent about half an inch. The edges are white, somewhat hard and inverted. The surface is yellowish, or of a pale ash-colour. If the disease has existed for several months the hardening is considerable, and at once suggests fears of the nature of the ulcer. A gnawing pain is present; but now for the more favourable symptoms. The patient's health is usually good, his aspect does not present the withered hue of cachexia, the ulcer seldom or ever bleeds, the pain is usually confined to the sore, not burning, lancinating, and violent, as in malignant ulceration; and though the disease has lasted for many months, the glands under the maxilla generally, perhaps always, remain unaffected. Still, it must be admitted, in many cases the diagnosis is not so easily established, and when we have to deal with an individual in broken health, it

is far from conclusive. The satisfactory thing, however, is, that even in old people some indurated and obstinate ulcers on the tongue, of a formidable aspect, presenting many of the characters of cancerous disease, do ultimately cicatrize.

These ulcers are often connected with a diseased state of the adjacent teeth, and sometimes with disorder of the digestive organs. They are but too frequently aggravated and perpetuated by strong stimulating or escharotic substances, the nitrate of silver and the sulphate of copper being favourite applications. Burnt alum, almost equally irritating, is a popular remedy held in high estimation. An entirely opposite plan of treatment is however necessary ; and the discontinuance of all local applications is sometimes followed by the best results. The means resorted to in irritable ulceration should be enforced. Small doses of the extract of henbane, conium, or lettuce should be administered once or twice daily, either singly or combined. Every attention must be paid to the general health, and all anxiety as to the result as much as possible relieved by the encouraging assurance that very formidable ulcers here do heal even under unpromising circumstances. Rest of the organ affected should be enjoined. Benefit will frequently be derived from alterative doses of mercury or iodine. A Plummer's pill may be given at bed-time, and a dessert spoonful of the fluid extract of sarsaparilla, in two or three ounces of water, taken two or three times daily ; or, to the compound infusion of sarsaparilla may be added four-grain doses of the iodide of potassium twice a day. If local applications are employed, they ought to be of a soothing kind. Barley water, containing an aqueous infusion of opium, is a useful wash of this nature. Collodion offers advantages in some of these cases. It is almost unnecessary to observe, that all sources of irritation from adjacent decayed or jagged teeth must be attended to as a primary and essential part of the treatment.

The management of chronic fissures on the tongue should be conducted on similar principles. These, however, bear a stimulating treatment better. A solution of the nitrate of silver often accomplishes a cure. I have, however, in more than one case, succeeded by leaving off all irritating local applications, and attending solely to the general health, where the disease had been very protracted and treated with remedies of that kind.

SECTION II.—DISEASES OF THE PHARYNX AND ŒSOPHAGUS.

Acute Inflammation of the Pharynx, involving the mucous membrane and subjacent structures, is far from uncommon in advanced periods of life, and though generally unaccompanied with danger, it now and then assumes a formidable aspect through extension of the inflammation to the adjoining soft parts, and to the epiglottis itself. It very rarely ends in suppuration, and generally subsides in a week or ten days at the most.

The attack is sometimes ushered in by rigors; more frequently they are altogether absent. Most of the cases I have witnessed have occurred in gouty individuals. I have also observed it, in more than one instance, supervene on the drying up of an old running ulcer. Exposure to cold appears to be its usual exciting cause.

In the beginning of the attack, the pharynx is of a dull reddish colour, and assumes a highly congested and livid hue as the disease advances. The surface of the pharynx is either dry and glossy, or streaked with lymph and mucus. Usually at a later period there is an enormous secretion of thick tenacious frothy mucus, which the sufferer is constantly endeavouring to hawk up; and accumulating in large quantities at the back of the throat, it impedes respiration, if it does not actually, in old debilitated persons, threaten suffocation. The power of swallowing is greatly impaired in severe cases, through the pain that accompanies the inflammation (though when the parts are at rest this is not so great as in cynanche tonsillaris); and also, no doubt, partly from the weakness or paralysis that attends inflammation of muscular structures in general. The accompanying fever usually runs high the first day or two in vigorous individuals. The chief distress is the accumulation of the viscid mucus adverted to, occasioning incessant desire for its expulsion, and sometimes a teasing, tickling cough, by which repose is entirely prevented, and a suspicion roused that the inflammation is extending to the glottis and rima glottidis.

In acute attacks, such as above described, the antiphlogistic treatment is necessary. General bleeding, however, is seldom if ever required, and most cases do well even without local depletion. A brisk saline purgative, repeated from time to time, should be given, to which, in gouty habits, moderate doses of the compound

tincture, or the wine of colchicum, may be added with advantage. Full and free action of the bowels generally brings relief, and greatly checks the excessive mucous secretion. This should be washed away frequently with tepid water. Astringent gargles are prejudicial, but where the secretion is moderate they relieve the inflammation, and towards the decline of the disease they are of great service in restoring the lost tone of the parts. From an early period it is necessary to support the strength of the patient by beef-tea, containing grated meat; and as the vital powers are often much depressed from the very onset, a cautious exhibition of wine or brandy is not unfrequently demanded at a time when the local phenomena appear to contra-indicate it. Still later these are of the greatest service, and stimulants may then be freely administered with advantage. Considerable weakness follows the attack. Relapses are rare.

Chronic Inflammation of the Pharynx.—Occasionally, in broken-down habits, the disease ends in chronic inflammation—a character which it often presents from the commencement. In this form, the parts affected are abraded, dry, rough, and studded with aphthous specks. An ulcerated and hypertrophied condition of the mucous follicles occasionally accompanies this state of the pharynx, and extends to the œsophagus. Assuming now and then an aggravated form, and accompanied with temporary fits of dysphagia, it is not unfrequently associated with persistent disorder of the digestive organs, general debility, and obvious decline of the vital powers. Tonics and local stimuli are then indicated, but the pharyngeal affection is, under such circumstances, comparatively of secondary importance, and its treatment must embrace attention to the general health and co-existing diseases. A mild, bracing climate is sometimes of great service in these cases.

Dysphagia.—Difficulty of swallowing frequently occurs between fifty and sixty years of age, and is perhaps still more common later in life. More or less present in all morbid conditions of the pharynx and œsophagus, it also accompanies the various painful affections of the adjacent structures, and is thus frequently symptomatic of tracheal and laryngeal affections. Impeded or obstructed deglutition is also occasioned by pressure exerted on some portion of the pharynx or œsophagus, by external tumours of various kinds, or by abscesses in the neck or mediastinum, and by aneur-

ism of the primary arterial trunks, especially of the innominata and aorta. Thus at a period of life when structural disease is common, we must be prepared for symptomatic or secondary dysphagia, and it behoves us to examine the whole course of the organs of deglutition, from without and within, before determining the exact nature of the affection. In the absence of the above causes, the more permanent the disease the greater must be the suspicion that it has its source in textural change in some part of these organs themselves.

Stricture of the Œsophagus from Scirrhus Degeneration is but too frequently the cause of continuous and persistent difficulty of swallowing in advanced life. This hopeless disease is generally situated at the upper end of the œsophagus, opposite the cricoid cartilage, just where the pharynx terminates and the œsophagus begins, though it may occupy any portion of the tube. Usually it is primary and isolated, being seldom connected with cancerous formations elsewhere. For a long time, the disease is generally preceded by dyspeptic symptoms, with constipation, which become more troublesome as it advances. The first symptom announcing it is some impediment to the descent of solids. The patient finds that he is obliged to be more careful in chewing his food than before, and that he is no longer capable of swallowing morsels of the same size he used to do. As the constriction increases, deglutition becomes more and more difficult, till at length nothing but liquids pass the stricture. Even these occasion pain and spasmodic action, affecting the larynx, and are often returned with a thick glairy mucus. In the second stage of the disease, should life be prolonged so far, when ulceration has taken place, a temporary improvement is sometimes observed in the facility of swallowing; but the constitution now rapidly gives way. Long before this, the countenance has acquired a cachectic hue, and the emaciation and debility have been progressive, till at length, exhausted by want of nutriment and by great suffering, the wretched patient sinks slowly or more suddenly through perforation of the trachea, or still more rarely through erosion of an artery.

The treatment of this dreadful disease, thus briefly sketched, is entirely palliative. In the early stage, the contraction may be hindered by the occasional introduction of the ivory or silver-mounted probang; but this is doubtful, and assuredly, to be useful,

it must be passed gently and cautiously, preceding its employment by the exhibition of sedatives, conium or henbane, or even by moderate inhalation of chloroform. Local measures are secondary. The general health must be watched, and by every means improved or sustained—by attention to the digestive organs, and by the avoidance of all sources of local and constitutional irritation. With the exception of sedatives and gentle laxatives, every other medicine may be set aside; for experience has shown that mercury, iodine, and other boasted remedies, are, to say the least of them, nugatory. In the advanced stages of the disease, when liquid nourishment cannot be swallowed, we endeavour to prolong life by injecting it into the stomach through a flexible tube, or per anum, by the ordinary syringe.

Spasmodic Dysphagia.—Difficulty of swallowing is not always, however, of the important or serious nature above described. A great number of cases present themselves irrespective of structural alteration, and independent of external pressure. Spasm of some portion of the pharynx or œsophagus is a not unfrequent cause of difficult deglutition, of a character sometimes sufficiently obstinate to excite apprehension, occurring, as it now and then does, in aged cachectic subjects. This affection more frequently attacks the gullet, and chiefly the pharyngeal or cardiac extremity, though generally the upper end, near the larynx, precisely where malignant stricture is usually situated. The higher the part affected, the more marked and painful are the symptoms. When the top of the œsophagus is the seat of the disease, deglutition is often impossible while the spasm lasts, and the act of swallowing is accompanied by a choking sensation, through extension of the irregular action to the muscles of the larynx, or through the influence of the violent constriction of the œsophagus on this body. The mere effort to swallow is often sufficient to occasion this feeling; but it is more distressing when solids are taken. So severe is it, in certain cases of spasm of the top of the œsophagus and pharynx, that I am certain death has sometimes ensued in old people, partly from the pressure of the morsel attempted to be swallowed on the larynx and trachea, but chiefly from sympathetic spasm of the rima glottidis. I know of two instances occurring in feeble old persons, in which, had not timely aid been given, there seemed reason to believe, from the discoloration of the

countenance, and the approaching insensibility, death would have resulted; and also of a third case in Chelsea Hospital, in which this actually happened to an infirm man eighty years of age, who had occasionally suffered from this affection. Death took place at dinner, in the act of swallowing a piece of unmasticated meat, which was pulled out of the pharynx and œsophagus by the assistant-surgeon, who was called to the patient a few minutes after the accident happened. It is possible, however, that in this case a portion of the meat had got into the larynx, though none was found there, nor in the bronchial tubes, on *post-mortem* examination. The accidental lodgement of even a small fragment of food in the larynx or bronchi is a cause of the sudden death of not a few old people.

Spasm of the pharynx or œsophagus is generally connected with a disordered state of the stomach and bowels. It not unfrequently presents itself in gouty habits. Occasionally it attacks individuals suddenly who are apparently in good health, an instance of which, occurring in an elderly gentleman who was twice in the course of his life seized by spasm of the gullet, is referred to by Monro.* Sometimes it proceeds from chronic local irritation or inflammation of the lining mucous membrane. In other cases it originates in inflammatory cold and sore throat, two examples of which presenting in females, one fifty-six years of age, and the other sixty-eight, are recorded by Howship.† A precisely similar case, also occurring in a female fifty years of age, was under my care in the spring of 1851. Simple spasmodic action of the œsophagus, with consequent dysphagia, is also often complicated with uterine irritation and pulmonary disease.

The duration of this affection greatly varies; in some cases it lasts only a few hours, sometimes for many days, weeks, or years. Its recurrence and duration are of course much influenced by the nature of the disease or diseases causing it, or with which it is more or less intimately associated.

The distinction between spasmodic and organic stricture of the œsophagus is mainly founded on the circumstances of the suddenness of the attack, its occasional absence, or decided mitigation,

* On the Diseases of the Gullet and Stomach, p. 264.

† Practical Remarks on the Discrimination and Appearances of Surgical Diseases, pp. 94, 95.

and the facility with which the bougie passes down the tube, either meeting with no impediment, or one which readily yields after a little pressure from the instrument. Although, in organic stricture, the difficulty of swallowing varies, being some days greater than on others, still deglutition is always impeded, the passage of the bougie obstructed, and the disease commences gradually, not suddenly as in simple spasm. Spasmodic stricture, moreover, may last for years, coming and going, without seriously injuring the general health; stricture from organic disease, simple thickening, or cancerous degeneration, is sooner or later accompanied with emaciation and general debility, and in the latter case by a sallow, cachectic, withered appearance of the countenance.

The treatment of this affection must be regulated by its pathological relations and associated diseases. A disordered state of the stomach and bowels is among its most common antecedents and accompaniments in advanced life, attention to which is then an object of great importance. It is unnecessary, however, to enlarge on the general management of a disease presenting many varieties requiring special consideration. Tonics and antispasmodics are in general appropriate remedies where obvious indications are wanting. In gouty habits, tepid baths and small doses of the compound tincture of colchicum, in combination with sedatives, and alkalies will be beneficial. Where the attack has followed inflammation of the pharynx or œsophagus, counter-irritation and the frequent use of demulcents, with conium, henbane, or extract of lettuce, or tinctures containing these substances, are advisable. The morbid irritability of the part or parts may be, in many of these cases, diminished by the application of the nitrate of silver in solution, and the external employment of belladonna as a plaster or unguent. Irritating and stimulating articles of food should be avoided, and liquid nourishment substituted where solids create spasm, or are swallowed with more difficulty. In the majority of cases, a generous diet and a sustaining plan of treatment should be pursued, especially in females with a hysteric tendency, in whom spasmodic dysphagia is common.

With the general treatment it is necessary occasionally to pass a bougie or silver ball through the part affected. Some obstinate cases, resisting well-directed constitutional means, have been effectually cured by this treatment alone, or with very little assistance

from medicine. The ball or bougie appears to be useful not only in dilating the stricture, but in removing the morbid irritability of the part, and accustoming it to the contact of substances swallowed.

Paralytic Dysphagia.—Difficult or impossible deglutition from paralysis of the pharynx or æsophagus is generally symptomatic of cerebral or spinal disease. It often accompanies apoplectic affections. Sometimes, though rarely, it is idiopathic, in the common acceptation of the term. I have known it precede some days fatal cerebral hæmorrhage, and in another case it was one of the earliest indications of softening at the base of the brain. Paralytic dysphagia is hence a very important symptom. Like other forms of local paralysis in old people, it may generally be regarded as a warning of apoplexy.

The diagnosis of this serious form of impaired or impossible deglutition is easily determined. The bougie meets with no mechanical impediment; solids and large masses of aliment are more easily swallowed than liquids or small morsels; and there generally accompanies it other paralytic affections, such as thickness or loss of speech, dyspnœa, &c.

Primary or idiopathic paralytic dysphagia is seldom complete. The power of swallowing may be almost entirely lost, but in general it is only weakened. Chomel refers to a singular case mentioned by Morgagni of an old man thus affected, who could swallow any kind of aliment, but, strange to say, the last morsel remained in the œsophagus until the following meal, unless in the meantime rejected. Morgagni partly explained this peculiarity in supposing that the sole action of the muscular fibres was insufficient to convey the alimentary bolus from the œsophagus into the stomach, until aided by the weight of the succeeding mass.

Paralytic dysphagia seldom comes under treatment, except in connection with, and dependence upon, cerebral lesion or disease of the medulla oblongata. The curative means are then subservient to the original affection. In idiopathic cases, or in those following apoplectic seizures, after the usual remedies have been employed for the cerebral affection, stimulating gargles, counter-irritation to the nape of the neck, as well as electricity, may be recommended; but most cases prove entirely beyond the reach of art, and we can only hope to benefit the patient by attention to his general health.

CHAPTER III.

CATARRHAL GASTRITIS, OR FOLLICULAR DYSPEPSIA.

We occasionally meet with undoubted examples of primary acute or sub-acute catarrhal gastritis in the old, forming a well-known species of indigestion, variously called gastrorrhœa, anorexia humoralis, follicular dyspepsia, &c., &c. This form of the disease is almost invariably occasioned by the direct and local influence of stimulating ingesta. Accordingly, it is rarely observed except in gourmets or persons habituated to the abuse of alcoholic liquors. It is commonly evinced by a sensation of gnawing and fulness, sometimes tenderness at the epigastrium, frequent eructations, occasional vomiting, especially early in the morning, of a thick, glairy, grayish or stone-coloured insipid mucus, varying in quantity from a tablespoonful to as much as a pint, and all the more pressing symptoms of chronic dyspepsia, such as acidity, gastrodynia, constipation. Pain on pressure is by no means a constant symptom. In the acute disease, the tongue is covered with a yellowish fur, through which the reddened papillæ project; or it is florid, shining, smooth, and dry, perhaps perfectly natural. The appetite is gone, though in some cases it is still good, and in others capricious, or singularly keen. Small quantities of food often appease the uneasy sensations in the stomach, and the rejection of the ropy mucus with the morbid secretion is equally productive of temporary relief. There is frequently thirst, and occasionally a desire for cold liquids; but the attack is seldom if ever accompanied with febrile movement.

The natural tendency of this disease is to assume a chronic form, and it is in this stage that we almost always meet it. Very generally it is chronic from the commencement. In either case, it is not unfrequently associated with intestinal or bronchial catarrh, and with a variety of other diseases, especially with urinary affec-

tions. When uncomplicated, and the secretion appears to be merely a slight increase of the natural mucus of the stomach, it may last for years without materially deranging the general health. Individuals thus affected vomit, or rather regurgitate, every morning and evening, or at other periods of the day, more or less glairy mucus, just as certain persons cough up, on first rising, some phlegm; and it is very remarkable, in these chronic cases, that the food is often retained, while the morbid secretions are alone rejected. Digestion afterwards appears to go on with or without pain, but exacerbations such as above described are common, and the gourmand is sure to pay the penalty of indulgence by a variety of gastric symptoms, varying in severity. Flatulence and constipation are generally present. The tongue is usually pale and flabby, sometimes indented with the teeth, but it is not unfrequently quite natural. In some instances it is raw, and with the adjacent soft parts studded with minute aphthous ulcerations, as in other forms of chronic gastritis. Thirst is not a common symptom. Piquant food is in general only relished.

Chronic catarrhal dyspepsia is often associated with, and appears in many instances to be secondary to, chronic bronchitis and chronic disease of the heart. It is thus a result of repeated afflux of blood to the stomach, or of passive congestion. There seems reason to believe that it is occasionally hereditary, perhaps more from habits and mode of living than from congenital causes. If consequent to chronic bronchitis, or originating in the same influences, it declines with that disease as summer advances, to return again with the approach of winter; and like it, it is subject to periodical exacerbations and relapses from injudicious exposure or indiscretion in diet. As a complication of bronchial or cardiac disease, it adds much to the difficulty of treatment; and in such cases the dyspeptic symptoms are often of an aggravated kind, among which flatulence and painful distension of the stomach are not the least prominent.

Anatomical Characters.—Opportunities of examining its anatomical characters are only found when the individual is carried off by some other disease. The mucous membrane of the stomach, which in advanced life, as before mentioned, is dull-white or ash-gray, then presents, according to Rokitansky,* a reddish-brown or

* Path. An., Syd. Soc. ed. vol. iv. p. 25.

slate-gray, or even blackish-blue colour. It may however, as I have seen it, retain the natural colour. The mucous follicles, which are regarded by many as the essential seat of the disease, are sometimes visibly enlarged. When the disease has been of long standing, the inflamed membrane acquires a granular or mammillary appearance, as observed in the bronchi and lining of the eyelids, in chronic inflammation of these parts. Ulceration, thickening and induration of the affected membrane, are frequent results. In advanced stages, the submucous tissue participates in the thickening of the mucous membrane, and all the coats of the stomach are occasionally involved in the same change. There seems reason to believe that the disease ends in some cases in cancer.

Treatment.—The cases are very few in which antiphlogistic measures are necessary; but where there is pain at the pit of the stomach, aggravated by pressure, accompanied by anorexia and the characteristic rejection of mucus, a few leeches ought to be applied to the epigastrium, and repeated from time to time according to the general condition of the patient and the urgency of the symptoms. Of local treatment, however, counter-irritation is chiefly to be relied upon in the majority of cases. Sinapisms are particularly convenient and useful. In more chronic states, these should be exchanged for small blisters, which should be allowed to heal and then be renewed.

All medicinal treatment is secondary to diet and regimen. In exacerbations, or in acuto-chronic attacks, the food ought to be of the least stimulating quality, and taken in small quantities at a time. In the ordinary form of the disease, it should be compendious, and chiefly composed of animal substances, with a minimum quantity of fresh, easily-digested vegetables. Liquid nourishment in general disagrees. Soups, beef-tea, and even milk —articles which *a priori* would appear suitable to the condition of the stomach—very often occasion flatulence and vomiting. In a protracted case, subject to acute relapses, which has frequently come under my care, a dry diet has always been preferred by the patient, even when there has existed considerable pain and tenderness in the epigastric region; and light farinaceous puddings are often rejected, when biscuits and dry toast and roast mutton are retained.

The greatest relief follows free alvine evacuations. If there is

much irritability of the stomach, purgatives administered by the mouth are injurious, and often rejected. In such cases this portion of the treatment should commence with the exhibition of three or four grains of calomel, guarded with half a grain of opium; and having been repeated, a stimulating enema should be thrown up some hours afterwards. The bowels may afterwards be kept open by tepid injections of plain water, to which may be added, if required, a little soap or castor oil. Emetics are generally injurious, though they have been recommended, and are often suggested by the patient himself, from the temporary relief afforded by the rejection of the offending secretions, acid or otherwise.

After the more acute symptoms have subsided, and in the chronic form of the disease, benefit will be obtained from aromatic stomachic bitter infusions, or the mineral tonic and astringent substances, while, at the same time, a more stimulating diet may be permitted with advantage. The infusions of cusparia, gentian, calumba cascarilla, and chiretta, with sulphuric or nitric acid where it can be borne, are appropriate. Of the mineral tonics, the oxide or nitrate of silver and the sulphate of iron are the best. One or other of these may be combined with the extract of gentian, or the compound aloetic pill, and administered two or three times a day. Small doses of opium, combined with articles of an astringent nature, have been strongly advised; and benefit is often derived from the compound powder of kino, or opium and alum, given as a pill once or twice a day. Dr Pemberton considered opium and kino the great remedy in this species of dyspepsia. Dr Baillie strongly recommended the compound tincture of benzoin. If the bowels are habitually confined, the mistura gentiana comp., with or without the decoctum aloes comp., will be serviceable, or the compound rhubarb or aloetic pill may be given immediately before dinner. The gastric mucous membrane, it is certain, is now much in the same state of debility and relaxation as the conjunctiva in chronic persistent catarrhal ophthalmia. Stimulants are now called for, but, to be useful, they must not be abused. Distension of the stomach by much liquid is to be avoided. Coffee is preferable to tea. Malt liquors are generally hurtful. A sparing allowance of old dry sherry or weak brandy and water, with a moderate quantity of well-dressed roast mutton or beef, will generally agree with the weakened tone of the stomach; and if

the food be taken in small quantities at a time, digestion will advance without pain or difficulty. Vegetables very uniformly occasion flatulent distension in this complaint. Stale brown bread or ship biscuit should be substituted. But, with regard to diet, the refined notions of the physician must occasionally give way to the experience of the patient himself, who is often a better judge of what is most easily digested with the least inconvenience. Oleaginous substances almost always disagree, and so do eggs and fish; but cases are met with where the contrary is observed.

In every form of dyspepsia we are occasionally forced to treat or relieve particular symptoms. While adopting means to strike at the root of the disease, our practice must still in a great measure be empirical and palliative. Vomiting, acidity, and pain in the stomach are among the most troublesome symptoms of this complaint. Of all the means most successful in procuring their temporary alleviation, none is to be compared to the muriate or acetate of morphia. Alone, or given with lime water, fluid magnesia, or a solution of the bicarbonate of soda or potash, it often and often is of the most signal service. The relief it brings is sometimes so great that I have known patients imagine that at length a remedy had been found for their disease; and I have little doubt that, with attention to diet and regimen, it has over and over been of permanent use. Flatulence, and other troublesome symptoms, may be benefited by carminatives; and if unaccompanied with tenderness in the epigastric region, a drop or two of creasote in a draught of peppermint water, or the same quantity of the oil of cajeput, with ten or twelve minims of chloric æther, dropped on sugar, and given in plain water, will frequently relieve it. We here, however, anticipate the remarks we intend to offer on the more frequent and annoying symptoms of atonic dyspepsia.

A residence in a dry climate is generally advisable in this form of senile dyspepsia. Too much attention cannot be devoted to the condition of the skin. Its action should be promoted by exercise suited to the strength and state of the patient. Occasional warm baths, followed by friction with the flesh-brush, are serviceable, and flannel should always be worn. In persistent cases, it may be advisable to try the balsams and gum-resins so efficacious in analogous affections of the bronchi and urinary organs. Tar-water has been found useful, but I have not myself ventured to give it, or the balsamic substances in this disease.

CHAPTER IV.

ACUTE ATONIC DYSPEPSIA—L'EMBARRAS GASTRIQUE.

ANOTHER form of acute dyspepsia, very frequently observed in advanced life, much more common than the acute variety of catarrhal gastritis, and which seems clearly referrible to a temporary erithism, if not actual inflammation, of the mucous membrane of the stomach, deserves consideration. I allude to those gastric and constitutional symptoms of an irritable kind, generally but not invariably occasioned by excessive indulgence at the table, and which, from their nature and severity, are often sufficiently alarming. I have said not invariably, for the attack is sometimes sporadic, especially in summer and autumn, and may be induced by checked perspiration and sudden alternations of temperature. Though very often occasioned by similar causes, the irritation falls less upon the mucous follicles than in the catarrhal form of the disease. The affection is perhaps of an erysipelatous nature. Certain it is that if the fauces and tongue be taken as indices of the existing appearance of the stomach, the mucous membrane lining it must frequently very much resemble, when suffering under this temporary irritation, the characters observed in erysipelatous inflammation of the conjunctiva or nasal passages. There is assuredly little or no increase of the excretory function of the mucous glands. If vomiting exist, the matters rejected are not imbued with mucus, as in the catarrhal form of the disease, but are mixed with a watery fluid, a vitiated secretion of the gastric juice, and often with pure bile. The fauces are dry, of a dull-red colour, sometimes inclining to purple, from venous congestion, and streaked with a viscid mucus, which is hawked up with difficulty. The tongue is brown, dry, and contracted. The teeth and lips are covered with sordes. The breath is hot. There is tenderness at the epigastrium, with nausea. The appetite is gone.

The bowels are confined, though sometimes relaxed. Retching and vomiting are easily induced. Along with these gastric symptom there is great prostration, and frequently frontal headache. The face is flushed or congested, the skin hot and dry, the pulse more or less accelerated. The urine is scanty and highly coloured. There are perhaps tremors, and the sleep is often disturbed by dreams. What with the appearance of the tongue and mouth, the febrile reaction, nervous tremors, and general prostration, the attack is very likely to pass for *asthenic fever;* or, if accompanied with cough, *influenza;* or, where the irritability of the stomach is marked, *gastric* or *bilious fever;* and when obviously induced by over-indulgence in alcoholic liquors, it may be erroneously regarded as the initiatory stage, or a mild form of *delirium tremens.* French writers call it *l'embarras gastrique bilieux.* By whatever name it may be designated, the stomach and biliary organs are mainly affected; and I know not that I could notice the malady in a more appropriate place than the present.

The attack, almost always sudden, is sometimes ushered in by chilliness; but it does not uniformly show itself in the aggravated form above described. Frequently there is neither fever nor dryness of the mouth, but merely gastric derangement with anorexia, general soreness and prostration, and a total incapacity for mental or bodily exertion.

In a few days, at most four or five, if judiciously managed, the symptoms, both local and constitutional, begin to subside. About the third or fourth day the tongue becomes moist. A mawkish, sour, or bitter taste is now perceived, and the brown colour is replaced by a yellowish fur occupying the centre of the tongue, while the edges acquire a normal pale reddish hue. There is still anorexia; but only a few days elapse after the tongue has changed its appearance when a desire for food returns, and the appetite often becomes craving. A spontaneous diarrhœa or diaphoresis is sometimes critical, and the urine is generally loaded with lithates as the attack subsides.

In less satisfactory cases other diseases are apt to spring up during the febrile stage. In winter or spring, or during the prevalence of particular epidemics, the individual is peculiarly prone to pneumonic or bronchial attacks, or is seized with the reigning complaints, among which erysipelas may be mentioned.

Under such circumstances, the superinduced internal malady may be latent, and it behoves the practitioner in all cases to be on the watch for pleuritic, meningeal, or pneumonic inflammation. The following is a case in point:—A gentleman just turned seventy years of age, of regular and temperate habits, and enjoying good health, was invited to spend a week in the country in the month of April 1852. A round of visiting ensued. After breakfast he daily drove some miles, partook of a hearty lunch, returned home, and dined late in the evening, indulging freely in champagne and other wines. Ten days elapsed, and all seemed to go on well. He had however scarcely reached his own house in town when he was attacked with pain in the stomach accompanied with a sensation of fulness, tenderness on pressure, occasional vomiting of bilious matter, and much febrile disturbance. After passing a "wretched night," I saw him in the forenoon of the following day, with a parched tongue, and suffering from nausea and headache. On the third or fourth day he was seized with a dull pain in the right side of the chest, while in other respects he seemed to be improving. A distinct crepitation was now audible in the lower and lateral part of the lung, remote from the site of pain; the respiratory murmur was here feeble, while elsewhere in this lung it was puerile. As yet he was free from cough. By the next day an occasional cough was complained of, and now a very viscid, dark, but not brownish expectoration was observed, while an indefinite dulness existed over the crepitous portion of the lung. Sinapisms had been applied to the chest, and now a number of leeches were placed on the site of the engorgement. The expectoration continued catarrhal, but still very viscid. The crepitation gradually gave way to the normal murmur, though the cough remained for ten days after all signs of pneumonia had ceased. In three weeks he was quite convalescent.

A continuance of febrile action, or a feeling of chilliness after the subsidence of the gastric irritation, should awaken suspicion of the probable advent or existence of mischief elsewhere, and the practitioner should not omit a careful investigation into the condition of the different organs. The intestinal mucous membrane is occasionally, as already observed, simultaneously affected. A disposition to diarrhœa is common. Next to the lungs, perhaps, the liver and kidneys are more frequently attacked secondarily;

and a congested state of these organs with a diminished secretion of urine, or the appearance of albumen in it, is not an unfrequent result.

Prognosis.—It is chiefly in the decline of life, or in broken-down habits from intemperance or privation, that this complaint assumes the dangerous aspect above represented; but alarming as these symptoms appear to be, the disease is seldom if ever fatal, unless it is complicated or followed by some other more serious malady. In itself, however prostrating, it is usually of temporary duration. Recovery is more rapid than the nature of the symptoms might indicate, but relapses from imprudence are not unfrequent.

Treatment.—Most sufferers from this form of gastric irritation derive signal benefit from emeto-catharticism. The attack is sometimes at once checked by this practice. French writers of the physiological school of Broussais, timidly cautious in similar affections, do not hesitate to recommend vomiting and purging in this disease. After full vomiting the symptoms generally decline. If the individual is still robust, and especially if the symptoms have originated in excess at table, the sulphate of magnesia with tartar emetic may be given with that view; but in shattered constitutions, or in feeble persons far advanced in life, an ipecacuanha emetic, followed by full doses of calomel, with the compound extract of colocynth, should be preferred. Having cleared the stomach, and procured full feculent evacuations by these means, it will be advisable to give small doses of calomel, morning and evening, either alone or in combination with the extract of henbane for two or three days afterwards, opening the bowels at the same time by castor oil, or moderate doses of the compound infusion of senna with the sulphate of magnesia. Too much, however, should not be attempted by medicine. A great deal may now be left to nature. This is one of not a few maladies where passive is more safe and beneficial than active medical treatment; and by abstinence or diluents alone, very many cases rapidly recover. The diet must chiefly be farinaceous, or composed of soups free from fat.

In febrile cases, the acetate or citrate of ammonia, in the usual form, may be exhibited along with three or five grain doses of the nitrate of potash and half a drachm of the sweet spirits of nitre every four or six hours. Where there is thirst, acidulated drinks

may be given. A small bit of ice allowed to melt in the mouth is most refreshing and grateful. If there is irritability of the stomach with vomiting, saline effervescing draughts should be prescribed with or without a few drops of laudanum. After free evacuations, it is hardly ever necessary to employ more active means. Where there is continued tenderness in the epigastric region, leeches may be thereto applied, or, if there is much headache, with signs of cerebral congestion, it may be advisable to cup, or to apply leeches behind the ears.

Should other diseases supervene, they must receive appropriate treatment. In the event of diarrhœa constituting a prominent symptom, the emeto-cathartic plan above advised must either be wholly abandoned or modified. We ought then to give small doses of gray powder or blue pill, and Dover's powder, and remove accumulating secretions from time to time with castor oil, and still further carry out the treatment applicable to gastro-enteric irritation in general.

CHAPTER V.

FUNCTIONAL OR CHRONIC ATONIC DYSPEPSIA.

At all ages a great variety of morbid phenomena, included in the term dyspepsia, present themselves independently of recognisable structural disease. Chronic gastritis, with its anatomical results, and mere functional disturbance of the stomach, may be accompanied with precisely similar symptoms; and the differential diagnosis during life is frequently unsatisfactory and inconclusive.

Physicians and nosological writers have long arranged functional dyspepsia into primary and secondary, according as the disorder appears to have its origin in the stomach itself, or results in that mysterious connection called sympathy, which associates certain viscera in disease. Of all the organs of the animal economy, the stomach is perhaps the one which most obviously, if not most extensively, exhibits this connection. Allusion has already been made to some of the most frequent sources of sympathetic dyspepsia, and it may be here only necessary to observe that, as regards distant organs, the stomach is especially influenced by diseases of the brain, kidneys, and uterus,—viscera which are frequently the seat of chronic structural alterations in advanced life. It is, nevertheless, at this period that we must look to and be prepared for gastric symptoms in immediate connection with organic changes in the stomach itself.

Diagnosis between Functional and Organic Dyspepsia.—In certain cases, the severity and obstinacy of the local symptoms, with impaired health and excessive emaciation, leave little room for doubt; but the line of demarcation between organic and inorganic dyspepsia in aged subjects is often extremely ill-defined. Organic disease of the stomach is not unfrequently latent, or masked by some other associated disease; and in the early stages it as often proceeds silently as otherwise, the individual long apparently en-

joying good health, or suffering only from slight dyspepsia, without sympathetic irritation of the nervous, respiratory, or circulatory systems. The symptoms attending chronic gastritis with ulceration are occasionally very obscure or unimportant, and the disease has again and again proceeded to perforation without manifest gastric or constitutional disturbance,—the first suspicion of the real nature of the case being elicited by the new and formidable train of phenomena following this accident, more frequently met with after than under fifty years of age.

The duration of the symptoms greatly assists us in the diagnosis between functional and organic dyspepsia. The more recent the case, the greater will be the difficulty. If the symptoms, though of long continuance and considerable severity, have not occasioned or been accompanied by progressive emaciation and weakness, there are grounds for considering that the disease is but functional, as organic changes generally entail these consequences sooner or later. Organic disease may be suspected when the dyspeptic symptoms have resisted judicious dietetic and medical treatment, are excited or aggravated immediately after a meal, and especially if the person is losing flesh and strength, and more particularly if at the same time he is becoming anæmic, or acquiring a sallow, cachectic appearance. The absence or presence of pain in the stomach is delusive. It is sometimes wanting where there is extensive structural disease, while, on the other hand, it may be severe without recognisable organic alteration. To be of value, it must be limited to or more severe at a particular spot, and it is the more conclusive if it is increased on pressure, and accompanied with vomiting immediately or shortly after a meal. The appearance of the tongue is equally deceptive. I have seen it permanently perfectly clean and natural where there has been most extensive ulceration, mammilation, and thickening of the mucous membrane. Nor are we to be surprised at this, when we remember that in cancerous disease of the stomach it is frequently normal. Fœtid eructations are suspicious. I shall return to the diagnosis of organic disease of the stomach in a future chapter on cancer of this organ. In the meanwhile it may be observed, that in chronic cases the treatment of organic and functional dyspepsia does not, in truth, essentially differ.

Causes of Functional Dyspepsia.—Loss of teeth, chronic affec-

tions of the gums and tongue, impeding mastication and insalivation of the food, debility of the muscular fibres of the stomach, impaired nervous irritability, and, not improbably, a vitiated or modified condition of the salivary and gastric secretions, are, in advanced life, frequent causes of what may be called primary functional disorder of the stomach. In old age the vital powers of this organ experience the general decay of the system. Digestion is then languid, not unfrequently painful; and the chemical affinities gaining the ascendancy, flatulence with irritating changes in the ingesta ensue, occasioning a variety of morbid phenomena not always limited to the stomach itself. The appetite for food, notwithstanding the reduced wants of the system and the participation of the chief organ of digestion in the general decay of the functions of animal and organic life, is often the last to fail. Many old persons, some from past habit alone, eat to excess, or retain a vigorous appetite which there is a difficulty in satisfying with impunity. Sometimes it is even craving and morbid, and there is a constant desire for food, probably occasioned by irritating secretions in the stomach, or inexplicable conditions of the system. Old people also often complain of a feeling of "faintness" or "emptiness," referred to the stomach, scarcely to be called hunger, but little less provocative, and only partially relieved by food, in consequence of which the debilitated organ is overtaxed, and deprived of the repose so necessary to the efficient discharge of its functions. In other instances, taste being perverted or abolished, a chief incitement to mastication is absent; and where the teeth are decayed or wanting, the food is bolted whole, leaving the work which should have been performed in the mouth to be imperfectly and with difficulty effected in the stomach. Such individuals, and aged gourmands in general, almost always suffer periodical fits of gastric and enteric derangement, and the load of effete offending matters is frequently removed by a spontaneous and salutary diarrhœa—occasionally, but more rarely, by vomiting.

Treatment—Diet of the Aged.—The preservation of a healthy tone of the digestive organs, always of the first importance, is peculiarly desirable in advancing years, as essentially conducive to the further prolongation of life and the attainment of a cheerful old age. Entailing a host of bodily infirmities, and bringing with it irritability of temper, depression of spirits, sometimes melan-

choly madness, very often protracted sleeplessness, and unfitting the mind for ordinary employment, dyspepsia robs the old of the best, sometimes the only source of enjoyment left, and spreads misery among those whose chief happiness consists in ministering to and anticipating the wants and wishes of venerated years.

The prevention and treatment of functional dyspepsia are best attempted by regimen and a careful regulation of the diet, embracing the quantity and quality of the food, cleanliness, exercise, attention to the bowels, which are prone to sluggishness as life advances, and all the other hygiènic means calculated to raise and maintain the general health. Too strict devotion to the rules of diet and regimen has been condemned by Heberden, as often hurtful to those that are well, and unnecessarily distressing to the sick. "The common experience of mankind," he judiciously observes, "will sufficiently acquaint any one with the sorts of food which are wholesome to the generality of men, and his own experience will teach him which of these agrees best with his particular constitution; but whether meat should be boiled, roasted, or dressed in any other plain way, and what sort of vegetables should be eaten with it, I never yet met," says he, "with any person of common sense (except in acute illness) whom I did not think much fitter to choose for himself than I was to determine for him." "Man, it is frequently urged," says an able reviewer, "advances in years and attains a gray old age without exercising any restraint upon his inclinations, and with no other guide but his natural appetites. Men who have been all their lives addicted to the use of large potations of spirituous fluids, are said to have reached seventy, and even ninety years of age; and those who have partaken freely from their infancy of all the luxuries of the table, to have enjoyed an equally protracted existence. But the converse of the picture should be brought into view: the years cut short by gout, rheumatism, hepatic, pulmonary, and renal affections, heart diseases, imbecility, palsy and apoplexy, and a host of effects leading to one certain goal,—a premature decay both of the mental and physical being."*

At forty, it has been said, man is either a fool or a physician. And without entirely subscribing to the opinion of Heberden,

* Brit. and For. Med. Rev. vol. xvii. p. 53.

that the kind of diet may be generally left to the choice of the individual, we by no means countenance extreme solicitude in this matter. It is nevertheless particularly in old age, or in the decline of life, when the vigour of the digestive organs and the power of assimilation are impaired, that excesses of every description, and all articles of food known to be of long and difficult digestion, should be avoided. A plain nutritious diet of animal and vegetable aliment is best suited to the physiological condition of the digestive organs and system of the aged. Tender, well-dressed, neither over nor under done, roast beef, venison, or mutton, partially cleared of fat and wholly deprived of all hard outside pieces; poultry, game of different kinds, eaten with rather stale brown or white bread, and a limited allowance of wholesome vegetables, spinach, potatoes, or cauliflower, to the exclusion generally of cabbage, greens, carrots, and turnips, are unobjectionable, being easy of digestion and readily convertible into the elements of the blood. The flesh of young animals, *i.e.* veal and lamb, is with difficulty digested. Pork is absolutely poisonous to many, and ought not to be taken by the aged. Pastry, salted meats, and, generally speaking, salads, should be discarded in senility; so ought shell-fish, especially lobsters and crabs, and also oily fish, salmon, mackerel, eels, and herrings; all of which tax the stomach of many healthy individuals in the prime of life, and are unfitted to the weakened tone of this organ in advanced years. Solid aliment should be adapted to the state of the mouth and teeth, and minced, bruised, or otherwise prepared. Panadas, lightly boiled eggs, and simple farinaceous puddings, with or without gravy, are appropriate when the powers of mastication are defective. Strong, recently prepared soups, freed from fat, generally agree with old subjects, and in far advanced age they often constitute the chief food; but certain stomachs digest them badly. They should never be wholly depended upon to the exclusion of meat; but thickened with well-boiled rice, or with toast or biscuit soaked in them, and cooked from fresh lean beef, they are unexceptionable. Broths containing vegetables are generally very indigestible, and must be avoided in extreme age, or whenever the functions of the stomach are enfeebled. Butter and cheese should be sparingly indulged in. Milk, perhaps, more frequently disagrees with old people than with adults; but it is

nutritious in a high degree, and many aged individuals almost entirely live on it. Tea, cocoa, and coffee, are grateful and salutary in moderation. Taken a few hours after dinner, they promote digestion. Their chief effects are stimulant and sedative according to their strength. Too much liquid at meals is injurious, by diluting the gastric juice, relaxing the stomach, and prolonging and impeding the first stage of digestion. Fermented liquors often occasion flatulence and acidity,—porter more frequently than pale bitter ale, which in numerous instances appears to impart tone to the stomach. It is now, in advancing years, or in ripe old age, and in the decline of life, that a judicious use of stimulating condiments at the principal meal, and a sparing allowance of good old wine—sherry, port, or Madeira—are beneficial in rousing the languid energies of the digestive organs and promoting their function; but temperance is a virtue the infringement of which saps the main springs of life, and hastens the progress of decay. Indulgence in the degrading and disgusting vice of intemperance is peculiarly dangerous in the old, and many among them are prematurely cut off by neglecting the golden rules of sobriety. The habit, too common, of indulging in a variety of dishes should be gradually abandoned with advancing years. Entrées smothered in rich sauces, and often made up from rejected dishes, are not to be trusted, and ought especially to be eschewed by the dyspeptic. Plainness, simplicity, and moderation, are precepts as valuable as brief. Simplicity and uniformity are not, however, suited to every stomach, and a variety of food is necessary to certain individuals. A constant adherence to one and the same kinds of aliment, however nutritive and wholesome, is less conducive to the preservation of health and strength than occasional variety. Most old persons are more prone to err on the side of quantity than quality. At advanced periods of life, contrary to popular belief, a moderate supply of nutritive food is sufficient for the wants of the system. "All that now is required is to provide for the waste of the body, and for the respiratory and hepatic functions." Excess brings disease. Repletion is full of immediate danger. The rigid capillaries, no longer accommodating themselves to the increased amount of their contents, congestions and hæmorrhages ensue, and many are the victims of apoplexy shortly after a heavy full meal. Different individuals,

according to constitution, occupation, and habits of life, require different quantities both of solid and liquid aliment; but, in old age, where the change of matter is slow, the reparative power feeble, and where the capacity for bodily exercise is diminished, and days are passed without crossing the threshold or leaving the fireside,—to maintain health the supply should be commensurate with the expenditure, and limited accordingly. It were an affectation of accuracy to lay down fixed rules on this score. Cornaro, Sanctorius, Bartholle, never took more than twelve or fifteen ounces of solid food a day, and attained very advanced age; but every practitioner must have met octogenarians in the full enjoyment of health, cheerful, still capable of considerable bodily exertion and of sustained mental labour, who consumed double, if not treble that quantity daily, and who appeared to feel the want of any diminution in the ordinary amount of their diet. There can be no question that the dietaries of the chief and noble establishments for the aged in this country—viz., Greenwich and Chelsea Hospitals—are more than ample. At Chelsea the solids alone are above forty-six ounces a day, yet the greater number of the hale old men consume the whole of the diet.

The custom in this country of three or four meals a day seems equally suited to the aged as to the adult. The number must, in a great measure, be regulated by the quantity of food consumed. In the extreme of life, and in feeble old subjects, there can be no impropriety in increasing the number to four or five where little food is eaten at a time. It is essential to preserve regularity, and to forbid eating during the intervals of meals; for a period of repose is requisite to enable the stomach to recruit its energies after the completion of digestion. The breakfast hour should regulate the subsequent meals. An interval of five or six hours should elapse between each meal, and no more. If breakfast is taken at eight o'clock, dinner should be taken at one or two, and tea at six or seven. Animal food ought not to be eaten oftener than twice a day, at breakfast and dinner. If luncheon is taken, the dinner hour should be later by an hour or two. A safe lunch is a small basin of freshly-prepared soup (not heated "stock," often rancid and greasy, and containing a superabundance of gelatine), with dry toast or ship biscuit; or it may consist of a light boiled egg, with bread, and a glass of sherry and water; or a sand-

wich of grated fowl and a small glass of bitter ale. Breakfast is often refused, and luncheon becomes an important meal to the aged. The practice of giving old people an egg beat up with rum or brandy at breakfast or lunch is highly objectionable, and ought only to be permitted in weak states of the system, or in convalescence from disease. An early dinner is generally advisable. If fruit is indulged in, it should be eaten at breakfast or luncheon in preference to any other period of the day. Dessert may be permitted with restriction, but ought not to be recommended. A few preserved figs or stewed prunes may be beneficial in promoting the action of the bowels, but they not unfrequently occasion flatulence taken at dinner time. When the dinner is early, a light supper, chiefly of farinaceous articles—sago, arrowroot, well boiled rice, or milk oatmeal porridge—is admissible. A light supper of these articles is occasionally useful in procuring sleep; oatmeal acts on the bowels, but it sometimes creates heartburn and flatulence. In debilitated constitutions, and in very old age, a small cup of coffee or tea before rising in the morning is refreshing, and enables the valetudinarian to go through his toilet in comfort.

On the supervention of dyspeptic symptoms, the diet should be modified to meet the peculiarities of the case. I have already pointed out the kind of diet best suited to the catarrhal variety of the disease. A more rigid attention to the general rules laid down in the foregoing observations will now be necessary. A gradual reduction of the amount of food, the rejection of superfluity, the adaptation of the quantity to the actual necessities of the system and the weakened power of the digestive organs, are considerations of the first importance in the management of indigestion. While the kind of food most likely to suit is pointed out and objectionable articles of diet forbidden, much must in every case be left to the experience of the intelligent patient himself, and he need scarcely be told that substances, however innocent they may be generally, must be forsaken, should they, after repeated observation, prove hurtful in his particular case. Whatever description of nutritive food is found to sit easiest and to occasion the least discomfort is unquestionably that which ought to be adhered to. With due attention to regularity as to the periods of meals, the dyspeptic almost invariably finds it better to eat sparingly four or five times a day than more abundantly at longer intervals, though

he may get up from table with an appetite, and without suffering till the process of digestion is somewhat advanced.

Next to appropriate diet, the advantage of exercise in the open air, cleanliness, early hours of retiring to rest and rising, and sufficiently warm clothing, cannot be over-rated. Where exercise cannot be enjoyed, the flesh-brush and occasional tepid baths are of great service in preserving a healthy condition of the skin, and promoting its salutary function over the whole animal economy.

The various bitter infusions are also of great service in restoring the lost tone of the stomach. Among these may be especially recommended the infusions of calumba, cascarilla, orange peel, gentian, and chiretta. Combined with acids or alkalies to suit individual cases, they are admirable adjuvants in the treatment of atonic dyspepsia. Strychnia, in doses of the 16th or 18th of a grain three times a day, is held in high estimation by many as a remedy in this form of dyspepsia, and theoretically it appears to be admirably suited to the required indications. I have employed it, but I confess with very doubtful benefit. I believe that it is at best an uncertain remedy, better adapted to the idiosyncrasies of some constitutions and unrecognised atonic conditions of the stomach than others, and scarcely worthy of the praise bestowed on it by more than one recent writer.

The alleviation of particular local symptoms frequently exercises the skill of the practitioner. These symptoms are often grouped together in great variety, and present different phases at different times in one and the same case. One day flatulence will be troublesome; on another it may be acidity, pain, nausea, or perhaps vomiting. Two or more of these symptoms are usually combined, but to one or other the sufferer not unnaturally attaches great importance; and notwithstanding the varied and capricious nature of the disease, one or two symptoms are so uniformly present as to give a distinctive character to the case.

Where there is so much variety, and where the medical treatment must necessarily be modified, it will be convenient to offer a few observations on the more common symptoms or forms of the disease, and their management.*

* These will constitute the subject of the following chapter.

CHAPTER VI.

ON THE VARIETIES OF FUNCTIONAL DYSPEPSIA—SPECIAL SYMPTOMS, AND THEIR TREATMENT.

Anorexia.—A gradual decline of appetite as life advances is usually observed, and assuredly it is a wise provision, guarding against innumerable accidents to which aged gormandizers are ever prone. This gradual, scarcely perceptible, and natural change must not be mistaken for disease. Nor ought attempts to counteract it by stimulating condiments be encouraged, where there is reason to believe that the quantity of aliment consumed is sufficient for the requirements of the system.

An appreciable and unnatural deficiency of the appetite in very old persons, whose digestion has hitherto been good, often precedes a speedy breaking up of the constitution. Occurring without obvious cause in individuals between fifty-five and sixty, previously in the enjoyment of health, it is not unfrequently the forerunner of premature old age and progressive decay, particularly in corpulent persons accustomed to high and full living. Old people of this conformation and habit rapidly succumb on failure of the appetite, and consequent deprivation of the wonted stimulus and nutriment. If seized by acute disease, they are soon prostrated. They bear active treatment badly. Recovery is slow, and they often become confirmed invalids by attacks of illness which in former years they had shaken off easily. A return of appetite in them is one of the best indications of convalescence.

Recurring fits of indigestion with loss of appetite, in elderly subjects, are not only among the surest signs of approaching failure of all the vital functions, but of serious disease of the stomach itself, or of the brain or kidneys. Long-continued anorexia, with emaciation, are often the only symptoms in ad-

vanced life which announce organic disease of the stomach, including cancer itself.

A capricious or defective appetite, amounting in some instances to complete anorexia, is frequently met with in aged subjects who have led intemperate lives, or who have impaired the nervous irritability and muscular tone of the stomach by the abuse of opium or tobacco. It is very remarkable how little aliment, solid and fluid, is consumed by such persons. Give them their accustomed stimulants, with a very moderate quantity of food, and they drag on, emaciated in body and depressed in mind, victims of past and persistent irregularities. Stop the accustomed stimuli, and the appetite entirely fails: the nicest food is not relished, and still it is not loathed. Flatulence is a common accompaniment of this enervated condition of the stomach, brought on by protracted indulgence in intoxicating liquors, and is generally relieved by a sparing amount of food.

When loss of appetite is dependent on senile impaired nervous irritability, benefit may be derived from a course of the aromatic bitter infusions, with fractional doses of the extract of nux vomica. A glass of dry old sherry, or a small quantity of brandy and water, taken shortly before a meal, will often rouse the languid energies of the stomach, occasion a desire for food, and promote digestion; but this practice should be guarded, and not unnecessarily followed. A very limited amount of wine is sufficient, where wine produces the desired effect; and excessive stimulation is sure to be followed by corresponding exhaustion and failure of appetite. If the bowels are sluggish, a pill taken before dinner, consisting of the compound rhubarb or aloetic pill, with a grain or two of capsicum, will be serviceable. In the anorexia of old drunkards or opium-eaters, similar means will be required; and while we lament the necessity, we must nevertheless continue to allow a certain amount of the accustomed stimulant, whether that be wine, brandy, or opium. What we should endeavour to do now is to regulate the habit, and not seek violently to break it. Opium-eaters sometimes derive benefit from the compound infusion of gentian, with diluted nitric acid; and a mixture composed of the infusion of orange-peel, the tincture of nux vomica, and diluted nitro-muriatic acid, is often serviceable taken after meals, where, with defective appetite, digestion is accompanied with the uncom-

fortable feeling of fulness and distension, however small the amount of food, or however simple and innocent its nature.

Flatulence.—This is one of the most constant accompaniments of dyspepsia in advanced life. Occasionally it appears to be idiopathic, the only symptom denoting disorder of the stomach. Whether single or combined, it often occasions much local and cardiac distress. It is even said to be sometimes the cause of convulsions and apoplexy in old subjects. I have myself never had an opportunity of witnessing a case of this kind; and I suspect that in epileptic and apoplectic attacks, flatulent distension of the stomach is rather an effect than a cause of these diseases, and arises from a local modification of the nervous influence attendant upon or immediately preceding them. Flatulence is usually most troublesome during the process of digestion, some hours after a meal, but it is not unfrequently still more annoying when the stomach is empty. Old gluttons present numerous examples of the former, and drunkards, whose appetite is deficient, suffer much from it in the latter way. It is frequently a prominent symptom in the associated dyspepsia of pulmonary or cardiac disease. I consider it unnecessary and inexpedient to enter into the question of the source of flatus in the stomach and alimentary canal; but it may be observed that it proceeds partly from the disengagement of the air swallowed with the food; secondly, from fermentation of the ingesta through imperfect and prolonged digestion; and, thirdly, by the secretion of gas from the mucous membrane itself. When the stomach is empty, there can be no doubt that this is the chief source of flatus; and that enormous quantities of gas can be thus secreted in a brief period, is proved by what is daily observed in hysterical patients.

In the majority of cases, a dry compendious diet, chiefly composed of animal food of quick and easy digestion, is beneficial. The meals should be frequent, an interval of four hours between each being ample. Of course the quantity of food taken at each meal must be proportionately abridged. Fish slow of digestion, and vegetables prone to fermentation, are generally to be avoided, or only indulged in sparingly. Stale and unfermented bread, biscuit, toast and rusks are unobjectionable; and so are mealy potatoes, in moderation. Slops and farinaceous food in general disagree, but not invariably. Spices, cayenne, or black pepper,

taken with the food, are often useful, and may obviate the necessity for stronger stimulants. Old dry wine is generally corrective and beneficial. The aromatic bitter infusions, in rather a concentrated form, combined with alkalies, should be given. Temporary relief may generally be obtained by the administration of any of the carminatives in ordinary use: the efficacy of the essence of peppermint has made it a popular remedy; cajeput oil dropped on sugar, and given with a little water, is also serviceable; so are the ethers. The compound infusion of horse-radish, with the compound tincture of cardamoms and chloric ether, or the compound spirit of sulphuric ether, is a combination of much efficacy in expelling flatus, and preventing its subsequent generation in purely atonic dyspepsia. The virtues of this mixture are enhanced by the addition of five or six grains of the sesquicarbonate of ammonia to each dose.

Cardialgia, popularly named *heartburn*, and the result of excessive acidity in the stomach, is not so frequent an attendant upon atonic dyspepsia in advanced as at middle age. It is however far from uncommon. According to Simon,* "Increased acidity of the gastric juice usually arises from an excess of those acids which exist in it in a normal state—namely, muriatic, acetic, and lactic acid. When there is a tendency to the formation of an excess of acid in the gastric juice, it appears to be developed from the food. Muriatic acid is principally developed from animal food; acetic and lactic acids from vegetable, and especially saccharine food, such as acid bread, beer, and wine; and the fatty acids from an excessive use of fatty matters." A careful consideration of individual cases might thus suggest appropriate diet suited to each.

In general, acidity is relieved temporarily by alkalies and alkaline earths. Magnesia and the sesqui-carbonates of potash and soda are the remedies chiefly resorted to for this purpose. Dr Prout was partial to a combination of the nitrate and bicarbonate of potash. The liquor potassæ and the aqua calcis, given with milk, are highly beneficial, and are supposed to have a more permanent and salutary effect than some of the other antacids, not only neutralizing the acid or acids in the stomach, but preventing their subsequent formation.

* Animal Chem., by Syden. Soc. vol. ii. p. 34.

As observed by Dr Paris, acidity, instead of being regarded as morbid, ought to be frequently considered as an effort of nature to assist digestion. The frequent use of large doses of alkaline remedies is prejudicial not only to the functions of the digestive and assimilative organs, but, through their effects on the blood, to the whole animal economy, sometimes occasioning anæmia and symptoms similar to scurvy. In obstinate cases the combination of alkalies with sedatives is highly beneficial, and fractional doses of the muriate or acetate of morphia, with enough rhubarb to counteract the constipating effects of this medicine, administered from time to time, will often succeed in allaying the irritation on which the excessive secretion of acid depends. The trisnitrate of bismuth with magnesia in laurel-water, and the trisnitrate in the form of a pill, with the extract of henbane, are very successful combinations. Of sedative remedies, there is none so efficacious, however, as the muriate of morphia, and the dose need not exceed the sixteenth or twenty-fourth part of a grain every sixth or eighth hour. It may be often advantageously conjoined in solution with the bicarbonate of potash, or added to the different bitter infusions employed in dyspepsia. Of these, the infusion of chiretta is peculiarly beneficial in cardialgia. There are numerous instances in which the mineral acids, particularly the sulphuric and nitric, are very valuable in restoring the tone of the stomach and obviating the tendency to acidity; and in all persistent cases, not clearly connected with local organic mischief, they ought to be resorted to. Cardialgia from sympathetic action with some distant organ, as the kidney, uterus, &c., Dr Paris observes, resists the ordinary mode of cure, and is more frequently relieved by acids than alkalies, or by the exhibition of narcotics.

It is unnecessary to observe that the greatest attention must be bestowed on diet. Though plainly dressed animal food usually agrees, an exclusive adherence to it is objectionable in other respects, and there are not wanting instances in which farinaceous food—sago, arrowroot, &c.—occasions less acidity. Sweet wines, and often every kind of wine, beer, tea, coffee, butter, milk, and sugar, are liable to cause acidity, where there exists a tendency to its formation.

Pyrosis, commonly called *water-brash* in Scotland, and *black-water* in England, is, like cardialgia, less frequent in advanced age

than in the meridian of life. Like it, however, it is occasionally present in a chronic and obstinate form, and it is not unfrequently then an accompaniment of organic disease of the stomach. In other instances it is idiopathic, a solitary and independent symptom of an unknown condition of the gastric mucous membrane, attended by a depraved secretion of a colourless watery fluid, instead of, as in gastrorrhœa, a redundant transparent or grayish mucus. The two diseases are often confounded, but they are distinct, though not unfrequently associated. In pyrosis, the fluid secreted is of a thin watery nature, insipid, but sometimes sour and acrid, setting the teeth on edge, and is regurgitated after the endurance of more or less pain. In gastrorrhœa, a thick tenacious mucus is vomited after painful sickness and retching; sometimes it is also acrid, but in general it is tasteless. The gush of liquid into the mouth, characteristic of pyrosis, is usually followed by a signal cessation of pain in the stomach; not so the retching of the mucus characteristic of gastrorrhœa, though its rejection also generally brings with it relief to the uneasy gnawing sensation accompanying that affection.

Pyrosis is more frequent among the poor, ill-fed, and ill-clothed, and, like gastrorrhœa, is often encountered in spirit-drinkers. It is very common among persons who exclusively or mainly live on vegetable food, especially on the coarser kinds of grain. Its extreme prevalence in the Highlands and Islands of Scotland, where the population chiefly subsist on oatmeal, potatoes, and dried fish, is well known.

The management of this form of dyspepsia differs in little or no respect from that recommended in gastrorrhœa. Errors in diet must be avoided. A change from an innutritious and unwholesome kind, requiring great labour on the part of the stomach and an excessive secretion of gastric juice, to a diet of a more compendious and nutritive description, is attended with the best results. Plain-dressed animal food usually agrees. Stimulants of every kind are generally injurious. Anodynes are of great service; and foremost among these are the acetate and muriate of morphia, in fractional doses, as advised in cardialgia. In a very obstinate case, occurring in an old man emaciated to an extreme degree, and who had every appearance of being the victim of incurable disease of the stomach, the symptoms were speedily relieved, and ultimately removed, by this plan of treatment. Bis-

muth, with rhubarb and the bicarbonate of soda—a combination frequently of great service in these cases,—and most of the bitter infusions, variously combined, had been tried and failed. The muriate of morphia, in doses of the twelfth of a grain three times a day, administered in the form of a pill, made up with the compound tragacanth powder, acted marvellously; and with attention to diet, which was chiefly composed of solid viands, animal food and unfermented bread, the permanent benefit was no less gratifying. Astringents in combination with opium are indeed the principal remedies in pyrosis; and among these, the pulvis kino compositus is one of the best. Where the fluid regurgitated is acrid, alkalies are indicated; but, as in cardialgia, the mineral acids, in small doses two or three times a day, are frequently of much benefit in correcting the morbid condition of the stomach, on which the redundant secretion of the watery fluid depends.

Gastrodynia.—Pain in the stomach, of a more or less severe character, occurring at various stages of digestion, or while the stomach is empty, is not unfrequently met with in persons advanced in life. In many cases the pain is diffused, but in not a few it is confined to a particular spot not larger than a florin. Along with it there may be some tenderness on pressure. In other examples pressure relieves the pain; and yet no sure diagnosis of the precise nature of the affection can be drawn from the circumstance, though the inference that organic lesion exists is in general correct when the pain is limited to a spot, aggravated by pressure, and accompanied with progressive emaciation.

Cramp of the stomach, by which name this affection is popularly known, is frequently accompanied with flatulence, acidity, and other evidences of disordered digestion, and is occasioned by the same causes, or is secondary to these symptoms. It is common in catarrhal dyspepsia, and also in pyrosis. It may however be a solitary symptom, in which case it sometimes, nay often, appears to be of a neuralgic nature. Occasionally it may be traced to "spinal irritation," and it is not unfrequently sympathetic of uterine and renal disease. When dependent on improper food, the first consideration ought to be to improve and regulate the diet. Without attention to this, in every painful affection of the stomach, permanent benefit cannot be expected from medicine,

however appropriate and however judiciously administered. Abercrombie,* whose observations on Gastrodynia are characterised by his usual acumen and practical experience, and are well worth the careful perusal of the physician, says: "On the head of regimen, it is impossible to lay down any general rules, as the diet must be regulated by attention to the nature and characters of the case. One rule is applicable to all of them—namely, that the food ought always to be in the smallest quantity. In regard to quality, there is great diversity. Some of the cases agree best with farinaceous diet and milk, while in others the pain is aggravated by articles of this kind, and the patient goes on most comfortably upon animal food, in small quantities, with bread or a little rice." The remedies of most utility are anodynes; and foremost among these is opium, which often succeeds in quieting the pain when every other medicine of this class fails. With attention to diet and the adoption of hygiènic measures, opium alone in small doses, repeated according to the nature and severity of the case, not only alleviates the pain, but, judiciously administered, prevents its recurrence, and by these means ultimate recovery is often permanently secured. Gastrodynia, however, is frequently of an obstinate nature; and though we may generally obtain a remission or suspension of pain by opiates or by hydrocyanic acid—a medicine greatly lauded in this affection, and from the use of which the happiest results have again and again been obtained—such remedies often fail in accomplishing more. The pain returns after their immediate effects have subsided, and at best they deserve but the character of palliatives.

The medicines chiefly to be confided in, in preventing a recurrence of the affection, and therefore such as must be had recourse to in persistent or chronic cases, are the mineral tonics, particularly the nitrate and oxide of silver, the trisnitrate of bismuth, and the sulphate of iron. Among these, bismuth is perhaps, after all, the most generally useful, and is assuredly the most extensively employed. It has this advantage, that it may be continued for an indefinite period, in doses varying from five grains to a scruple two or three times a-day, without injurious consequences, which cannot be said either of the preparations of silver or of iron,—the

* On Diseases of the Stomach, third edition, p. 78.

former staining the skin, and the latter confining the bowels or interfering with the functions of the biliary and pancreatic organs. Bismuth is usually combined with rhubarb, to which is sometimes added the bicarbonate of soda; but it is often more useful when given with the extract of conium or henbane, or with very small doses of the muriate of morphia—say the 16th or 20th of a grain. The oxide and nitrate of silver are perhaps more appropriate in cases in which there is all but positive evidence that the gastric mucous membrane is in a state of vascular erithism, the pain arising immediately after food. In such cases, there is frequently tenderness at the epigastrium, and the indications for counter irritation are obvious. Generally, however, very little benefit is obtained, in genuine gastrodynia, from this measure. When the pain comes on, two or three hours after a meal, it often proceeds from acidity in the stomach generated during the process of digestion. The means required in cardialgia are then useful, and the affection may frequently be prevented by an antacid administered before the attack—that is, an hour or two after eating. For this purpose, ten grains of the bicarbonate of soda with five of the bicarbonate of ammonia, and five or six minims, and not more, of the diluted hydrocyanic acid of the London Pharmacopœia, in an ounce and a-half of camphor mixture or plain water, will be found serviceable. I have so often warned the young practitioner of the danger of large doses of prussic acid in persons of advanced age, that it is unnecessary to repeat the caution. It ought always to be given after food. Where the disease is connected with spinal, renal, or uterine irritation, due attention must be given to the parts concerned. The nitro-muriatic acid is highly useful when the urine is loaded with oxalate of lime, as it frequently is. Dr Abercrombie states that he found nothing of more general utility in cases occurring when the stomach was empty, immediately after taking food, and from two to four hours afterwards, than the sulphate of iron in doses of two grains combined with one grain of aloes and five grains of aromatic powder, taken three times a-day. Immediate relief is sometimes obtained in these cases by a little hot brandy and water in equal quantities.

Gouty Gastrodynia—Gouty Gastritis.—This is perhaps the most convenient place to notice this painful affection of the stomach so common in gouty subjects, and which, though often appa-

rently but of a spasmodic or neuralgic character, is unquestionably sometimes of an inflammatory, and probably still more frequently of a mixed nature—partly neuralgic and partly inflammatory. As a symptom of suppressed or irregular gout, it occasionally, certainly not uniformly, presents itself in a mitigated form, and is limited to the stomach itself. In more severe attacks the pain sometimes extends from the stomach to the back, loins, and lateral regions of the chest; other portions of the digestive tube, more particularly the cæcum, are occasionally simultaneously affected. Appearing at uncertain intervals, the pain is also of indefinite duration. Usually it is attended with flatulence and acidity, or the attack has long been preceded by these and other symptoms of indigestion. When it immediately precedes the development of a regular fit of gout, when the stomach is the organ primarily affected, the attack is generally of a severe kind, the pain often excruciating, and the depression of the vital powers alarming. The outward manifestation of that disease is immediately succeeded by the most signal relief to the inward affection. The worst attacks, however, of "gout in the stomach" are those following the sudden retrocession or more gradual disappearance of this disease in an extremity. Along with intense suffering and excessive prostration, a feeling of approaching dissolution is then present similar to what is experienced in angina pectoris. And so sudden are these attacks, that they bear the impress at the outset of a purely nervous or spasmodic affection. They are full of peril. In protracted cases, after a few hours' duration, inflammatory symptoms arise, which, if neglected or improperly treated, rapidly end in disorganisation and perforation of the stomach.

From twenty to forty minims of laudanum, or still more, the quantity being regulated by the severity of the symptoms, should forthwith be administered, along with a drachm of compound sulphuric ether, and ten or fifteen minims of chloric ether in an ounce of brandy with a little water, and repeated in urgent cases in half an hour, if necessary,—the immediate indications being the relief of pain and the support of vital power. A large mustard cataplasm, or a warm turpentine epithem, should at the same time be applied to the epigastrium, and means resorted to to elicit or restore gout in the extremities, by immersing the feet in warm water, rendered still more stimulating by the addition of salt and

mustard, or by sinapisms themselves applied to the feet. If vomiting accompanies the attack, the muriate of morphia or solid opium must be substituted for the tincture, and with the view of aiding the action of the bowels and removing morbid accumulations, either of these preparations will be advantageously conjoined with a few grains of calomel. In similar cases, a stimulating enema with turpentine will be of great service in allaying the irritability of the stomach and obviating the necessity of administering purgatives by the mouth, which would only add to the distress of the patient.

Should febrile symptoms show themselves, with tenderness in the epigastrium, the bowels must be freely opened by enemata, and leeches unsparingly employed, while, at the same time, we endeavour to support the strength by brandy and opium, and liquid nutritious food, taking care also not to relax the efforts to elicit gout by derivatives to the lower extremities. These are indeed serious cases, requiring prompt measures; and all the energies of the judicious and experienced physician but too often fail in preserving the life of the sufferer. A fit of gout has however rescued many who appeared to be on the very verge of sinking under arthritic inflammation of the stomach.

CHAPTER VII.

CANCER OF THE STOMACH.

Cancer of the stomach is peculiarly a disease of the more advanced epochs of life, although no age is entirely free from it. Chiefly met with between the fortieth and fiftieth or fifty-fifth year, it is still more common in proportion to the number living between fifty-five and seventy years of age; the predisposition to it increasing until then at least with the progress of years. Of 70 cases collated by Canstatt, only 14 occurred before the age of forty; and of the remaining 56, no less than 21 occurred in persons between the ages of sixty and seventy.* In 17 cases, all males, falling under my own observation, and verified by *post-mortem* examination, one presented at fifty-three, the rest between that and seventy-six years of age; 3 were of this advanced age. The mean age of the whole was over sixty-seven. Of 12 cases, similarly verified, recorded by Dr Alderson, in his work on the Diseases of the Stomach, the mean age was fifty-seven. The youngest was forty-eight, the oldest seventy-eight. The disease not unfrequently occurs at still more advanced periods of life, and it is worthy of remark that when cancer shows itself in extreme old age, it almost exclusively attacks the stomach.

The stomach is exposed to all the different forms of cancer. The scirrhus, medullary, and colloid or areolar forms occur in the order mentioned. All occasionally co-exist. Scirrhus and areolar cancer chiefly infest the orifices, the fungoid, and again the areolar form, the body of the stomach. The pylorus is the most frequent seat of the disease, the body of the stomach next, and the cardiac orifice the least. It rarely happens that the whole organ is involved, death usually ensuing before this; but in some cases

* Day on the Diseases of Advanced Life, p. 190.

scarcely any portion is found unaffected, from the pylorus to the cardia. Cancer of the cardia is followed by general diminution of the stomach, cancer of the pylorus by dilatation. Cancer of the intervening portion is generally accompanied with great thickening and induration of the tunics, and by contraction of the cavity, sometimes to the extent of almost entirely obliterating it. The stomach is thus occasionally so reduced by the disease as not to exceed in bulk a shut hand, nor to be capable of holding more than a few ounces of liquid; while, on the contrary, it sometimes attains such a capacity as to appear to occupy the whole of the abdomen.

The disease is generally primary, and it is to this form alone I now address myself. In the course of time, the neighbouring absorbent glands become infected, strong adhesions form between the stomach and the contiguous viscera; ultimately, in numerous cases, perforation of the diseased organ, with ulcerative destruction of the liver, pancreas, colon or spleen ensues, and the escape of its contents into the cavity of the abdomen is alone prevented by the adhesions which it had previously contracted to one or other of these viscera. Secondary cancerous deposits in the liver are far from uncommon, but gastric cancer is very frequently indeed solitary. Occasionally, though rarely, it co-exists with cancer of the uterus, and more frequently with cancer of the rectum.

Admitting a cancerous diathesis, the abuse of stimulating ingesta, particularly frequent indulgence in alcoholic liquors, appears to conduce to the disease, though persons of the most temperate habits are not exempted. Long-continued anxiety, which unquestionably greatly influences the digestive organs, is also believed to encourage it; but here again, in innumerable instances, this supposed cause has been wanting, and the presumed power of the depressing passions in promoting cancer of the stomach has been very probably exaggerated, from the circumstance that the disease itself is very generally productive of lowness of spirits and moroseness, amounting to melancholia. Males are much more prone to the disease than females. At the Salpêtrière, allotted to women, it is comparatively unfrequent, while at the Bicêtre, allotted to men, it is very common. Barras* mentions that, of 30 persons in whom he ascertained its existence, 26 were men and 4 only

* Sur le Cancer de l'Estomac: Br. and For. Med. Rev., vol. xviii. p. 208.

women. My own experience on this point is valueless, as it is almost entirely derived from observations made at Chelsea Hospital; but recorded cases give a proportion of males over females of about 5 to 1. The truth is, that the mammæ and uterus are the parts, *par excellence*, affected with cancer in the female, while the stomach, in the male, takes the place of these organs; and as I have already remarked, this is almost the only seat of cancer, in either sex, in the very decline of life.

Gastric cancer is one of the diseases in which the influence of hereditary predisposition is most strongly marked. "The family of Napoleon exemplifies the fact: himself, his father, and his sister Caroline, all fell victims to this disease."* In 1847–8, I had under my care at one and the same time, two brothers, the one forty-eight, the other fifty-six years of age, the younger of whom was afflicted with cancer of the rectum, the elder with cancer of the stomach and duodenum. Although the seats of the disease were different, occupying the extremes of the digestive tube, the structures engaged were similar.

Symptoms.—The disease commences in the majority of cases, and proceeds in others, insidiously. At first the symptoms are such as are common in chronic gastritis, or in mere functional derangement of the stomach, from either of which it cannot then be distinguished. Experienced observers and practical writers recognize two if not three stages in the progress of the disease. In the first stage, acidity, flatulence, painful digestion, impaired, voracious, or capricious appetite, constipation, occasional vomiting of a glairy ropy mucus, and more or less tenderness at the pit of the stomach, are common. The tongue is pale, sometimes flabby and indented by the teeth; at other times it is quite natural. The pulse is unaffected. The second stage, which sets in at very variable periods, from three to six or nine months after the first occurrence of dyspepsia, is characterised by an aggravation of the symptoms observed in the first period; by pallor of the countenance, loss of strength, general emaciation; often by lancinating pains, shooting through from the epigastrium to the spine. The bowels are now much confined or irregular. Flatulence is a most troublesome symptom. The eructations, generally inodorous in the first stage, are frequently fætid and sour in the second, and

* Walshe on Cancer, p. 283.

accompanied with copious regurgitations of acrid fluid into the mouth. The spirits are depressed—the patient is morose and easily moved to tears, but not fanciful. A careful examination of the epigastrium not unfrequently discovers a tumor, or some undefined hardness, which, owing to adhesions contracted to the neighbouring parts, and the condition of the stomach and bowels in regard to fulness or emptiness, is liable to shift its relative position, and, what is deserving of remembrance, may for days together remain undistinguishable, to the no small embarrassment of the attendant. This examination, though generally productive of great pain at the moment, or subsequent suffering, nausea and vomiting, affords, it is often remarked, a peculiar and melancholy satisfaction to the patient, that the exact seat of all his distress has been touched and discovered. There is a notable diminution in the appetite, or a craving for articles which the individual himself knows he dare not indulge in without severe consequences. The food, especially solid food, occasions much pain, and is frequently rejected along with grayish mucus containing blackish particles of half-digested blood, immediately it has entered the stomach, or soon afterwards, almost unchanged, and with considerable relief. So constant is the pain and distress after eating, that rather than experience the torture endured in some instances, the sufferer fasts, or takes no more than is barely sufficient to support life, and preferably submits to the pangs of hunger. Vomiting is also frequent in the intervals of meals, while the stomach is empty, the ejected matters chiefly consisting in morbid secretions, tasteless or otherwise, but often sour and offensive. The rejection of a dark brown fluid resembling coffee-grounds, well known as "coffee-ground vomiting," is a portentous symptom of this and the succeeding stage of the disease, and, coupled with other phenomena, very characteristic. The passage to the third, or what may be called the ulcerative stage, is ill-defined, but usually marked by rapid prostration, progressive emaciation, and increased severity of the gastric symptoms. When fully developed, it is characterised by the addition of new phenomena, such as the dark-coloured vomiting just described, often deferred till now; mælena; colicky pains; diarrhœa; hectic fever. Faintings, anasarca, and dropsy of the short cavities are among the symptoms that a short time precede death. The general surface has already assumed a pale straw-

coloured tint. The skin is rough and dry, but sometimes smooth, soft, shining, and transparent. The countenance shrinks, becomes sallow, opaque, and anxious. There is generally total loss of appetite. The tongue is clean and natural: at other times it is particularly pale and contracted, but still soft and moist. The breath is offensive; the borborygmi are frequently horribly fætid, and bring with them acrid regurgitations. The patient himself is sensible of the fætor of his breath and eructations, and they add much to his misery. Cough, with more or less bronchial irritation, is a frequent accompaniment of every stage of the complaint.

With the continuance of the disease the emaciation becomes excessive, notwithstanding which, and the daily increasing failure of the vital powers, there is often a great reluctance to take to bed. So long as it is limited to the stomach, and there is no exhausting diarrhœa or other important complication, patients suffering from this formidable affection may be seen creeping about or sitting near the fire in the last stage of marasmus and debility, almost pulseless, a few days or even a few hours before dissolution, in whom there is subsequently found total disorganisation of a great part of the stomach. A sudden termination is sometimes brought about by syncope, by hæmorrhage, or by perforation and consequent escape of the contents of the stomach into the abdomen. In general, however, the patient dies exhausted from starvation, expedited by hectic fever, attacks of diarrhœa, and sanious vomitings. To the last the mind is clear, and in the midst of great suffering I have known a person transact important business with rare discretion and judgment, very shortly before the fatal event. According to Lebert, thirteen months is the average duration of the disease.

Such is an outline of the ordinary features of cancer of the stomach, irrespective of its exact locality. It must however be observed, that its symptoms and progress are greatly diversified, and that it by no means invariably presents itself in the marked manner above described. A remarkable remission, or even suspension, of the symptoms sometimes occurs for days and weeks, raising the hopes of the patient and his friends. During this period, a certain amount of flesh may be regained, but the healthy colour of the countenance is never restored after it has acquired the characteristic tint of malignant disease.

Again, in not a few instances, though the existence of the disease is beyond doubt, there is a surprising exemption from suffering; in others, it is exceedingly obscure, or entirely latent, from first to last. De Haen, Pemberton, Bouillaud, Cruveilhier, Abercrombie, Seymour, Watson, and others have adduced cases of this nature; and so generally known is this peculiarity of gastric cancer, that were it not a work of supererogation, I could add to the number four or five instances occurring to myself among in-pensioners of Chelsea Hospital, who had for a long period preceding decease been under observation.

It will generally be found in these obscure or latent cases, that the disease is entirely or mainly situated in the body of the stomach, leaving both orifices healthy or free from obstruction. The symptoms are also now and then modified in very far advanced age. Pain and vomiting are then not unfrequently wholly absent, even where the orifices are affected; and anorexia, wasting, prostration, with the peculiar dull-white or opaque straw-coloured hue of the skin are the only symptoms indicative of the disease.

Diagnosis.—The diagnosis mainly rests upon the intractable nature of the dyspeptic symptoms, the progressive emaciation, and the cancerous tint of the complexion. When to these are added the perception of a tumour in the epigastrium and coffee-ground vomiting, little or no doubt should exist of the presence of cancer in some part of the stomach. In advanced stages of the disease, a microscopic examination of the matters vomited will often assist in removing any doubt of its nature, since they usually contain disintegrated particles of the disorganised structures, with epithelium.

Cancer of either orifice is usually accompanied with such marked symptoms as enable us to determine the presence of the disease; and when productive of contraction, the impediment to the ingress or egress of the food, so characterise these symptoms that we may generally announce its precise seat by the period at which pain and vomiting occur, and the spot at which that pain, if any, is chiefly experienced; whether, on pressure from the hand, by the passage of the ingesta, or in the interval of meals.

Cancer of the Cardiac Orifice, with constriction, is accompanied with vomiting, or rather regurgitation of the food immediately it

reaches the seat of the disease. The patient feels it stop there, and the act of swallowing occasions acute pain in the spot, shooting through from behind the left false ribs to the back. Sometimes there are also bulging in the neck and a sensation of suffocation, as in cancer of the œsophagus, higher up. It very rarely happens that any tumour can be felt—while, at least, the disease is limited to the cardia. Irritative cough is a frequent accompaniment of this seat of cancer.

Cancer of the Pylorus, serious, painful, and fatal as it proves, is a less harrowing form of the disease than cancer of the cardia. The pangs of hunger may here be allayed, the system may still be supported, there are often long intervals of relief from all the urgent symptoms, during which the patient enjoys fair health; and if the body of the stomach remains unaffected, which it frequently does, the final issue may be delayed for a period of two or three years from the onset of the disease.

The characteristic symptoms of this seat of cancer are pain in the region of the pylorus,—*i.e.,* to the right of the median line, and from two to three inches below the last false rib, often shooting from this spot over the lower part of the chest and through to the spine, very generally aggravated by pressure, and most intense during the process of digestion; periodical vomiting at variable intervals, usually daily, from one to three or four hours after meals; but at other times the sickness and vomiting are suspended for several days, or even a fortnight, when all at once an enormous quantity of matter, consisting of nearly all that had been taken in the interval, is vomited with great relief. The bowels are much confined, and the motions almost always very scanty, owing to the small quantity of ingesta that passes the pylorus. On careful examination, the indurated pylorus may frequently be felt through the emaciated abdominal parietes, and it is especially in this seat of cancer that the examination, painful as it may be, affords the peculiar and melancholy satisfaction already noticed. The precise seat of the affection is sometimes clearly pointed out by the sufferer himself, long before there is any evidence or suspicion of its nature by a fixed, dull, dragging pain in the spot.

Extensive dilatation of the stomach is a common result of pyloric cancer, whether or not accompanied with contraction. The distended organ not unfrequently occupies almost the whole

of the abdomen, and may usually be traced when the emaciation has proceeded far. The enlargement of the abdomen thus produced singularly contrasts with the wasting of the limbs. Persons exhibiting this fulness have been supposed to be getting fat; and with the suspension of dyspeptic symptoms and the absence of tumour, the idea of organic disease of the stomach has been abandoned till an examination of the abdomen has disclosed the deception. A distinct fluctuation may generally be perceived in the stomach. The patient complains of "wind rolling about" in the cavity; and in one case the disagreeable sensations experienced were frequently described to me as an "aching void," the individual feeling as if the pain wandered over a large empty space in the abdomen.

Treatment.—Irrespective of all theory of the origin and intimate nature of cancer of the stomach, the early symptoms are unquestionably such as frequently accompany chronic gastritis, and experience assures us that a treatment conducted on nearly similar principles to that pursued in this affection relieves the patient, and appears to postpone the ulcerative stage. Before the rational signs and symptoms of cancer show themselves, the two diseases are indeed very liable to be confounded. Be that as it may, cancer of the stomach is very generally associated in its progress with more or less inflammatory action, which, though of a specific nature, or perhaps altogether accidental, and less amenable to antiphlogistic treatment, is nevertheless benefited by a judicious modification of it.

In all suspected cases, whenever there is fixed pain or tenderness at the pit of the stomach, or in the vicinity of either orifice, the occasional application of a few leeches should be recommended, and counter-irritation maintained by a liniment consisting of equal parts of the spiritus camphoratus and acetum cantharidis, or small blisters may be substituted and renewed from time to time. Care must be taken not to press these and like measures so as to disturb rest or lower the general health. Rigid attention to diet is of the first importance. Without this, other means are totally unavailing, and the individual himself very early discovers the necessity of eschewing all articles of food of difficult digestion, or of a heating, stimulating nature. A bland, farinaceous, or milk diet is that which, in the majority of cases, sits most comfortably. Soups in

general disagree, but in this respect there is great diversity. If taken in small quantities at a time, and made without spice or vegetables, they often remain on the stomach without occasioning excitement or irritation. A constant aim should be to accommodate the food to the peculiarities of individual cases. The patient's experience must be respected. What suits in one case produces great discomfort in another; and in no state of the stomach more than in cancer are preconceived notions of diet more frequently at fault. A patient of mine afflicted with cancer of the pylorus digested pork easily, when mutton chops caused great pain; and what is still more remarkable, I have seen him frequently indulge in bottled porter and cheese with impunity, when a mild, unexciting diet of milk and farinaceous articles could not be borne on account of acidity and flatulence. A rule of almost universal application is, that the food should be taken in small quantities, and consequently at shorter intervals than in health.

Pain, vomiting, and constipation will demand great and constant attention, as so will other symptoms—flatulence and acidity. Sedatives are required at a very early period. Conium has long had a reputation in cancer of the stomach, but it does not appear to have any advantage over other sedatives of this class, such as the extract of belladona, henbane, stramonium, aconite, and Indian hemp. Opium and its preparations are objectionable on account of the existing constipation, but sooner or later we are driven to employ them, and for a time the comfort they procure is very great. Some relief to pain may be obtained by the application of a belladonna or opium plaster to the epigastrium, or by blistering the skin and sprinkling the raw surface with the muriate of morphia. Hydrocyanic acid, either alone or conjoined with laudanum, is of great service, both in allaying pain and vomiting; and when acidity exists, the addition of the bicarbonate of soda or potash to these draughts augments their utility by correcting one source of great discomfort. Severe or persistent vomiting is occasionally checked by opium and creosote in the form of pill, where blisters to the epigastrium, hydrocyanic acid, saline effervescing draughts, and ice are unavailing. Flatulence will generally require a carminative, as, for instance, a drop or two of cajeput oil, or a few drops of the oil of peppermint dropped on sugar and administered with water, either with or without laudanum

and chloric ether. So long as the bowels can be regulated by mild means, such as the daily exhibition of the compound rhubarb or aloetic pill, rhubarb and magnesia, or castor oil, more active medicines should be avoided; but it will occasionally be necessary to remove accumulation in the colon by calomel and colocynth, followed up by a saline aperient. Should the stomach be irritable, four or five grains of calomel, with the same quantity of the extract of conium or henbane, or half a grain of opium, should be administered, and laxative enemata exhibited some hours afterwards. In this state of the stomach, the less it is teased with aperients the better.

When the disease is fully developed, or has advanced to ulceration, similar means will be required, modified to circumstances. The trisnitrate of bismuth, given with magnesia, suspended with a little mucilage in water, or in the form of pill, along with the extract of conium, has been supposed to be peculiarly beneficial in this stage; and weak mixtures of nitric and nitro-muriatic acid have also been recommended, with the view, it is presumed, of correcting the vitiated discharges and cleansing the ulcerated surface. I have never myself exhibited such a mixture, nor do I feel disposed to recommend it. An open state of the bowels, too often difficult to maintain, contributes greatly to the comfort of the patient. The practitioner must not be deceived by occasional watery discharges, which are often the result of irritating accumulations. A spurious diarrhœa is common where the colon is filled with hardened scyballæ. We can only hope to prolong life by mitigating pain and administering to particular symptoms. However much we may have abstained from opium and its preparations, they are now indispensable. Wine, which in the commencement of the disease almost invariably aggravates all the symptoms, is in many cases, in the advanced stage, the only thing that is not rejected, or that is taken with relish. As we can do no more than palliate, large concessions should be made to the wishes of the sufferer. It rarely happens that the patient himself is not the best counsellor as to what kind of food or beverage is fittest for the state of his stomach.

I have omitted in the preceding remarks all notice of iodine and like remedies, as I consider them in this disease to be worse than useless.

CHAPTER VIII.

HYPERTROPHY OF THE STOMACH.

A DISEASE which is not so frequent as cancer, but which is often confounded with it during life, and not rarely on *post-mortem* examination, is chronic thickening of the coats of the stomach. Attacking more especially its orifices, tending to their occlusion, very generally affecting the pyloric extremity, diminishing or increasing the cavity according to the site of the lesion, almost always terminating fatally, chiefly seen in the male sex and in people of intemperate habits, rarely observed before the forty-fifth year of age, and increasing in frequency with the advance of life—it possesses many points in common with that more terrible disease, and fully merits a few passing observations.

Anatomical Characters.—Though generally originating in the submucous or subperitoneal cellular tissue, it sooner or later involves the whole substance of the stomach. A section of the hypertrophied structures exhibits a firm, smooth, dull-white, milky, or opalescent surface, interlaced with the enlarged muscular fibres, which are separated from each other by hypertrophied and indurated cellular tissue. Dr Watson says, "The thickened parts present an appearance somewhat like horn, and are crossed by whitish lines that run parallel to each other. The structure is quite definite and uniform; and very dissimilar, in that respect, to the irregular masses of scirrhus and the amorphous deposits of encephaloid cancer. Neither does it at all resemble that of the colloid variety of carcinoma."* Scarcely any exudation takes place from the cut surface, in which respect it also differs from scirrhus, to which it bears the closest resemblance, this formation always yielding on pressure a white,

* Principles and Practice of Physic, 3d ed. vol. ii. p. 418.

opaque, creamy-like matter, occasionally of a pinky tint. Further, simple, non-malignant hypertrophy is a local affection, unaccompanied with encephaloid or scirrhous deposits in the adjacent viscera, or with contamination or enlargement of the absorbent glands. Nor does the stomach in this disease contract the firm adhesions to the neighbouring viscera which it generally does in advanced cancer. The absence or presence of the microscopic so-called "characteristic cancer cells," in conjunction with the phenomena above adverted to, would greatly aid in doubtful cases a correct diagnosis; a matter of importance at all times, but particularly desirable in the present instance where the apprehensions of an anxious family may be relieved, or great dread engendered by the fiat of the physician, the hereditary nature of cancer being a general belief equally shared by the public and the profession.

Symptoms.—There are no symptoms peculiar to the disease. Obstinate dyspepsia, resisting the usual remedies, and presenting various phenomena common to every form of indigestion, have been observed. Vomiting is almost a constant attendant. According to the irritability of the stomach, and the exact seat of the affection, this takes place either immediately or some hours after meals, when the ingesta are passing through the constricted or morbidly sensitive pylorus. When the disease is situated at the cardia, obstructed deglutition and immediate regurgitation of the food attend it. In advanced stages, "coffee-ground vomiting" is not uncommon. Pain and tenderness at the epigastrium are frequently present, but not invariably, even where subsequent inspection has shown an inflamed state of the mucous membrane, with thickening of its substance, and a granular state of the villi. Anorexia, morning sickness, thirst, and a desire for cold liquids, sometimes attend cases characterised by these local symptoms, and suggest the existence of chronic or subacute gastritis. The bowels are habitually constipated. The tongue, almost always clean in gastric cancer, is often in this disease furred, and the pulse is more frequently excited in it than in the early stage of cancer; but, in perhaps the majority of cases, the tongue and the pulse long retain their normal characters. Emaciation is not observed until an advanced period. Persons die of the disease, who up till a short time before the fatal event have retained a tolerably healthy appearance. They lose flesh, become pallid, but the wasting is

never so marked as in cancer, nor does the countenance acquire the pale yellow tint so general in that disease. More or less pain, permanent or intermittent, in the stomach, with various dyspeptic symptoms, and chronic obstinate vomiting, wear out the patient.

It appears to be to this disease in an advanced stage that Dr Pemberton* refers as "a continued state of vomiting, unattended by pain, hernia or original affection of the brain, which attacks those who are advanced in life." "The efforts to vomit," he observes, "are very violent, and almost incessant: the patient rejects every thing the moment it enters the stomach, whether it be food or medicine. The pulse is frequent and small. This vomiting will continue in spite of all the measures to restrain it, for many days; when what is thrown up becomes of a very dark brown colour, cold sweats arise, and at length the patient is cut off. The prognosis is unfavourable."

Treatment.—The treatment of this disease, which is seldom accurately diagnosed during life, but which is often supposed to exist when the symptoms are independent of organic change in the stomach, and proceed from sympathy with the liver, pancreas, spleen, kidneys, or brain, must be in accordance with the nature of the existing phenomena. Strict attention to diet, and leeches to the pit of the stomach, followed by counter-irritation, are suggested by pain and vomiting, and may be serviceable early in the disease. Sedatives in combination with alkalies are generally beneficial. The trisnitrate of bismuth in the form of pill, conjoined with the extract of hops and henbane, is a useful formula in many cases. Vomiting and constipation are the symptoms with which the practitioner will mainly have to contend. Purgatives by the mouth are often not endured, unless combined with opium; but even then they cannot be had recourse to frequently. Lavements are always to be preferred where the irritability of the stomach is excessive. For the relief of vomiting, saline effervescing draughts, with a few minims of the tincture of opium, and prussic acid may occasionally be administered with benefit. When these fail, a grain or a grain and a half of solid opium, with two drops of creosote, will frequently succeed. Occasionally stimulants are beneficial. Dr Abercrombie states that he has known some

* A Practical Treatise on the Diseases of the Abdominal Viscera, p. 129.

very protracted cases of chronic vomiting yield to the use of strong tincture of garlic; and others, to small doses of calomel. In extreme cases, a nodule of ice allowed to melt in the mouth, and then swallowed, sometimes checks it. The stomach should not be teased, but food and medicine introduced by the rectum, until the irritability has either partially or entirely abated.

The treatment, it will be perceived, assimilates to that recommended in cancer, and the necessity of scrupulous attention to diet is so obvious, that this point need not be further insisted upon. The quantity of food taken at each meal should be small, not exceeding, in urgent cases, a table-spoonful at a time; and where milk alone, or bread and milk agree, this kind of diet should be adhered to. Some cases of persistent vomiting, which resist every kind of medicine, entirely recover by severe dietetic regimen, almost amounting to abstinence. By degrees the quantity of nutriment may be increased, but as the vomiting is always liable to return on more food being taken than the stomach is perfectly competent to digest, the meals should be spare and frequent; restriction should be enforced, and on the slightest indication of returning irritability, abstinence for a time enjoined.

CHAPTER IX.

FUNCTIONAL AND ORGANIC DISEASES OF THE INTESTINES—GENERAL OBSERVATIONS—COLONIC DYSPEPSIA.

CONSIDERING the great length of the alimentary canal, its complicated structure, peculiarities, extensive sympathies, and the injurious influences from without and within to which it is ever exposed, we cannot be surprised at the variety of its disorders, their frequency and importance. The functions of the stomach, liver, and kidneys, are hardly ever affected without some portion of the intestinal tube manifesting derangement; and the sympathetic phenomena thus elicited are not unfrequently of equal importance, in the eye of the physician, to the original affection from which they spring. The constipation accompanying gastric dyspepsia, and the diarrhœa so common in renal and hepatic disease, require incessant attention; and though we can only hope permanently to remove them by attacking and combating the primary disease upon which they depend, much of the comfort and safety of the patient hang on their judicious management.

The intestines, and particularly the large intestines, are not unfrequently, as the stomach, the seat of primary functional derangement in advanced life. Duodenal dyspepsia, so common in manhood, is now less frequently encountered; but the colonic variety of the disease increases, and as we descend the canal we find the sigmoid flexure and rectum very often affected, functionally and organically. It is especially in advanced life that serious structural changes in the intestines are observed. The cæcum, colon, and rectum are frequent seats of spasmodic and organic stricture, malignant or otherwise. Ulceration of the mucous membrane of the small intestines is comparatively unfrequent; and dothinentery is so rare in persons beyond fifty years of age, that its very existence has been denied in persons of advanced

life. Hernia, it is known, is extremely common. The mortality from it between fifty and seventy-five years of age is great; so is the mortality from diarrhœa, enteritis, ileus, intussusception, and stricture. Peritonitis, though met with, can scarcely be regarded as a disease of old age. I have myself not seen more than two or three cases, unless as a secondary affection, consequent to intestinal perforation, hernia or cancer of some one of the abdominal viscera. There is reason to believe, however, that, like pleurisy, it now and then, and perhaps not very rarely, presents itself in a perfectly latent form, a very remarkable instance of which came lately before me in a man of about seventy years of age. Still it is much more rare than pleurisy, and of infinitely greater frequency in earlier than advanced life. The tubercular form of the disease is hardly ever seen. I have only met with two well-marked cases in more than one thousand *post-mortem* examinations of persons above fifty-five years of age, and then it was associated with tubercles in the lungs in one case, and with cancer of the diaphragm and tubercles in the lungs in the other.

Colonic Dyspepsia.—Functional derangement of the colon is chiefly manifested by constipation, flatulence, and stridulous noises in the course of the bowel. Colicky pains are experienced, but not invariably, unless where the accumulation of feculent matter and the distention from flatus are considerable. A dull, aching sensation is sometimes complained of in the loins, which the patient generally refers to the kidneys. From long retention of the fæces in the cells of the intestine they become dry, and are voided as hardened balls. These lumps are, in certain cases, imbued with mucus secreted by the irritated cells, and are often passed with great difficulty. The affection appears to consist in deficient vital energy, or torpor of the bowel, by which its contents cease to excite contraction, or, still accomplishing this, the muscular power is insufficient for the purpose of propelling them onwards. Large accumulations thus occasionally take place, and the habitual constipation observed is frequently alternated by a spurious diarrhœa; still more serious consequences are apt to ensue. This condition of things is generally productive of constitutional irritation and weakness, accompanied with various sympathetic phenomena. The stomach feels the influence of the disease. Dyspeptic symptoms show themselves, and the disorder

of the stomach is often regarded as the primary affection, when in truth it is the colon that is in fault. The disease is of a chronic nature, and exceedingly obstinate. It chiefly occurs in sedentary habits, and is more frequent in the female. Very often it has existed for months, or even years, before relief is sought at the hands of the physician. A constitutional peculiarity is supposed to prevail. The slowness with which the affection has established itself, without pain or prominent local suffering, perhaps without any disorder of the stomach, and with no obvious impairment of the general health, favours this belief; which is, in many instances, still further confirmed by the circumstance, that so long as the bowels are but moderately confined, the individual feels more comfortable than on the days they act, and is sometimes much distressed by cathartic medicine.

Treatment.—The diet should chiefly consist in easily-digested animal food, with a moderate proportion of wholesome vegetables. Carrots, turnips, and greens leave much residuary matter, and give rise to flatulence in the bowel, and are consequently objectionable. Brown bread is preferable to white; it stimulates and assists the action of the colon. Prunes, figs, and similar fruits, usually prescribed in these cases with the view of arresting the habitual constipation, frequently occasion flatulence, which is one of the most troublesome symptoms of the disease. Malt liquor is also objectionable for the same reason, but the moderate use of old wine may be permitted with advantage. As much daily exercise should be taken as the strength will admit without fatigue. Where this cannot be followed, abdominal friction should be practised. The medicines best adapted to relieve the bowel of its accumulations, and to improve its power, are those of a tonic and aperient quality. In order that they should reach the bowel as little changed as possible by the action of the stomach, the form of pill should generally be preferred. The compound aloetic pill answers the purpose well; and it may further be improved by combining it with gum mastich, and fractional doses of the extract of nux vomica. As a tonic and promoter of nervo-muscular power, this latter medicine seems admirably adapted to the requirements of the disorder, and may be advantageously added to the aperients employed. The compound colocynth pill, with or without quinine, is also suited to this affection. Where flatu-

lence is troublesome, these and like remedies may be beneficially combined with assafœtida, or the compound galbanum pill may be given with a few grains of Cayenne pepper; but this symptom is best prevented by attention to diet, and the avoidance of such fruits and vegetable as experience has shown disagree. In several cases in which stridulous noises with sharp transient pains in the course of the colon indicated spasmodic irritability of the bowel, I have found nothing so effectual as an after-dinner pill, consisting of a grain and a half of Barbadoes aloes, the same quantity of the sulphate of iron, and two grains of the extract of henbane. This pill may be repeated once or twice daily at meal-time, and the proportions of the ingredients varied to suit particular cases. The addition of a sedative, such as the one here recommended, to any of the medicines that may be selected to act on the bowels, is always advisable whether pain is present or otherwise; but in all cases accompanied with a morbid sensibility, as evidenced by the occurrence of uneasiness some hours after meals, sedatives are peculiarly indicated. By relieving spasm, they increase the efficiency of the purgative employed, so that smaller doses are required when thus exhibited than when given alone.

CHAPTER X.

DIARRHŒA.

At both extremes of life a common and fatal complaint, diarrhœa in old age is still more serious than in infancy or childhood. Often attacking weakly subjects or bed-ridden invalids without being attended by griping or any unusual distress, it steals on insidiously and soon occasions dangerous prostration. Many old people are thus carried off by it, when apparently in their usual state of health, in an incredibly short time—often within twelve or twenty-four hours—without alarm, until a sudden sinking of the vital powers leaves the aged valetudinarian *in articulo mortis*. When epidemic, the complaint falls heavily on the aged. The diarrhœa that preceded and accompanied the outbreak of cholera in 1831–2 and 1849 was peculiarly destructive at the more advanced epochs of life.

Feculent Diarrhœa, or *Senile Lientery* as it has been called, is common, and may generally be traced to some error in diet, often to a surfeit. It is frequent in infirm or bed-ridden old subjects retaining a vigorous appetite, in whom it occasionally alternates with constipation. It is then a conservative provision, guarding against feculent accumulations, and usually ceases with the removal of its causes.

A chronic habitually relaxed condition of the bowels is frequently observed in aged persons who are otherwise in the enjoyment of excellent health. Such individuals pass from three to six motions in the twenty-four hours without any distress whatever. The evacuations are pultaceous, and except in form perfectly natural. Before I had seen much of the diseases of old age, I was inclined to regard this relaxed state of the bowels with some

apprehension. As it was not alluded to in the works of systematic writers, I considered it a rare and peculiar form of diarrhœa which had escaped observation, and to some cases of which I directed the attention of the profession in a short paper inserted in the "London Medical Gazette," 1842. I attacked it vigorously; successfully for a time, but only temporarily. At length I found it to be far from rare, that in many cases it had existed for years; that the individuals had in the meantime not only enjoyed good health, but some had become corpulent; and I ceased to view it otherwise than as a normal, though inconvenient state, the opposite of that habitual constipation so frequently observed, and which is not looked upon as disease.

Gouty subjects are liable to attacks of feculent diarrhœa, which are obviously beneficial, and ought seldom to be interfered with. An irritable condition of the mucous membrane of the bowels is common with them; but it will be observed that the temperate are less liable to diarrhœa than gross feeders, who pander to a depraved, insatiable appetite, and indulge beyond the powers of the digestive organs or the wants of the system.

The Serous Form of Diarrhœa is frequently a termination of the feculent variety, neglected or improperly treated by active purgatives, particularly salines, such as the sulphate of magnesia. Very often, however, from its commencement, the diarrhœa is of a serous nature, the evacuations almost wholly consisting of a brownish or limpid liquid, the natural contents of the bowels having been expelled at a very early period or partially retained. In the latter case, the motions are scybalous, their chief bulk, however, being composed of a thin watery fluid assuming various appearances, sometimes ochrey and frothy, but generally brown, and as generally very offensive. These evacuations are occasionally accompanied with severe griping pains about the navel and lower part of the abdomen; but this symptom is oftener absent than in the adult, and the diarrhœa sometimes goes on to an exhausting and alarming extent without any unusual uneasiness.

Like the feculent form of the complaint, this variety may very often be traced to some indiscretion in diet. It prevails to a greater extent in the cold months of the year. When it arises from cold or checked perspiration, it is not unfrequently accom-

panied at the beginning with slight febrile disturbance and evidences of local vascular excitement. Its prevalence in a mitigated form in the aged may in some measure be ascribed to a vicarious action, the diminished activity of the skin being compensated for by increased activity of the exhalants of the intestinal canal.

Mucous or *Catarrhal Diarrhœa* is comparatively unfrequent in the aged. Still some well-marked cases occasionally present themselves, the discharge consisting almost entirely of mucus variously discoloured with blood or bile, though sometimes retaining its natural transparency. Occasionally accompanied with some degree of fever and deep-seated pain in the abdomen, aggravated by steady pressure, there can be no doubt that mucous diarrhœa is then but an indication of active disease affecting the lining membrane of the intestinal tube; but I allude here solely to those cases of diarrhœa free from febrile symptoms, and proceeding from irritation of the mucous membrane without direct evidence of inflammation, such as purulent, muco-purulent, or sanious discharges, passed with tormina and tenesmus, and clearly resulting from inflammation of the internal membrane of the colon and rectum. Nor do I now allude to the ropy mucous discharges common in hæmorrhoidal diseases, and frequently encountered in elderly persons.

In the preceding observations, I have endeavoured to point out the distinctive characters of the various forms of diarrhœa as they occasionally present themselves, and agreeably to usage; but it must be borne in mind, that the disorder very often occurs in old subjects in such a way as to render it impossible with any degree of precision to assign it to any particular species. At first feculent or chiefly serous, the evacuations may in the course of a limited period become of a mucous character, and may equally differ in colour, being at various times, during the progress of the attack, dark, whitish, clay-coloured, green, or yellow. I have also referred almost exclusively to acute spontaneous attacks of the disease, leaving out of consideration the diarrhœa incident to various chronic maladies, whether pectoral, hepatic, or renal. These sympathetic diarrhœas are common, and, standing in the relation of a symptom to the diseases themselves, are always taken into consideration in their treatment.

Diagnosis.—Is it possible that diarrhœa can be mistaken for any other affection? Setting aside muco-enteritis, which, in truth, is frequently its immediate cause, there is one complaint in the aged which I have seen again and again confounded with it, and the remedies employed have only protracted the evil. I allude to fæcal accumulations in the colon and rectum. When these have existed for some time, perhaps for weeks or months, nature endeavours to get rid of them by throwing out an abundant exhalation, by which the fæces are softened and their expulsion facilitated. The evacuations are then frequent, watery, and lumpy. The diarrhœa ceases for a time on the discharge of the accumulated fæces, but returns again with a fresh source of irritation. Large balls of partially softened excrement are passed amid much liquid, with flatus and griping; at other times the motions are scanty and teasing, the solid matters small and granular. The individual is supposed to have an attack of common diarrhœa, instead of which he is really constipated, and requires active purgatives, which then become the best astringents, and without which other treatment is wholly unavailing. Many of the cases alluded to under feculent diarrhœa attacking bed-ridden subjects, and alternating with confinement of the bowels, belong to this category.

In persistent diarrhœa the rectum ought to be carefully examined. Disease of this bowel—malignant disease itself—has been confounded with chronic diarrhœa until attention has been drawn to the state of the bowel, and digital examination instituted. One of the most common causes of obstinate, intractable diarrhœa, is ulceration of the rectum. Such cases are generally accompanied with tenesmus, and bloody purulent or muco-purulent discharges.

Treatment.—When the disorder has been produced by a surfeit or by some offending ingesta, the treatment is extremely simple. The obvious indication is to remove the source of irritation by seconding the efforts of nature. The mildest laxatives are generally sufficient for this purpose, and among these one of the best and most effectual is castor oil. Saline purgatives ought in general to be avoided, as determining too great a secretion from the already irritated lining of the bowels, and tending to procrastinate the attack. In persons of far advanced life, in whom a few

evacuations rapidly produce great prostration, it is generally necessary and advisable to combine the laxative with a diffusable stimulant. A favourite draught in ordinary cases among the aged inmates of Chelsea Hospital, and which may be strongly recommended in the beginning of apyrexial diarrhœa, is composed of the compound tincture of rhubarb, powdered rhubarb, magnesia, and aromatic confection in cinnamon water. When the evacuations are attended with griping and flatulence, from three to six minims of the tincture of opium are added to the draught, which is repeated, and the rhubarb and magnesia are increased or diminished according as it is desired to move the bowels freely or otherwise. This draught in general agrees remarkably well with aged infirm subjects. Occasionally it checks the diarrhœa at once, even without the addition of the opiate, in which case, on the following day perhaps, it is advisable to move the bowels gently. Should the diarrhœa continue after the bowels appear to have been freed from their irritating contents, either by medicine or by the violence of the attack itself, an opiate, repeated according to circumstances, will generally succeed in moderating its frequency, or entirely removing it. If the disorder has already occasioned considerable prostration, it is incumbent to reserve the order of proceeding, and prescribe an opiate at once with a cordial, and some hours afterwards to relieve the bowels by a laxative. Thus, in a large proportion of parochial or dispensary cases the diarrhœa will have existed long enough to render it probable that the bowels have been thoroughly emptied, and that the attack is continued through morbid excitability of the exposed surface of the intestines. No medicine appears better adapted for allaying this irritability, and determining to the skin, than the compound ipecacuanha powder. From five to eight grains of this powder may be given with half or equal the quantity of rhubarb, by which the risk will be avoided of hastily locking up the bowels only to render their liberation necessary; or the draught above mentioned may be substituted, with such modifications as may seem advisable. The chalk mixture, with laudanum and chloric ether, given in moderate doses two or three times daily, is often of great service in these cases. The exhibition of a mild laxative, followed up by an opiate, or the combination of a laxative with small doses of laudanum or solid opium; abstinence from solid food, together

with rest and warmth to the surface, seldom fail in removing ordinary attacks of the disease. In protracted cases, the means hereafter to be adverted to will be necessary.

But when the attack is accompanied with febrile symptoms, wandering pains in the abdomen, a dry tongue, nausea, thirst, and prostration, and in which cases the discharges are chiefly serous, dark, and very offensive, then more active measures are required. Whatever be the precise character of the evacuations, should they still retain a healthy colour, there is nevertheless reason to believe that the patient is labouring under inflammation of some portion of the mucous membrane of the intestines, or that the irritation is bordering on inflammation, and the risk to life is not inconsiderable. In such a case as this, the mildest laxatives often do harm before the vascular turgescence is in some degree reduced. Whenever fever accompanies diarrhœa, the abdomen should be carefully examined, and the site of the irritation, if possible, determined. Over this, as many leeches should be applied as the severity of the symptoms warrant, and they ought to be repeated from time to time until these symptoms are relieved. Less than eight or ten leeches will seldom be of benefit, and double that number are often necessary. The age of the patient ought not to prevent the free local abstraction of blood, where there is tenderness with diarrhœa and general febrile disturbance. The case is imminent, and safety is best secured by pretty active local treatment, perfectly compatible with the internal use of stimuli. Here, also, opium is a remedy of the greatest value, and Dover's powder the most appropriate form. It is usually combined with blue pill, or the hydrargyrum cum creta, to which, in general, there can be no objection; but the chief value of the whole is the opium, the great aim being to allay irritation and give rest to the bowels. Calomel is positively injurious, and ought to give way to the gray powder or blue pill. Warmth to the surface is of the greatest consequence in all varieties of diarrhœa. In inflammatory attacks it is essential. The dull aching pain and tormina accompanying this form of the disease may often be relieved by tepid fomentation, hot bran or linseed poultices. The recumbent posture should be strictly enjoined, and the bed-pan used to prevent fainting or exhaustion. The occasional exhibition of a mild laxative, once in twenty-four or thirty-six hours, is necessary. Castor

oil, with a few drops of laudanum to prevent griping, is particularly well suited to these cases. During the acute stage, the food should consist of strong soups, arrowroot, rice-milk, and light farinaceous puddings, in small quantities at a time. To these should be added a little wine or brandy to support the strength under the exhausting influence of the attack.

In less urgent cases, local depletion may be unnecessary. Rest, confinement to bed, and strict attention to diet, are nevertheless imperative; for the pyrexial form of diarrhœa in old persons is never free from danger, however slight the general reaction. So long as the bowels are relaxed and the pulse is accelerated, the food ought still to be wholly farinaceous, or consist of beef-tea thickened with sago, arrowroot, or ground rice; or of chicken-broth, with grated rusk or fine biscuit. Three or four grains of Dover's powder, with the same quantity of the gray powder, should be given every fourth hour, and on the following day a dose of castor oil, with a few drops of laudanum.

Should the diarrhœa continue notwithstanding these means and the cessation of the febrile symptoms, astringents are necessary, and the most appropriate are the vegetable astringents, catechu, kino, logwood, cusparia, &c., combined with opium. The ordinary astringent mixture of the hospitals, viz., the mistura cretæ, with the tinctures of catechu, opium, and kino, is generally efficacious, seldom failing, where organic mischief has not ensued, in checking the diarrhœa. This mixture is peculiarly adapted to the many cases attended with acid eructations, or sour offensive evacuations. Great attention to diet is still requisite. The warmth of the skin should also be preserved. An old writer, Wainright, has quaintly observed, that "a woollen shirt mightily conduces to cure an habitual diarrhœa." A flannel bandage round the abdomen affords an agreeable support, and is beneficial in promoting the action of the skin. If the patient has been accustomed to wine, it should not be withheld from him. Occasionally wine indeed seems to be of great service in checking the inordinate secretion from the irritated mucous membrane, and restoring the tone of the bowels; but in other instances, in which perhaps the irritation is of a more active kind, the stimulus of wine is injurious.

In more obstinate cases, resisting the above and other astringents of a similar kind, and in different forms of chronic diarrhœa,

the metallic astringents will be found valuable. Among these, the acetate of lead, the various preparations of iron, and the sulphate of copper may be mentioned as generally useful. The mistura ferri comp. of the Pharmacopœia is a medicine from which I have seen decided benefit; but perhaps the sulphate of copper in combination with opium, as recommended by Dr Elliotson, commencing with half a grain of the former joined with a grain or less of the latter twice a day, and gradually increasing the dose of the sulphate of copper to a grain and a half or two grains three times daily, is the most valuable of all medicines for the relief of rebellious forms of chronic diarrhœa. In apyrexial attacks occurring in old people, occasioning exhaustion and resisting ordinary means, it may be given early and with the best effects. I am confident that I have seen it save life in more than one instance where other astringents had failed, and where the patient was rapidly sinking under the disease, and must have died in a few hours had the symptoms not been checked.

CHAPTER XI.

CONSTIPATION.

General Observations.—A confined state of the bowels is still more common than the condition we have just been considering, though it comes less frequently under our cognizance. Easily remedied in its ordinary forms by domestic means, the practitioner is generally not consulted until it has assumed an habitual or obstinate character, and has entailed evils which enforce attention. Amid the many consequences of neglected constipation may be mentioned disease of the rectum and contiguous structures; venous congestion of the pelvic viscera, varices of the bladder and prostate, hæmorrhoids, melæna, hæmaturia, abscesses in the neighbourhood of the rectum, fistula, anal fissures, stricture, ulceration, and prolapsus—diseases of great frequency in advanced life, very often clearly occasioned by habitual torpor of the bowels, and always aggravated by fæcal accumulations and obstruction. The more remote consequences are not less important than the local effects. Without over-estimating the constitutional evils arising from a prolonged retention of morbid secretions and excrementitious matters in the intestines, it may be assuredly affirmed that the healthy and vigorous discharge of the various functions of organic life are incompatible with an imperfect and inefficient action of the bowels. Digestion becomes languid, the spirits sink, headache and vertigo are common; congestion of the brain and apoplexy itself are not unfrequently traceable to the same cause. The different depurating functions are oppressed and impaired. The breath is offensive, the kidneys secrete morbid products, the liver furnishes a vitiated or scanty bile. The parched and shrivelled skin of the aged, unable or vainly endeavouring to throw off the impurities circulating in the blood, is liable to eruptions of various kinds, among which may be especially enumerated, psoriasis,

prurigo, eczema, erythema, and erysipelas. A cachectic state of the system is induced. Injuries heal slowly, and are apt to degenerate. Its more immediate and prominent effects are flatulent distension of the abdomen, colic, and the form of spurious diarrhœa already alluded to.

Casual constipation must be distinguished from constitutional slowness of the defecating process, natural to the individual in many instances, from early age onwards, consistent with the soundest health, and sometimes indicative of a vigorous organism. Persons of this habit of body show it more in advanced life. Celsus has, however, declared that when the bowels are confined in youth they are often relaxed in old age. Several instances of a contrary kind have come to my knowledge; and some of the hailest old people, male and female, have assured me that throughout life they have not been accustomed to have the bowels moved oftener than two or three times a week. I knew one individual in the enjoyment of excellent health, in the seventieth year of his age, who from boyhood had not had occasion to go to the closet above once in six or seven days. Peculiarities of this kind require to be known and respected. Such persons do not bear purging, and when circumstances render purgatives necessary, the action of the bowels is accompanied with a feeling of sinking, often demanding cordials.

Causes.—In not an inconsiderable number of cases originating at advanced periods of life, habitual constipation appears to be occasioned by impaired propulsive power and organic sensibility of the bowels, the muscular structure of which, as well as of the abdominal parietes are atrophied, as stated in a preceding chapter, sometimes to a remarkable degree, leading to accumulations in various parts of the canal, especially in the cæcum, the cells of the colon, the sigmoid flexure and rectum. The remote causes are various. Diseases of the brain and spinal marrow, blunting the sensibility or paralyzing the alimentary canal, occasion, it is well known, persistent and sometimes formidable constipation. In senile dementia, apparently connected with atrophy or hardening of the brain, it is generally a most troublesome attendant. The abuse of purgatives and lavements is also a frequent source of the complaint. Sedentary habits and inattention to the monitions of nature—the indolence of advancing years—are productive of the

same torpor, by impairing the organic and animal sensibility of the canal, and inuring it to large accumulations. Costiveness, moreover, appears to be an occasional result of deficiency of the different secretions poured into the bowels, and is very frequently observed when from any cause there is a deficiency of bile.

The accumulated fæces often form tumours in different parts of the intestines, which are easily detected in emaciated subjects. On many occasions, accumulations of this nature may be felt in the arch or descending portion of the colon, from which it is sometimes easy and expedient to move them onwards; but, in other instances, these indurated masses are immoveable, entirely obstruct the canal, and become the cause of extremely dangerous enteric inflammation. The largest collections take place in the sigmoid flexure and cæcum, where they may almost always be discovered by manual examination, forming a defined swelling in the left or right ileo-inguinal region. They are also sometimes the result of mechanical causes, tumours, stricture of the intestine itself, or of stricture from external adhesions, encircling and constricting the gut. In one instance of this kind, in a man sixty-two years old, a hard swelling of the size of a child's head existed in the right side, and entirely disappeared after immense fæculent motions. He died a few years afterwards, from caries of the lumbar vertebræ. On examination I found the cæcum partially girt by a very strong band, passing over it from the brim of the pelvis to near the umbilicus, where it terminated. This had effectually prevented the contents from passing, and appeared to have been the undoubted cause of the retention alluded to, a recurrence of which was only prevented by great attention to the daily liberation of the bowels.

Torpor of the Rectum.—There is a form of constipation depending upon inaction of the lower bowel, almost peculiar to the aged, and which in every way deserves the attention of the practitioner. Often occurring in bed-ridden, infirm, feeble, or paralytic subjects, it is still more common in the female, in whom also the most marked examples appear. It is characterised by the accumulation of dry, hardened masses of feculent matter in the rectum, rendering their expulsion difficult, sometimes impossible, and generally requiring mechanical means to dislodge them from the bowel.

This form of constipation is referred to by almost all practical writers on the diseases of the bowels. For the earliest accurate account of it we are indebted to Dr John Warren of Taunton, whose original communication "On Painful Constipation from Indurated Fæces," read on the 14th November 1768, appeared anonymously in the fourth volume of the "London Med. Obs. and Inquiries," p. 123. In a subsequent paper, published eighteen years afterwards, in "Duncan's Med. Commentaries," vol. x. p. 255, a further account is given of the disease, and it is only just to the memory of Dr Warren to quote his own lucid, practical observations on the subject. "The malady," says he, "assumes the appearance of a diarrhœa, but is, in fact, a constipation; or, at least, owes its origin to an unusual and considerable collection of indurated fæces in the rectum." After narrating two cases illustrative of the disease, one of which terminated fatally, he observes, "That this disease may in future be more easily distinguished from diarrhœa, which is so opposite to it in its nature, and with which it is so apt to be confounded, it may not be improper to remark, that in each of the cases above narrated, as well as in every other which I have seen of this disorder, the pain is principally seated in the lower part of the abdomen, and is always accompanied with a tenesmus, or a sense of bearing down, which is never attendant upon a simple diarrhœa; that the motions are at all times inconsiderable, and in general mixed with small scybalæ; and that it is a disease which does not yield to any remedy administered under the supposition of its being only a purging. It is likewise worthy of notice, as a farther diagnostic, that the pains attending it are infinitely more acute than any ever experienced in a diarrhœa. I must also add, that it is a disorder peculiar to persons in advanced life (pregnant women excepted), as I have never met with an instance of it in patients of any age under sixty. . . . . It is frequently occasioned by a long-continued use of bark, opiates, and the like."

The disorder may thus proceed for an indefinite period, so long as the rectum retains its sensibility and the power of partially relieving itself. The attacks of diarrhœa and tenesmus, occasioned by the irritation of the scybalæ, are often accompanied by dysuria or retention of urine. At length, from injudicious treatment or increasing atony, the fæces collect and become firmly impacted

in the bowel. In some cases, the obstruction is so complete as to occasion symptoms of ileus or strangulated hernia. In others, where the rectum is paralysed, the expulsive efforts entirely cease, and immense accumulations of arid fæces, resembling dry mortar, take place. The relaxed, dilated, and distended rectum has been known to nearly fill the pelvis without occasioning much distress. In the case of an old officer attached to Chelsea Hospital, half a chamber utensil of hardened fæces was removed from the bowel in the course of one day, and nearly as much on the following morning. The patient had been long bed-ridden from a variety of causes, and the accumulation was only accidentally discovered by the nurse failing to introduce a clyster-pipe, so slight was the inconvenience experienced.

It may be well to observe that the nuclei of collections of impacted fæces in the rectum have occasionally been found to consist of agglomerated masses of pills and other substances, such as magnesia, taken to remove constipation.

Treatment.—The aged submit to casual constipation with indifference. A blunted sensibility of the intestinal canal favours this apathy. With the listlessness of advancing years, a most pernicious habit is acquired of deferring obedience to the calls of nature, costiveness follows, purgatives are then resorted to, perhaps daily, and the period has generally passed when attention to diet, exercise, and the habit of frequenting the closet at a regular hour might alone have prevented the torpor of the bowels, which it is now the object of the patient to avert, and which can only be effected, in the majority of cases, by the aid of medicine. Nevertheless, so long as there is still sufficient vigour of body, the means above suggested should not be neglected. The customary place of retirement should be visited at fixed hours daily, and though ineffectually at first, the habit ought not to be hastily abandoned, as perseverance in these attempts promotes the functions of the bowels, and often induces a salutary regularity in their liberation. When, through accident or the infirmities of advancing age, a disinclination or incapacity to bodily exercise exists, the contractility of the bowels may be assisted by friction over the abdomen, and the act of defecation itself promoted in debilitated subjects, when on the chair, by bending the body backwards and forwards, and by lateral movements of the trunk. The weakened abdomi-

nal muscles are beneficially exerted and assisted, the intestines compressed, and the propulsion of the residual contents accelerated by these and like efforts, which, trivial as they may appear, ought not to be despised. Much assistance will be derived from a diet consisting largely of vegetables, such as spinage, greens, Brussells sprouts. The action of the bowels will also be promoted by the use of ripe fruits—gooseberries, currants, and oranges; skinned apples, prunes, and figs are useful, and often render recourse to purgatives unnecessary. In general, however, vegetables and fruits do not suit the digestive organs of the aged, in whom they are prone to occasion flatulence and colic. Fine white bread, which is occasionally adulterated with alum, should be eschewed, and coarse brown or rye bread substituted. If oatmeal porridge agrees with the stomach, and does not produce heartburn, taken at breakfast or on going to bed it is an admirable excitant of the alimentary canal, promoting the natural action of the bowels, and obviating constant recourse to aperients. I have seen it taken with treacle instead of milk, prove highly beneficial. The late Dr Baillie was in the habit of recommending broiled hot or cold bacon for breakfast to costive persons, and with the best effects. It almost always succeeds with a friend of mine, and I have known it in another case bring on at will sharp purging. A cigar after breakfast, or in the evening, after dinner, encourages the action of the bowels in some cases. In others, a tumbler or two of cold water at bed-time or early in the morning, before breakfast, has the same effect.

With every assistance from diet, and these and like means, it will very generally be found necessary to employ aperients. Occasionally the more active medicines of this class are requisite. In numerous cases the habit has early been acquired of taking medicine daily, through an absurd belief of the necessity of daily evacuations, without which the bowels now cease to act. The milder laxatives gradually lose their effect, and drastics are then resorted to with the certainty of perpetuating the evil, if not of injuring the general health. Under these circumstances, a return to more gentle medicine should be inculcated and greater reliance placed on the efforts of nature aided by diet and exercise. It will be no easy matter to persuade the patient that a single feculent motion procured every other day by mild aperients,

repeated at intervals from time to time, is better than diurnal watery evacuations, which leave much solid matter behind, and is in general sufficient relief. An opportunity is thus afforded the bowels of recovering their lost tone, and the practice has the advantage of hardly interfering, if at all, with digestion and assimilation. Most practitioners must have met with persons who have greatly improved in health on discontinuing the daily use of purgatives. I know of several instances in persons both of middle and advanced age. At first an effort is required, but perseverence is rewarded by renewed vigour. Drastic medicines should if possible be avoided. They not only create a necessity for their frequent repetition, but injure the powers of life in depriving the system of nutriment and impeding the functions of the whole of the alimentary canal. Medicines that procure full feculent motions ought always to be preferred in ordinary cases, and a fair trial should be given to them before having recourse to more powerful purgatives.

The combination of tonics with aperients is peculiarly adapted to the habitual constipation of advanced age. Cullen,* in remarking that habitual costiveness often proceeds from weakness of the alimentary canal, says that "in such a case bark, given in the dose of a drachm for several days together, has in more than one instance in his knowledge cured the disease." By invigorating the action of the intestines, the tonic assists the operation of the aperient, and mitigates, or entirely counteracts, the relaxing and debilitating effects of the laxative given singly. This is an important desideratum where aperients are constantly required, and instances are not wanting in which the bowels, long accustomed to the daily irritation of active medicine, have entirely regained their tone and action by the judicious exhibition of tonics, aided by a generous diet, with the lighter description of wines, hock and claret, for example. In ordinary forms of habitual constipation demanding daily recourse to aperients, pills consisting of the compound extract of colocynth with the extract of gentian or the sulphate of quinine; the compound aloetic pill with the extract of rhubarb, the aloetic pill with myrrh and quinine or gentian; the compound extract of colocynth with the addition of a grain of scammony with or without a quarter or the sixth of a

* Lectures on Mat. Med. Dublin, 1772, p. 244.

drop of croton oil,—these will be found useful. One or two should be taken immediately before dinner or at bed-time, according as they are found to act most conveniently and comfortably.

In some cases of habitual constipation, depending on a deficiency of the mucous and serous secretions, the saline aperients are most efficient, especially combined with bitter infusions. They often succeed when the above and similar medicines fail.

Tonic-aperient medicines are often used for a long series of years without injury, nay with benefit. A lady of my acquaintance, who died at the extraordinary age of 103, had for the last forty or fifty years of her life taken almost every night a compound aloetic or rhubarb pill. Sir Benjamin Brodie knew "a healthy old gentleman, eighty-six years of age, who could walk round the Regent's Park, and who for three score years was in the habit of taking an aloetic pill every night. Another gentleman lived to ninety-two, and had taken either an aloetic or rhubarb pill daily." "These," he states, "were only two of many other examples familiar to him."* A late medical officer of Chelsea Hospital, dying at the age of seventy-four, had for thirty years been in the habit of taking every night, on going to bed, a pill composed of equal parts of the compound rhubarb pill, compound extract of colocynth, and Castile soap. The addition of a few grains of blue pill procured abundant evacuations. And I have observed similar effects in like cases. It deserves to be remarked, that none of the individuals with whom I have been acquainted suffered from piles, though they must have taken in their day an immense quantity of aloes. Nevertheless, where hæmorrhoids, fissures, uterine, vesical, or rectal irritation exist, aloetic medicines should, as a general rule, be avoided.

In the obstinate and frequently unmanageable forms of constipation, dependent on impaired organic sensibility of the bowels from chronic disease of the brain or spinal marrow, benefit is occasionally derived from the use of aromatic condiments. Curries stimulate the enervated canal, and aid the action of the aperients resorted to. A pill composed of aloes, gum mastich, and a few grains of capsicum—to which may be added, if required, a quarter or half a drop of croton oil—is sometimes useful in these cases.

* Lecture in "Lancet," Jan. 13, 1844, vol. i. p. 497.

Strychnine is said to have been advantageously employed in this form of constipation as well as in others proceeding from loss of tone of the bowels. I have occasionally found the compound aloetic pill with a drop of creosote, given two or three times a day, serviceable in these cases.

When accumulations take place in the cæcum or course of the colon, it will generally be necessary to employ very active purgatives together with enemeta; while, at the same time, in aged individuals, the powers of life must be supported by cordials and nutritious food. The mercurial purgatives, variously combined with the compound extract of colocynth and the extract of henbane, and other sedatives and antispasmodics, followed up by the compound infusion of senna with the sulphate of magnesia, or the compound infusion of senna with the compound decoction of aloes and the tartrate of potash, are appropriate remedies. Repeated small doses of castor oil—from two to three drachms—every three or four hours, with two or three drops of laudanum and croton oil in the proportion of the sixth or quarter of a drop to each dose in some carminative water, together with friction of the abdomen, frequently succeed in removing these collections when calomel with drastic purgatives fail. Large lavements are of great service in these cases, in whatever way originating, and the more stimulating injections are frequently required to dislodge the accumulated masses. Enemeta ought not, however, to be entirely confided in, but regarded as valuable adjuvants to the aperients advised. It is in cases of feculent accumulations in the large intestines that the passage of a moderately sized flexible bougie eight or nine inches up the rectum, as recommended by Dr Willan, or the introduction of a large gum elastic tube into the sigmoid flexure of the colon, "by which, after giving exit to such fluid fæces as may happen to escape," purgative injections may be thrown into the bowel, as advised by Dr O. Beirne, are peculiarly beneficial, and ought not to be omitted in any instance resisting ordinary measures. A case is mentioned in the "Cyclop. of Pr. Med.," article Constipation, which illustrates the advantage that may be derived from repeated copious injections. A paraplegic old gentleman, who for years had been the subject of constipation from enormous accumulation in the colon, not the result of stricture in any part of it, but merely from want of action in its

muscular fibres, had as much as a gallon of salt and water thrown up every morning for a week after constipation of long duration. Scarcely any fæcal matter would for several days pass; but at length the repeated use of the injection would call the muscular fibres into activity, and then an enormous mass of fæcal matter would be parted with.

The means to be adopted in cases of impacted fæces in the rectum are sufficiently obvious. The accumulated mass must be broken up by the repeated and careful introduction of the surgical scoop, or the handle of a dessert spoon, and the bowel further cleared by saponaceous, or terebinthinate and oleaginous enemeta.

CHAPTER XII.

COLIC AND ILEUS, INCLUDING MECHANICAL OBSTRUCTION OF THE BOWELS.

SECTION I.—COLIC.

We are often consulted by the aged of both sexes, otherwise in good health and free from hernia, for pain in the bowels of more or less frequency and severity. The attacks are sometimes attended by nausea, faintness, and vomiting, more frequently with tympanitic distension of the intestines, and spasm of the abdominal muscles; but in general there is merely acute twisting pain, without any other symptom of importance. The pulse is unaffected, there is no febrile disturbance, the pain is inconstant, and in nine cases out of ten relieved by pressure. These negative symptoms characterise the affection, and distinguish it from inflammation.

The cæcum and colon are obviously in many cases the exact seat of pain, but in others it appears to be limited to the small intestines. Flatulence and constipation are common antecedents and accompaniments of these colicky attacks. There seems reason to believe that excessive acidity of the contents of the cæcum is not unfrequently the cause, when the pain is chiefly centred in that gut. Imprudence in diet, inattention to the bowels, and sudden exposure to great cold, are their frequent source. Great eaters, especially those who are unable to take sufficient exercise, and the aged, with pendulous abdomens and worn-out constitutions, are peculiarly liable to seizure of this kind. Sometimes the attacks appear to be of a gouty, rheumatic, or neuralgic nature.

The cæcum is a frequent seat of gouty irritation of a nervous or spasmodic nature in persons above fifty, and, as formerly observed, it is sometimes simultaneously affected with the stomach. Like

gouty gastrodynia, these attacks are liable to end in inflammation, with subsequent perforation of the bowel.

Colicky pains, with irregular action of the bowels, are also frequent consequences of old herniæ. Such attacks, if neglected, sometimes assume a serious character, and occasion considerable embarrassment, where, from old adhesions, the hernia, though not strangulated, is irreducible.

Treatment.—Attacks of colic depending upon the retention of excrementitious matters and flatus, are successfully treated by warm carminative purgatives combined with sedatives. Tepid fomentations, or dry warmth and friction, with the tincture of opium, are of great service in subduing the tormina. In robust subjects, where these measures fail, and the pain is severe and accompanied with vomiting, a small bleeding from the arm sometimes brings immediate relief. The bowels are frequently opened soon after venesection, when before it they have resisted active purgatives.

When the cæcum appears to be mainly affected, vegetables, especially carrots, greens, and turnips, should be avoided. The acidity which appears to cause the irritation and pain is best neutralised by chalk or magnesia; and rhubarb, magnesia, and ginger is one of the most useful combinations that can be employed in these attacks.

Cases unaccompanied by constipation are generally more benefited by sedatives than purgatives; attacks of this kind are frequently of a chronic nature, and almost of daily occurrence. The pain comes on at irregular periods, often wholly irrespective of meals, and without any unnatural appearance in the evacuations. Remote organs are sometimes at fault, particularly the kidneys and uterus. After the bowels have been relieved by a mild laxative, the trisnitrate of bismuth, given in five-grain doses twice a day, conjoined with half that quantity of the extract of conium or henbane, will be found very serviceable. In weak subjects, the extract of gentian may be added with advantage. Camphor is also a valuable remedy in almost all these cases. Two grains may be given two or three times a day, along with two or three grains of the extract of henbane.

In gouty or rheumatic colic, of which this indeed may be considered a variety, recourse should be had to Dover's powder, conjoined with the acetous extract of colchicum. The extract of

henbane or aconite may be substituted for the former, where its constipating effects are troublesome or apprehended.

Where a rupture exists, if reducible, it should be immediately returned, and the individual confined to bed, or to the horizontal position for some time after the bowels have been moved. Without this reduction, and perfect rest in the recumbent posture, colicky attacks connected with old herniæ are with difficulty relieved, and are frequently aggravated by the active purgatives employed to open the bowels. The pains often cease, and the bowels act soon after these measures, though, admitting of being roughly handled without uneasiness, the rupture may seem to have had nothing whatever to do with the attack.

SECTION II.—ILEUS.

A less frequent, but much more severe, and moreover a most dangerous form of colic presents itself, which, from the mortality it occasions in advanced life, deserves serious consideration. It is an aggravation of that affection, and is characterised by severe pain of a twisting or wringing kind, chiefly limited to the umbilical region, obstinate constipation, and inverted action of the bowels, occasioning stercoraceous vomiting. At all ages a most fatal disease, it is peculiarly so at advanced epochs of life, the deaths accruing from it being more than double between the ages of fifty and seventy-five than between the ages of twenty and forty-five.*

Symptoms.—The symptoms accompanying ileus are modified and variously grouped. In a few cases, the obstruction of the bowels is incomplete; in others, vomiting is unfrequent or slight, and the matters vomited merely consist of the food or medicine swallowed, without any trace of excrement. Tympanitis is generally present from an early period, but not invariably. The pain, usually paroxysmal and of a wringing kind, especially at the commencement, is sometimes gradually developed, dull, aching, and continuous, with but temporary griping. Generally confined to the parts around the umbilicus, whatever may be the precise seat of the affection, and relieved by pressure, it is, at advanced stages,

* See Tenth An. Rep. Register-General, pp. 290, 291.

aggravated by it, and diffused over the abdomen. The pulse, at first unaffected, becomes small, weak, and frequent; the abdomen tense and hard; the countenance pinched and anxious; the breathing hurried; the extremities cold; thirst and hiccup distress the patient. A few hours are sometimes sufficient to develop all these symptoms, and death may ensue within twenty-four hours, but generally three or four days elapse, even in the worst cases, while at other times a fortnight passes before the fatal event, the duration of the disease depending upon its precise nature, the pathological causes, and the antecedent condition of the patient. The severity of the symptoms are less affected by age than the pathological causes of the disease. Some very old persons suffer little, though they sink rapidly, and death often takes place when it is hardly expected.

Prognosis.—Extremely dangerous as the disease proves, the estimated mortality for all ages being 7 out of 9, and, as already mentioned, double after than before forty-five, recovery sometimes takes place even at very advanced periods of life. An octogenarian in Chelsea Hospital had fæcal vomiting for several days, with complete obstruction of the bowels for nearly a whole week, when at length evacuations were procured, and he completely recovered. Dr Mayo* and Dr Watson† mention a case they had seen together of an elderly lady, who had laboured under acute symptoms of ileus for several days. From Wednesday morning to the next Monday at noon she had had no alvine relief; her visage was contracted and sunken; her tongue brown and dry; calomel and active aperients had been skilfully and earnestly employed. She suffered frequent paroxysms of pain and vomiting; but the abdomen was scarcely if at all distended, nor was it tender. After a complete examination of the abdomen, during which "much pressure was employed," she fancied that the pressure had displaced something within. Before the consultation was over, word was brought that the bowels had acted. She had passed a liquid motion precisely resembling the stuff she had last vomited, and next day a gall stone was voided as big as a small walnut.

Causes.—In general the disease is brought about by whatever induces and perpetuates confinement of the bowels. Feculent

* Lect. on Prac. of Phys., vol. ii. p. 465. † Med. Gaz., vol. xxxiv. p. 146.

accumulations are not necessarily present; but in nearly every case the bowels do not act downwards, and there exists obstinate if not invincible obstruction. In the majority, this depends on internal mechanical causes, obvious on *post-mortem* examination; but in those cases where the canal remains free, the immediate causes of the disease are not so easily recognized, and we are forced to the alternative of admitting the existence of a spasmodic constriction, resisting the passage of the contents of the bowels, or, secondly, with Dr Abercrombie, a paralyzed condition of the muscular coat of some portion of the intestinal tube, by which its propulsive action is impaired or annihilated.

Inflammation and its consequences are almost uniformly met with in some portion of the bowels in fatal cases. The muscular coat is often mainly implicated, and gangrene of this texture common. Of the mechanical causes of the disease, the most frequent are intussusception; tumours external to or within the bowels; old adhesions, constricting the bowels and impeding their free action; internal herniæ of various kinds; strictures of the colon and rectum; blocking up of the canal by biliary and intestinal concretions —the nuclei of feculent accumulations. Comparatively, intussusception is less frequently met with than in infancy or manhood; but the other organic causes, especially stricture and tumours, are more common in advanced life, and it is also now that "internal herniæ, from twisting of a portion of the bowel upon its own axis, or on the mesentery, and incarceration of the colon and rectum from unnatural descent of the small intestines, with its mesentery, are very frequent." (Rokitansky.)

Differential Diagnosis.—Depending upon so many different pathological causes, it is of the utmost importance carefully to examine each individual case, with a view to the detection, if possible, of the precise nature and seat of the affection. Could we accurately discover the exact condition of the bowel,—whether incarcerated, intussuscepted, strictured, or simply obstructed by fæcal matter,—the discovery would furnish the chief element towards a safe prognosis and a successful or appropriate treatment. Unfortunately, the differential diagnosis is by no means easy; but in not a few cases the previous history of the patient, the mode of attack, and the slow or rapid progress of the symptoms, furnish valuable information and suggest important considerations.

If, for example, the symptoms have appeared suddenly after unusual bodily exertion, and are accompanied with a dragging sensation, an internal hernia may be justly suspected, more especially if the individual had at a former period of life laboured under peritoneal or enteric inflammation. If the symptoms appeared while straining at stool, more especially during the existence of diarrhœa, intussusception may be suspected. Where the bowels have been irregular or habitually confined, and the symptoms have gradually appeared after unusual delay, stricture or fæcal accumulations are not improbably their cause. Provided the distension of the abdomen is not great, nor its tenderness excessive, the region of the cæcum and sigmoid flexure of the colon will frequently, in the latter case, be found the seat of accumulation. A fulness, sometimes obvious to the eye, in the right or left iliac region, according as the cæcum or colon is obstructed, will be observed; palpation discovers a tumour, and percussion elicits a dull sound; while the rest of the abdomen is preternaturally resonant. Internal herniæ, abdominal tumours, stricture and accumulations in the cæcum or sigmoid flexure, are what ought chiefly to be looked for in advanced life. The precise seat of the disease may be sometimes divined, in the absence of more positive indications, by the nature of the vomiting and the amount of the urinary secretion. When the matters vomited are partly or wholly stercoraceous, the obstruction is low down the canal, near the ileo-cecal valve, or in some portion of the large intestines, and the urine is but little diminished in quantity, as absorption from the intestinal surface still proceeds. If the affection is higher up, the contents of the small intestines are rejected, and the urine is much reduced, perhaps nearly suppressed. The site of pain, whatever may be the exact position of the disease, is almost always around the umbilicus, so that it affords little assistance in determining this question. But, both in regard to the anatomical causes of the disease and as to its exact situation, there are numerous exceptions to the preceding observations, and these points are too often concealed until revealed by *post-mortem* examination.

The reader who has perused the above remarks need hardly be reminded of the necessity of minutely examining the various natural openings and the whole of the abdominal parietes, in

order to satisfy himself that the symptoms do not proceed from strangulated hernia. The symptoms of ileus have often been occasioned by the incarceration of a portion of intestine not larger than a hazel-nut, and which could not have formed an external tumour. Several years ago a case of this kind in a man about eighty years of age came under my notice, in which a piece of intestine scarcely larger than the tip of a finger was found strangulated in the inner inguinal ring. The late Sir Richard Dobson, when surgeon of Greenwich Hospital, mentioned to me a similar case. As the man had been operated upon by him for a strangulated inguinal hernia two years before, the symptoms were supposed to be occasioned by a return of the accident, but the most careful examination during life failed to discover a rupture. On dissection, one was found in a state of strangulation in the inner inguinal aperture of the opposite side, so small that it had just entered the ring.

It is also important for the practitioner to be fully aware of the fact that in ruptures of long standing, such as he must frequently meet in advanced life, whether reducible or irreducible, strangulation not unfrequently takes place without the usual local symptoms manifesting themselves. This is particularly true of large irreducible herniæ which have contracted adhesions; but ruptures of smaller size, sustained by an ordinary truss, or supposed to be sustained, are also sometimes strangulated without the attention of the patient himself or his attendant being directed to the rupture. The pain is remote from the protrusion, generally referred to the umbilicus; the rupture bears rough handling with surprising freedom; and the patient attributes all his distress to the state of his stomach and confinement of the bowels, without ever alluding to the rupture, the true source of all the evil and danger. The exemption from local suffering in these cases is really surprising, and extremely apt to throw the practitioner off his guard, or, when suspicion is awakened, it may still greatly embarrass his proceedings. The subject pertains to the domain of surgery, but having seen one or more examples of this description, I do not hesitate to advert to it in this place. From what I have observed of these and like cases, did I dare to lay down a rule, I would say, whenever symptoms of ileus with stercoraceous vomiting show themselves in a case where a hernia, usually reducible, has become irre-

ducible, and these symptoms do not speedily yield to ordinary treatment, or cannot be traced to any other source, the operation for strangulated hernia should be performed, notwithstanding the absence of pain or tension in the tumour. In large irreducible herniæ, a similar rule may be applied. The symptoms are of the most dangerous description; the disease, under ordinary circumstances, is almost always fatal, and to let a patient die without giving him this chance is neither humane nor proper. On the contrary it is highly culpable,—and in one, if not two instances, I have seen reason to regret the omission.

Treatment.—In the absence of external hernia, three important indications present themselves: first, to relieve the bowels; secondly, to subdue pain; and thirdly, to support the strength. The relief of the bowels generally accomplishes the second indication also; but this is the great difficulty, and while they remain obstructed, vomiting and pain continue, and with them rapid failure of all the vital powers, requiring the free exhibition of wine, brandy, and opium.

It is convenient, with reference to treatment, to divide the cases of this disease into two categories: those in which pain is excessive, and those in which it is moderate. In the former class, a liberal exhibition of sedatives is demanded in combination with the purgative employed; in the latter, sedatives ought not to be omitted, but their administration is less imperative, and more freedom may be exercised in the use of drastic purgatives. In sudden and acute attacks, falling under the first category, a full dose of opium, say one or two grains, should at once be administered, with at least eight or ten grains of calomel, and repeated every three or four hours. After the second dose, this amount of opium may be diminished, provided the pain and vomiting have at all abated, and a stimulating enema of castor oil and turpentine should be thrown up the bowel, with two or three pints of gruel, or as much as can be received. If, after repeated trials of these means, evacuations cannot be procured, the lancet should be employed when the pulse and general vigour of the patient are favourable. Advanced age, *per se*, is no objection to this measure, which sometimes succeeds surprisingly in at once relaxing the bowels and removing all the urgent symptoms; and in robust habits it may precede every other remedy with advantage. When venesection is

inadmissible, as it generally is, and the bowels remain obstructed, the calomel must be continued in reduced doses every two or three hours, conjoined with the extracts of aloes and henbane. At the sametime copious enemeta should be exhibited. If the vomiting persists, and all nourishment is rejected, advantage may thus be taken to support the strength, and concentrated beef-tea or milk should form the bulk of the injection. Other expedients have been advised in ileus and intractable obstruction of the bowels,—such as, dashing cold water on the abdomen and lower extremities, warm baths, inflation, tobacco injections, and the exhibition of crude mercury. The first, second, and third of these means may be tried, but tobacco, a valuable agent in robust subjects and in the prime of life, is a most dangerous remedy in weakly persons, and ought never to be exhibited in advanced age. Quicksilver is now-a-days generally discarded. If the intestinal canal were a straight tube, it is easy to conceive crude mercury might frequently by its weight overcome a moderate obstacle and force a passage; but this is not the case, and, as observed by Heberden, it can obviously be of no use when the obstruction is situated in an ascending part of intestine, where it often is.

The cases belonging to the second category, or those in which the abdominal pain is less violent, and the symptoms altogether of a more chronic character, frequently appear in constipated habits. For a day or two before the occurrence of vomiting, the bowels have been more than ordinarily sluggish. The usual purgative has failed to effectually relieve them; more active medicine is then resorted to without success, the abdomen grows full, tense, and painful, the tongue loaded, and vomiting sets in. If injections have been employed, they have merely washed out the part of the bowels below the obstruction; above that the bowels become more and more distended with flatus, and often with fluid fæces; the distension increases till the abdominal parietes appear ready to burst, the vomiting becomes more frequent, and already the contents of the bowels are rejected by the mouth, preceded by pain in the upper part of the abdomen or region of the umbilicus, or in some other limited space, where, after the first two or three days, there frequently exists uneasiness on pressure.

This form of the disease is often occasioned by fæcal collections

in the cæcum and sigmoid flexure of the colon, where, as already observed, they may be detected on examination, and it is frequently consequent to organic disease in some other part of the intestinal canal, particularly stricture of the rectum.

A variety of purgatives, as we have hinted, having usually been tried before consultation, it will now be a question whether the same are to be continued, or others substituted,—it may even be a question whether one and all should not, at least for a time, be abandoned. Generally, the purgative which the experience of the individual led him to employ under ordinary circumstances is the one that ought still to be selected. The idiosyncrasy must be considered. By a systematic proceeding, the purgative which had utterly failed in the hands of the patient occasionally succeeds with the practitioner. Thus small and often-repeated doses of the sulphate of magnesia in the compound infusion of senna, or in the infusion of roses, sometimes at length open the bowels, after large doses have been taken without any other effect than creating vomiting; so it is with aloes and the compound extract of colocynth, two or three grains of which, administered every hour or two, are frequently much more effectual than double or treble the quantity given at longer intervals. Calomel is here, as in the preceding form of ileus, a valuable remedy. Full doses, varying from five to ten grains, may be exhibited every four or six hours, or oftener, according to the duration or urgency of the symptoms, with or without five or six grains of the extract of henbane. In the intervals a pill, consisting of two or three grains of Barbadoes aloes and two of the extract of henbane or conium, should be ordered every two or three hours. Where it has not been considered advisable to prescribe large doses of calomel, a grain or two of this medicine may be given with the aloetic and henbane pill,—the efficacy of which may be further augmented by the addition of a quarter or half a drop of croton oil, if the stomach will bear it. Vomiting may be partially allayed by the usual remedies,—sinapisms to the epigastrium, the internal use of ice, hydrocyanic acid, &c.; but our chief confidence must be placed in full doses of calomel and opium, and the exhibition of large enemeta by means of O'Beirne's tube, or the tube of the ordinary stomach-pump, and, as advised above, when all nourishment is rejected, the injection should contain beef-tea or milk, with the intention of supporting the strength.

It but too frequently happens that the measures recommended in both sets of cases entirely fail in procuring evacuations and in mitigating the severity of the symptoms, however skilfully and patiently employed. A cessation from active treatment is then occasionally followed by the best effects. The constant exhibition of medicine, through the anxiety, zeal, or over-officiousness of the practitioner, increases the distress. Severe griping and vomiting follow each purgative administered, and the bowels are excited to the most violent efforts by the drastic and irritating substances employed to relieve them, The intestines, as Dr Watson has observed, fill up above the seat of obstruction; and then throes of pain occur, attended with sickness, during which, if the abdomen be uncovered, immense coils of intestine—as big, perhaps, as one's arm—may be seen rising and rolling over like some huge snake, with loud roarings and flatulence. Purgatives can then be of no further use. Opiates should now be administered, and the strength further supported by wine or brandy and nourishing enemeta. Some obstinate cases, it is said, have ultimately yielded to the constitutional influence of mercury. In desperate circumstances, relief and eventual recovery have been obtained by puncturing the bowel above the mechanical impediment, and the abdomen has been opened and successful search made in cases of internal hernia or intussusception. The operation of opening the colon in the groin or loin has been successfully performed after thirty, and even forty-five days' obstruction. But in regard to this question, I must refer the reader to recent works on Surgery, and to an excellent paper by Mr Hawkins, in the 35th vol. of the Med. Chir. Trans., in which volume cases are recorded by other surgeons where the colon was successfully opened on account of intestinal obstruction.

CHAPTER XIII.

DISEASES OF THE RECTUM.

SECTION I.—ACUTE AND CHRONIC INFLAMMATION OF THE RECTUM.

ACUTE inflammation of the rectum, *proctitis*, is far from unusual at advanced periods of life. I have met with it in octogenarians, but it is more frequent in persons under sixty-five years of age, and more common in men than in women.

Causes.—Persons of a costive habit of body, and those who indulge in spirituous liquors, are obnoxious to it. I have never known it coincide with acute gout, or result from a retrocession of that complaint; but I have seen it occur during convalescence in a person of a strongly gouty tendency, and also after the system had been much reduced by a protracted attack of the chronic form of the disease. Nothing seems more likely than that the rectum, in common with the other hollow viscera, may be the primary seat both of gouty spasm and inflammation. On many occasions the disease appears to be induced by the abuse of strong purgatives, particularly aloes and calomel, by exercise taken during the action of medicine, and by long exposure to cold draughts in the closet. In other instances, none of these causes are observed, and we are unable to account for its origin.

Symptoms.—A sensation of heat and fulness in the bowel is one of the earliest symptoms of the disease. This is speedily succeeded by irresistible efforts to evacuate its contents. These efforts are attended with tenesmus and pains shooting up the bowel. At first they are wholly ineffectual. After a time, scanty motions are passed, consisting of small portions of feculent matter, and mucus or muco-purulent matter, with more or less sanious discharge or pure blood. During the straining at stool, prolapsus would be frequent were it not prevented by spasm of the sphincter.

The urinary bladder sympathises with the state of the rectum. There is frequent desire to make water, and sometimes actual retention. Along with these local phenomena, there is considerable constitutional disturbance. The skin is hot and dry, the pulse quick—there is thirst, and sometimes wandering. These symptoms frequently assume an asthenic character. The attempts to empty the bowel, and the progress of the disease, soon occasion excessive prostration. This, together with a brown, parched tongue, a feeble pulse, and a total dislike to all nourishment, are sufficiently alarming symptoms; and, under such circumstances, the disease is certainly not without danger, but few are carried off by it in the acute stage, unless where the inflammation has extended up the bowel and spread to the colon, which it sometimes does, and then constitutes a true form of dysentery, one of the most serious and fatal diseases to be met with in advanced age.

The lining membrane of the bowel appears to be the chief seat of the disease. Unquestionably the submucous cellular tissue and muscular tunic sometimes participate in the inflammation. It is apt to terminate in chronic inflammation, abscess, or ulceration; but even in far advanced age, complete resolution is frequently obtained. The most common association is piles.

Diagnosis.—The only disease with which proctitis is likely to be confounded is dysentery. The absence of tenderness in the abdomen, the general limitation of pain to the sacral or coccygeal region, aggravated by pressure in the latter situation, and a spasmodic contraction of the sphincter, resisting the introduction of the finger, the attempt to do which is productive of great distress, are generally sufficiently characteristic; and, together with the history of the origin and progress of the symptoms, point out the rectum as the seat of the complaint.

Treatment.—Immediately the disease appears, leeches should be applied to the anus or coccygeal space, the recumbent posture enjoined, and a dose of castor oil, with laudanum, administered. The sooner the bowels are moved the better. By and by, during the height of the inflammation, and while there is an incessant desire to get up to the chair, soothing means only are admissible. It is therefore highly important to open the belly early, while as yet this can be accomplished without greatly aggravating the sufferings of the patient and exhausting his strength. This done,

the leeches may be renewed, provided the symptoms are advancing. A brown state of the tongue ought not to deter us from abstracting blood in this manner whenever the local symptoms are at all severe. The relief afforded by a few leeches around the margin of the anus is sometimes very remarkable. I have never had occasion to bleed from the arm, but I can easily conceive this step necessary in vigorous constitutions, though advanced in life. After the bowels have been moved, four or five grains of Dover's powder, with two of blue pill, should be given every three or four hours, according to the severity of the attack. As a general rule, calomel, which is liable to irritate the rectum, should be avoided. Relief will be obtained by tepid fomentation, and the application of a hot sponge to the anus. Emollient and tepid injections are also sometimes beneficial, but where there is much irritability, they are returned immediately with an aggravation of suffering. Opiate injections, with starch, may then be tried. In some instances cold enemata are more soothing, and evaporating lotions are also occasionally comforting. The strength must be supported from the beginning by beef-tea, concentrated nourishing soups, milk and farinaceous diet, and even by wine, or weak brandy and water, while we are at the same time endeavouring to reduce the local inflammation by appropriate means.

Chronic Inflammation, Chronic Catarrh, or Blennorrhœa of the Rectum, is much more common than acute inflammation of this bowel. It is sometimes a result of that disease, but more frequently it is from the commencement a subacute or chronic inflammation of the lining membrane, accompanied with mucous discharge and irritability, evinced by more or less tenesmus, frequent and insatiable desire to empty the bowel—the sensation of fulness or of a foreign body remaining after each evacuation. The symptoms vary with the degree of inflammatory irritation and the extent of bowel affected. Aggravations of the complaint are common, and are frequently traceable to irregularities in diet or exposure to cold. During these attacks, the discharge from the bowel is sanious, or muco-purulent, or both. The motions thus assume a dysenteric character. The disease is often consequent to or connected with ulceration of the mucous membrane, and is also frequently associated with internal hæmorrhoids. In the former case, defecation is painful and protracted, though not uniformly;

in the latter, the mucous or muco-purulent secretion is often tinged with blood, which sometimes flows in large quantities. In all cases, prolapsus of the bowel is common, and thickening of the folds of the mucous coat, with more or less granular development of the villi, and hypertrophy of the mucous follicles, are usual.

The disease is much more common in men than in women; it is frequently long concealed by the latter sex, until other conditions of the rectum, such as piles and prolapsus, have been induced. Occasionally it succeeds the cessation of the menses. In its simple state it may exist for years without affecting the constitution; nevertheless I have at least seen two instances in which it occasioned general debility and exhaustion of no ordinary degree. In another case, occurring in a celebrated military historian, whom I repeatedly saw in the absence of his usual adviser, it was the forerunner of malignant ulceration or epithelial cancer of the rectum, so that it must not be regarded with indifference, however slight the symptoms announcing it.

Chronic catarrhal inflammation of the rectum is generally obstinate. If it yields for a time, it is extremely prone to return, and aggravations are common; but by care and attention it may be either entirely removed, or so modified as to occasion little or no inconvenience.

Treatment.—The internal remedies applicable to this disease are such as are found beneficial in chronic catarrh of other mucous surfaces. Astringent injections, such as the decoction of oak bark, with the addition of the sulphate of alum, weak solutions of the sulphate or acetate of zinc, the nitrate or sulphate of copper, or the nitrate of silver, are serviceable. The internal exhibition of the Balsam of Copaiba, alone or in combination with turpentine, is a valuable remedy. Injections of pure cold water are occasionally useful. The bowels should be carefully regulated. Active purgatives are most prejudicial. Aloetic medicines must be avoided. Castor oil, the lenitive electuary, or rhubarb and magnesia, are the laxatives which most generally agree in these cases, as in all irritable complaints of the lower bowel. Ward's paste, or the confectio pip. nig., given every night at bed-time, occasionally does good in old-standing forms of the disease. In all cases of this kind, the rectum should be carefully examined. If ulceration exists, the direct application of a strong solution of the nitrate of

silver, or the solid substance itself, is frequently of great service. Weak citrine ointment, or the ung. gall. comp. is also useful, and may be introduced by means of a bougie. Moderate walking exercise is conducive to the removal or mitigation of the disease by promoting the portal circulation, and thus obviating the congestion, upon the continuance of which it mainly depends. The treatment, it will be perceived, assimilates much to that required for internal hæmorrhoids.

SECTION II.—HÆMORRHOIDS.

There is scarcely any disease for which the practitioner is more frequently consulted at all stages of advanced life than piles; yet on inquiry it is commonly found that the complaint has existed for a long period. Disappearing for a time, it has returned again and again from manhood upwards, and its origin may thus not unfrequently be traced back twelve, fourteen, or even twenty years. When the disease presents itself for the first time in advanced life, or after an absence of some years, it is frequently connected with enlargement of the prostate, stone in the bladder, disease of this organ, abdominal tumours, enlargement of the uterus, induration of the liver, persistent or habitual constipation, all of which act as impediments to the free return of blood from the pelvis and lower bowel, or occasion venous dilatation by the straining efforts attending micturition and defecation.

The complaint, it is well known, is more frequent in the male sex at the period of life at which it chiefly occurs; but there is reason to believe that with the advance of age, after fifty, the greater prevalence of the disease in the male is scarcely maintained. Piles are very common among the old females at the Salpêtrière, and some of the most aggravated cases are met with in women in the middle and upper ranks after the cessation of the menses. Occurring at this epoch, they frequently persist throughout life, unless removed by surgical interference. Hasse* has observed that they are often replaced after the period of the grand climacteric by vesical and vaginal hæmorrhoids—occasionally disappearing altogether, or nearly so, in very advanced age.

Internal piles are very frequently accompanied, in elderly per-

* Hasse, Path. Anat., Syden. Soc. ed., p. 39.

sons, with relaxation of the sphincter, and prolapsus of the rectum. The tumours protrude on the least exertion, along with a fold of the mucous membrane, and there is a constant mucous or sanious discharge from the bowel, staining the linen, and occasioning much mental disquietude, with local distress. The discharge increases in walking, and blood sometimes then flows freely, drop by drop. Owing to this circumstance, a lady, now in her sixty-eighth year, is obliged to dress accordingly, and is on many occasions prevented from leaving her apartments, or entering into society. Another lady, about fifty years of age, the mother of a large family, is repeatedly, for months together, confined to the sofa, the piles descending with the bowel on standing or walking, and letting loose blood or a gleety sanious discharge. Both these ladies decline surgical treatment.

Piles of an intermediate order, between internal and external, occupying the verge of the anus, and partially covered with mucous membrane, do not seem to be quite so frequent in advanced life as the other forms of the disease.

For the most part, internal hæmorrhoids, on first descending, present a livid bluish appearance, which they generally retain; but along with piles of this kind, we frequently find piles of a highly florid colour, and of a fungoid or spongy texture, which bleed freely on the slightest touch, and emit pure or almost pure arterial blood. Bleeding from the other description of piles is usually venous, though often of a mixed character.

The periodical bleedings which the subjects of internal hæmorrhoids experience are by no means confined to free livers or the plethoric. They often occur in withered, aged, or middle-aged people, who sometimes lose immense quantities of blood on these occasions.

It is of the utmost importance in these attacks, during what is called a "fit of piles," to ascertain the precise nature of the bleeding. The oozing of a venous character proceeding from the surface of an abraded pile, however copious, is of infinitely less importance than the bleeding of an arterial kind, the result of arterial erosion. In the latter case, instead of an oozing or trickling, the hæmorrhage frequently takes place *per saltum*, and sometimes requires immediate attention. But whether venous or arterial, or, as it more commonly is, of a mixed kind, if excessive and frequent, the

bleeding sooner or later ends in impairing the general health, and causing the usual symptoms of habitual loss of blood. The salutary effects of hæmorrhoidal discharges have generally been overrated, and many a sound constitution has been ruined through the belief entertained of the benefit of bleeding piles, and of the danger of removing them. Heberden—an author for whom I am perhaps too partial, but whom I class with Cullen and Hoffman, men of mark, whatever may be thought of them in these days—has some sensible observations on this subject, which I reluctantly omit.

Treatment.—The expediency of operative interference is, in very many cases of internal hæmorrhoids in advanced life, the only question left for the decision of the practitioner. The disease has in general been of long duration, and every expedient has been tried that offered a prospect of its removal. If this is the case, and the hæmorrhage is either so great or so frequently recurring as to be impairing the general health and exhausting the remaining energies, direct treatment is in general required, whatever may be the precise nature of the bleeding; whenever it is arterial, the necessity for effectual proceedings is imperative. The propriety of surgical treatment may be doubted when the disease occurs in robust plethoric habits of a gouty or apoplectic tendency, or where the periodical bleedings appear to act as a safety-valve in relieving a congested state of the portal system, congestion of the kidneys or other abdominal organs. The popular prejudice in favour of hæmorrhoidal fluxes is very great, and no doubt the system occasionally becomes so inured and habituated to such discharges that there is sometimes a risk in suddenly checking them without due precautionary measures, dietetic and medicinal; but, as observed above, the advantages derived or supposed to be derived from bleeding piles, is often very questionable, and the danger of direct, immediate, and effectual means seems to be at least equally exaggerated. I have myself never seen but one instance where the removal of internal hæmorrhoids appeared to be followed by permanent injury to the system. In that case they were removed at the repeated and earnest solicitation of a broken-down old man suffering from chronic bronchorrhœa. The local relief he obtained was great, but in three or four months his cough increased, and he died of rapid consumption. On the other hand, numerous instances could be adduced of persons far advanced

in years, whose lives appeared to be prolonged in comfort by surgical removal of the annoying and exhausting malady, even after it had existed for the greater portion of a long life.

In illustration of the safety with which the hæmorrhage may thus be arrested, even when of the longest standing and greatest extent, Mr Syme* mentions the case of a lady who, at an early age, had begun to suffer from hæmorrhoids, and had, thirty years before, been advised by the late Mr Benjamin Bell to have them removed. This was declined, and the disease went on increasing with all the usual symptoms, until at length the bleeding, which for seven or eight years had been very profuse, so affected the general health as to excite the serious alarm of her friends. She exhibited in an extreme degree the peculiar aspect and other symptoms of exhaustion caused by a continued drain of blood. Very soon after the removal of the hæmorrhoidal tumours, which were large and numerous, so as to encircle the aperture of the gut, she regained her strength, together with a healthy look. Three years had elapsed since the operation was performed, and she had not suffered any unpleasant symptoms from the sudden suppression of her complaint.

When, from the peculiar circumstances accompanying the disease, surgical means are not resorted to, it is of the utmost consequence to the comfort of the patient to procure soft, easy, bulky motions, without straining or griping. Few medicines answer this purpose better than the lenitive electuary conjoined with sulphur and the supertartrate of potash; occasionally this may be alternated with castor oil, or the simple extract of colocynth with the extract of henbane. A habit should be encouraged of relieving the bowel at bed-time, as retiring to rest afterwards promotes the portal circulation, and takes off undue weight from the super-adjacent organs. It is hence advisable to give laxatives about noon, or at such periods as the patient's experience finds conveniently to answer the purpose; and on all occasions after a motion he should, when practicable, assume for a time the horizontal posture. As soon as possible, the protruding mass should be carefully returned by gentle and steady pressure with a sponge or soft rag, after bathing the parts with cold water. Just before

* On Diseases of the Rectum, pp. 69, 70. Edin. 1838.

the usual time of visiting the closet, great benefit will be obtained by throwing up the rectum a pint or so of cold water. This is useful in constringing the dilated veins and softening the fæces, and is a measure of relief which most sufferers cherish, whether the piles are internal or external. In some recent cases it is itself an effectual remedy. Ward's paste, or the confectio piperis nigri, has long borne a reputation for the relief of internal hæmorrhoids administered in doses of a drachm twice a-day for two or more months. It acts in stimulating the circulation in the lower bowel, and thus obviating congestion. Introduced within the sphincter, and immediately applied to the parts concerned, it is said to prove beneficial. Exercise should be enjoined. In some cases, particularly with prolapsus of the rectum, riding is even more beneficial than walking. If the hæmorrhoids come down in standing, operative proceedings are generally advisable; but if, on account of extreme age or other circumstances, it is considered inexpedient to remove them by surgical means, some relief may be procured by wearing an anal truss. The introduction of an ivory pessary into the rectum is seldom borne with any comfort for such a time as to be of more than temporary benefit, and comparatively few patients can wear it at all.

Should internal piles at any time become strangulated, and so much inflamed that they have already begun to slough, or cannot be reduced, soothing means, poultices and fomentations, together with the internal exhibition of henbane or morphia, are alone admissible; while, at the same time, the strength must be supported by nutritious diet. A spontaneous cure sometimes succeeds an attack of this kind.

External piles in a state of inflammation demand leeches and tepid fomentations. Great relief generally follows puncturing them with a lancet, so as to give exit to coagula, after which the piles may be poulticed with linseed. An open state of the bowels must be maintained, but purging should be carefully avoided. The diet should be antiphlogistic, and the recumbent posture strictly enjoined. After the cessation of the attack, and in chronic cases both of external and internal hæmorrhoids, anointing the verge of the anus and diseased structures with the unguentum gallæ compositum, or the unguentum hydrarg. nitr. dilutum, is serviceable. Morning and evening, or after the parts have been

cleaned and thoroughly dried after a motion, is the best time for applying these and like ointments.

SECTION III.—PROLAPSUS ANI.

A relaxed state of the parts around and within the anus, and weakness of the sphincter from general senile debility or paralysis of the anal muscles, by diminishing the power of resistance, predisposes to prolapsus of the rectum. Accordingly, this affection is not unfrequently met with in elderly persons of both sexes, and, with the exception of childhood, is more common in old age than at any other period of life. The prolapsus may be either general or partial,—consisting, in the former case, of the whole coats of the intestine; in the latter, of the mucous membrane only, or along with it the submucous cellular tissue. Prolapsus of the entire substance of the bowel sometimes assumes a formidable appearance from the magnitude of the protrusion, and essentially constitutes a form of invagination. Incomplete prolapsus is necessarily of limited extent. By frequent descent, however, the mucous and submucous tissues acquire considerable elongation and development, and prolapsus of this kind occasionally attains the size of an orange. Both are a common result of chronic irritation of the rectum, such as chronic catarrhal inflammation, and they frequently attend persistent diarrhœa or dysentery. Whatever induces inordinate expulsive efforts is extremely apt to occasion prolapsus in old age. The affection, like piles, is often connected with enlargement of the prostate, and stone, or disease of the bladder. The form of the disease consisting in protrusion of the inner coats only is very generally associated with internal hæmorrhoids, and is consequent to long-continued engorgement of the mucous membrane.

In extreme cases of either form of the complaint, in feeble and cachectic states of the system, or where the weakness of the sphincter and the relaxation of the integuments and other textures around the anus are considerable, a fit of coughing, or any sudden exertion, is sufficient to produce it. In mere irritation of the mucous coat, the protrusion generally retires on the cessation of expulsive efforts, or with very little assistance from the hand; but occasionally, from repeated descent, as already observed, the sub-

mucous tissue becomes hypertrophied, the mucous coat itself also thickened and engorged, and the return of the prolapsed parts is more or less difficult and incomplete. Large protrusions, involving all the coats of the bowel, are also in general replaced with facility. The relaxed condition of the sphincter, permitting the escape of the gut, is equally favourable to its return by pressure; and old age is almost, if not entirely, free from those accidents attending the affection in children and adults. A corresponding difficulty exists, however, in maintaining the parts within the sphincter. Without mechanical support they are apt to slip out again, almost with as much readiness as a reducible rupture, and are in certain cases always more or less protruded when the person is in the erect posture.

Treatment.—Much good may be effected in a large number of uncomplicated cases by careful attention to the state of the bowels, by removing all sources of rectal irritation, correcting an existing diarrhœa, or obviating constipation by mild laxatives and cold water enemata, and by improving the general health by gentle, regular exercise, a generous but regulated diet, and, in feeble habits, a moderate allowance of old wine. Where the descent is associated, as it frequently is, with chronic catarrh of the rectum, astringent injections and the remedies advised in that complaint should be employed. The prolapsus keeps up the irritation in the bowel, reacts on the original affection, and medical treatment fails to relieve both. It is then necessary, all important indications having been fulfilled, and the predisposing and exciting causes removed when practicable, if we are desirous of effectually remedying the malady, to remove a fold or two of the relaxed integument, together with a portion of the protruding mucous membrane. Here the ligature formerly recommended has given place to excision; but again I must refer the reader to works on Surgery for further information on this point. Prolapsus dependent upon or accompanied with internal hæmorrhoids, is generally obviated by the effectual severance of these tumors.

When the complaint is obviously the consequence of a paralysed condition of the sphincter, whether or not associated with paralysis of the abdominal muscles or lower extremities, it is needless to observe, operative treatment would necessarily be abortive; nor ought any endeavour of this kind to be made in emaciated, broken-

down subjects far advanced in life, as I once saw attempted at the Hôtel Dieu, Paris, in 1839, by a surgeon of European reputation, the unhappy patient being a withered old crone in the last stage of marasmus. In these and like cases, mechanical support, evacuating the bowels in the horizontal posture, or immediately after defecation retiring to rest, are, together with attention to the state of the dejections, almost all we can advise for the relief of the patient.

SECTION IV.—ANAL FISSURES, SPASM OF THE SPHINCTER, AND ABSCESSES.

These are usually connected with disorder of the general health and morbid irritability of the rectum—frequently with abrasion and ulceration of its lining membrane. Soothing constitutional and local remedies are highly beneficial in these cases; and Dr Copland* has shown, as well as other physicians and surgeons, that fissures with consequent spasm of the sphincter, rendering defecation extremely painful, and the introduction of instruments or the pipe of the common enema syringe impossible, have been removed and effectually cured by these means alone, without recourse to the knife. An ointment composed of one part of the extract of belladonna to seven parts of lard is an excellent application. Nevertheless, the most judicious attention to the general health, the state of the primæ viæ, and the most appropriate local treatment occasionally prove unavailing, when partial division of the sphincter at once relieves all the symptoms and cures the patient. Complete division of the sphincter seems to be unnecessary, and the operation is said to be more successful when the lateral edges of the muscle are cut, than the anterior or posterior portion.

Abscesses.—Small abscesses and boils are frequently met with in the immediate vicinity of the anus, which occasion considerable inconvenience, but usually disappear in a short time by rest and emollient applications. An external pile now and then suppurates, heals up, and ever after ceases to give any annoyance. Occasionally, however, and more particularly with piles of an intermediate

* Art. "Rectum," in Dict. of Prac. Med.

order, neither external nor internal, but just within the grasp of the sphincter, a fistulous sac remains, which is prone to close and break open again after more or less local irritation. Without a careful examination, the patient is supposed to labour under the more serious complaint of fistula in ano, but the probe readily detects the difference, and by a little straining the whole seat of the abscess is brought into view, and its nature made obvious. An instance of this kind has, to my knowledge, existed fully thirty years. Two or three times a year the minute opening closes, the sac becomes painful, a swelling the size of a hazel nut forms, and then after a day or two bursts, giving exit to a small quantity of purulent matter. In the intervals of these attacks, there is so little inconvenience that the patient will not submit to the appropriate treatment; and he is under the impression that as he suffers less from piles than formerly, the trifling drain—scarcely exceeding a drop or two on pressure—is conducive to this immunity. Fistulous abscesses, or piles of this kind, are only to be effectually cured by snipping out the sac.

Abscesses often form external to the rectum; and the laxity of the cellular and adipose tissues in advanced life, together with reduced constitutional vigour, favour their rapid development and extension. These abscesses are generally limited to one side. In unhealthy old subjects, however, the gut is sometimes dissected all round by diffuse suppurative inflammation of the cellular tissue. Recovery is slow, and fistulæ are apt to follow.

Extensive abscesses in this situation are not, however, always of so unfavourable a nature. Large abscesses are again and again met with in far advanced life, which, considering all circumstances, are surprisingly amenable to treatment. Even in emaciated and feeble subjects of this class, recovery is often observed without any of the dreaded consequences of abscess in the neighbourhood of the rectum. In illustration of this statement, I could adduce several instances of septuagenarians who perfectly recovered without fistula or any other accident; and one of a man eighty-three years of age, who also escaped the not unusual consequences, after exit had been given to fully three ounces of excessively fætid matter.

These abscesses are frequently dependent upon chronic inflammation or congestion of the rectum, and are often connected with hæmorrhoids. One of the patients above referred to had just got

over a protracted attack of chronic gout. The first symptoms are usually those of rectal irritation. There is frequent desire to evacuate the bowel, the attempts to effect which are so painful that they are wholly unsuccessful. Rigors are often present. There is more or less constitutional disturbance. The febrile symptoms generally assume an asthenic type, though the local inflammation be what is denominated sthenic—*i.e.*, acute, limited, and defined, as in a healthy phlegmon. At an early period the patient shrinks from pressure, and the tenderness increases with the advance of the disease, till the abscess is fully formed. Four or five days may effect this; a week is generally sufficient. The abscess almost invariably forms between the ischium and gut, seldom on the anterior or posterior aspect, in the perineum or coccygeal space.

Treatment.—Attempts to check the progress of the disease by leeches, fomentations, and laxatives are generally nugatory. These measures may limit it, but they do not prevent suppuration. Tepid fomentations afford relief and promote the natural termination of the inflammation, either in resolution or abscess. They should be industriously employed. The bowels ought at the same time to be gently moved by castor oil, with a few drops of laudanum to keep down irritation. It is imprudent, however, to be over solicitous in regard to the evacuations; all that should be aimed at is to procure soft, painless motions. Henbane should be administered two or three times a day, in doses of three or four grains, according to the amount of pain and constitutional excitement.

Immediately fluid is suspected, before fluctuation can be satisfactorily ascertained, the abscess should be freely laid open by a sharp-pointed bistoury, and afterwards fomented and poulticed. This is the secret of success in these cases. The relief is instantaneous, and the further extension of the disease checked; while at the same time the walls of the abscess and all the textures concerned have not yet been injured by the inflammation beyond power of reparation. If the practitioner waits till the abscess is fully formed and the integuments are thinned, the structures engaged are then so altered and disorganised that a long and doubtful recovery takes place—I mean doubtful as regards the occurrence of fistula. Delay in opening suppurations in the

vicinity of the rectum cannot be too strongly reprobated, and is especially hazardous in old persons. The gut is thereby liable to be denuded if not perforated, and delay may entail the extension of the abscess up to the brim of the pelvis. Early and effectual incision into the swelling usually prevents all unfavourable consequences. A generous diet, together with wine or fermented liquors, will be required after the abscess has been opened, and while granulation is proceeding. At the same time, rest in the recumbent posture should be inculcated, and the parts kept as quiet as possible by avoiding active opening medicine.

SECTION V.—STRICTURE OF THE RECTUM.

Of the three recognised kinds of stricture of the rectum—viz., *spasmodic;* secondly, *simple,* or non-malignant; and thirdly, *malignant,* or scirrhous stricture—the two latter are almost the only forms encountered in advanced life; the malignant is the most frequent.

Spasmodic Stricture.—Excluding spasmodic contraction of the sphincter, generally consequent to chronic proctitis or anal fissures, spasmodic stricture is very rarely met with in persons beyond forty-five years of age. That the rectum, after this period, is occasionally subject to irregular contractions from local and remote irritation I do not mean to deny, but, judging from my own experience, this affection is extremely rare in advanced life. I have not met with more than one or two examples of uncomplicated spasmodic stricture in this situation in Chelsea Hospital these twenty-three years; and in the only instance falling under my observation out of it, presenting in a female above sixty years of age, the diagnosis was somewhat doubtful, the vermiform appearance of the motions appearing mainly to depend on irritative contraction of the gut, occasioned by an enlarged and irritable uterus. The numerous cases described under the head of inflammatory spasmodic stricture of the rectum hardly deserve the appellation. We might with equal propriety speak of inflammatory stricture of the bladder, when that organ is excited to undue contractions by irritation of its lining membrane.

It is not improbable, however, that a nervous or spasmodic contraction of the rectum is an occasional effect of gouty irritation.

Certain gouty subjects experience at times neuralgic pains in the rectum with impediment to its action, which appear to be of this nature; and we know that other hollow viscera are liable to be thus affected with spasm in persons of a gouty habit.

Simple Stricture.—Simple, non-malignant, organic stricture, consisting in mere thickening and induration of the coats of the rectum, is also comparatively less frequent than at the middle period of life, though it is occasionally seen in very old age. In middle life it is chiefly confined to females, but at more advanced periods the predisposition appears to be reversed, the male sex suffering most between fifty and seventy years of age.

Causes.—The causes of this disease are obscure. Chronic irritation of the mucous membrane is perhaps its chief source. Unaccountably, it is almost always situated at the lower extremity of the bowel, two or at most three inches from the anus, and can be very readily reached with the finger. If examined by the speculum, the induration presents a reddish granular aspect, projecting into the cavity of the bowel. It is usually annular, of a fibro-cartilaginous hardness, and little dilatable. The contraction is sometimes so great as only to admit the little finger. These circumstances distinguish it from a natural fold of the intestine, with which it is apt to be confounded on inspection. Below and above the seat of the disease, the bowel feels soft, pliant, and healthy. It there yields to the finger, and does not contract adhesions to the neighbouring parts, while at the same time there is an absence of the characteristic straw-coloured hue of the countenance significant of malignant disease.

Symptoms.—The symptoms vary with the duration of the malady, the amount of contraction, and the degree of local irritation. Very generally, the affection steals on gradually, and has thoroughly established itself long before its nature has been suspected. This is more likely to happen when it follows upon chronic diarrhœa, dysentery, or inflammation of the rectum. When the result of a low degree of inflammatory action or simple hypertrophy of the mucous and submucous tissues the local irritation is so inconsiderable that constipation from mechanical obstruction is usually the earliest symptom. The motions acquire a peculiar shape, and, moulded by the contraction, are flattened or vermiform. Evacuations of this character are peculiarly significant, if at the same

time they are accompanied with pain in the sacral region, pains in the loins and limbs, enteric flatulence and gastric dyspepsia. Flattening of the motions is common, however, in chronic enlargement of the uterus or prostate, and hypertrophy of this gland is sometimes attended by symptoms which are apt to be mistaken for stricture of the rectum without careful digital examination. The evacuations are also prone to assume a flattened or vermiform appearance from mere temporary irritation of the bowel, independent of organic disease.

Irregularity of the bowels, constipation alternating with diarrhœa, abdominal distention from feculent accumulations and flatus, are prominent symptoms. In the advanced stage of the disease, if solid fæces are voided they consist of small rounded lumps resembling the excrement of sheep. There is frequent desire to evacuate the bowels, and the motions are scanty, and mixed with blood and mucus. Diarrhœa is sometimes supposed to be the disease under which the patient is labouring; for the motions are often thin, watery, and frequent, and passed with more or less straining and pain. If, from the combined influence of the stricture itself and the irritation produced by the accumulation of excrement, the bowels are excited to excessive efforts, which they frequently are, the evacuations are then expelled with great force, and the attempt is often repeated with but temporary relief. Prolapsus frequently accompanies these cases, and the patient's sufferings are greatly aggravated every time he goes to the closet. Fistula is also a not unfrequent complication of the advanced disease.

Treatment.—When there is much local irritation, the hip bath, tepid injections, with the addition of a small quantity of laudanum, and the free exhibition of henbane conjoined with camphor, afford temporary relief. The diet should then chiefly consist in nutritious soups and farinaceous substances. Irritating purgatives must be carefully avoided. Calomel and opium, followed up by oleaginous enemata, often procure easy evacuations, as so do tepid water injections. Until the local irritation has somewhat subsided, all attempts at surgical interference should be suspended.

The radical cure of the stricture falls to the care of the surgeon; it may be effected by cauterisation, incision, and dilatation. The two first methods are in frequent use in France, and have a few

advocates in this country; but dilatation is wisely preferred, both here and in America, by at least nineteen-twentieths of the profession, and the introduction of a bougie into the stricture every third or fourth day is the mode of treatment which is generally the most successful. The bougie alone should not be trusted. In recent cases the iodide or bromide of potassium may be given in a stomachic bitter infusion two or three times a-day, in hopes of reducing the diseased mass; and, with the same view, the bichloride of mercury should have a trial where mercury is not contra-indicated. Great attention should be paid to the general health. The practitioner ought to be satisfied if by mild laxatives feculent evacuations are procured every other day.

Malignant Stricture.—Cancer of the rectum, though not entirely limited to advanced epochs of life, is so much more common after fifty years of age, that it may be well regarded as a disease of elderly persons. It is more common in the female, owing apparently to its connection with cancer of the vagina and uterus. In the male it is generally isolated and primary. In the female it is also frequently independent. The scirrhous or fibrous is the most common form of the disease here, as in other situations in advanced life; but the medullary and areolar varieties also occur, and all three occasionally co-exist. Epithelial cancer of the rectum is also far from rare in old age. There is no part of the bowel exempt from cancer; but the disease appears to select the lower and upper portions in preference, from both of which localities it diffuses itself in certain cases more or less extensively. According to Rokitansky,* annular carcinoma and stricture occur almost exclusively at the upper portion, especially at the points at which the sigmoid flexure terminates in the rectum, and which, in its normal condition, presents a distinct constriction. We are accustomed, however, to meet with cancer lower down the gut, from between two and a-half to four inches above the outlet, in nearly if not quite the same situation as the simple form of stricture, so that it can generally be reached with the finger.

Symptoms.—The disease is sometimes limited to one side of the intestine, leaving the other free. On digital examination, the bowel feels hard and nodulated. After a time, it is generally

* Path. Anat., Syd. Soc. ed., vol. ii. p. 108.

bound down to the neighbouring structures by strong unyielding adhesions, which resist any attempt to move the bowel from side to side. The sensation communicated to the finger has been compared to what is experienced on examining a strong leather pipe, the hose of a fire-engine, or a thick piece of gutta-percha tubing.

Like the non-malignant form of stricture, cancer of the rectum has usually made great progress before the nature of the disease is suspected. There are no symptoms indicative of its early development which do not belong to congestion of the bowel, internal hæmorrhoids, or chronic inflammation. Uneasy sensations, both before and after going to stool, with occasionally slight mucous discharge and irregularity of the bowels, were among the first symptoms in two cases which from a very early period fell under my observation. In most cases, the onset of the disease appears to be accompanied with pain in the bowel, which increases in severity with the progress of the complaint; but in a few, certainly rare examples, there is, as in carcinoma of the stomach, a surprising exemption from acute suffering, nay, in one case of epithelial cancer of the rectum, occurring in Chelsea Hospital in 1851, the patient was hardly ever known to complain of pain, though the disease involved the anus and was accompanied with numerous deep-seated sinuses communicating with the degenerate mass. Constipation almost uniformly attends the disease from the commencement, or at all events from a very early period. Before the amount of organic obstruction can account for it, this is not improbably owing to increased irritability of the bowel occasioning spasmodic contraction, resisting the descent of the fæces. In advanced stages, when the thickening and induration of the bowel is considerable, there is not only mechanical obstruction, but frequently inaction and a paralysed state of the sphincter. The confined state of the bowels is what the patient chiefly complains of, to remove which he is constantly obliged to resort to opening medicine. At first mild laxatives succeed, but by and by, as the obstruction increases, these fail, and stronger purgatives are employed with only partial relief. There is now generally a more or less constant feeling of weight or fulness in the bowel, forcing the patient very often to the closet, where, after some straining and the escape of flatus, he experiences much pain in the gut, with sickness and faintness.

As yet these may be the only symptoms observed. They vary much. In certain cases, along with, or instead of, a sense of weight in the bowel, there are acute lancinating pains shooting down the thighs and across the pelvis into the bladder and urethra, aggravated every time an attempt is made to empty the bowels. The general health sooner or later begins to suffer,—sooner in this than in the simple form of the disease; and the countenance acquires the pale, haggard look so characteristic of serious organic mischief. Dyspeptic symptoms usually show themselves early. The appetite is capricious, but sometimes it remains good till a very advanced period. Despondency and irritability of temper are frequently early attendants. Still pain in the bowel and constipation, with an occasional attack of diarrhœa, may be the only symptoms strictly referrible to the rectum while the disease is in the first or non-ulcerative stage. After a time the mucous membrane inflames, and exudes an abundant sanious discharge; sometimes pure blood flows. At length it is abraded and destroyed. As the diseased structure softens and the ulceration of the mucous membrane extends, the sanious discharge acquires an intolerably offensive odour and an irritating quality, by which it excoriates the parts it touches. The bowel is frequently perforated. Stercoraceous abscesses form, and deep sinuses follow. With the commencement of the ulcerative stage, the sufferings of the patient increase. The pain in the sacral region and rectum is now constant, and of a burning, lancinating kind, stretching to the hips and thighs. Defecation is intolerably painful. The constitutional symptoms are aggravated. The pale hue of the countenance attending the early stage of the disease now assumes a straw-colour or a leaden tint. The pulse becomes frequent and filiform. There is hectic fever. If the patient survives long enough, œdema of the lower extremities and of the face is common. Worn out by constant pain, sleeplessness, and exhausting discharges, the unhappy sufferer dies a miserable death, emaciated to an extreme degree, sometimes procuring for the last few days a merciful respite.

The duration of the disease varies. Perhaps eighteen months or two years is about the average period. It is frequently fatal before that, and it has been known to last as long as four years. The epithelial form is slower in its progress than the scirrhous,

medullary, or areolar. When the second stage begins, it generally proceeds rapidly towards a fatal termination.

Treatment.—The treatment of malignant stricture or disease of the rectum is wholly palliative. Notwithstanding the constipating effects of opium, we are generally driven to it at an early period. Enemata of tepid water with laudanum, as in the simple form of stricture, are soothing; as so are injections of olive or linseed oil. Conium, henbane, or opiate suppositories are also beneficial. Weak injections of the chloride of soda or zinc moderate the sanious discharges, and render them less fætid. Fæcal accumulations must be prevented by occasional laxatives. The saline aperients, in combination with the compound infusion of senna, with the addition of the tincture of henbane, are generally suitable, providing still less irritating laxatives fail. The strength must be supported by wine. In the early stages alteratives may be given, but with faint hope of benefit. Attempts to dilate the stricture by mechanical means increase the irritation and accelerate the progress of the disease.

The subject of this chapter appertains more to surgery than medicine,—it cannot be exclusively claimed by either the physician or chirurgeon. In the above outline several points have been omitted, while others have barely received any consideration. The reader need hardly be told that it affords ample matter for a volume. Of late it has been much enriched by the labours of Mr Curling, Professor Quain, Mr Ashton, and Mr Smith. The works of these gentlemen have exhausted the materials, and should be consulted by all who are desirous of becoming thoroughly acquainted with the diseases of the rectum.

PART VI.

DISEASES OF THE BILIARY ORGANS.

CHAPTER I.

DISEASES OF THE LIVER—GENERAL OBSERVATIONS—CONGESTION OF THE LIVER.

ACUTE inflammation of the liver, rare at any period of life in this country and in all temperate climates, is hardly ever met with in aged subjects; and many of its so-called chronic diseases, including inflammation, are strictly referrible to affections of the duodenum, colon, and stomach. Except in advanced stages, the difficulty of diagnosing them is far from inconsiderable; and in old age especially, not a few of the structural lesions to which the liver and gall-bladder are liable remain entirely latent. This obscurity or latency not only appertains to the more trivial alterations of structure, but also extends, in not a few instances, to the most marked forms of nutmeg liver, granular liver, hydatids, cirrhosis, and even cancer, both primary and secondary.

Disease of the liver, exclusive of cancer, is regarded by M. Durand-Fardel* as rare in the aged, though he admits that congestion and all the organic lesions to which it is liable at other epochs of life are occasionally observed. He notices as a proof of the rarity of structural lesions after the age of sixty, that Cruveilhier, with his long experience at the Salpêtrière, has not given an instance

* Traité Clinique et Pratique des Maladies des Vieillards, p. 755.

of this kind in his great work on Pathological Anatomy; and he adds that he himself had only met with but a very small number at the Bicêtre and Salpêtrière, and that the work of M. Bonnet on the Diseases of the Liver does not afford an example. But whatever may be the cause, whether the result of different modes of living and the greater indulgence in the use of strong stimulants, this exemption of the aged from organic disease of the liver and its appendages is not enjoyed in England. What more common than cirrhosis with abdominal dropsy in men above fifty and sixty; and how often do we meet with congestion and its effect in the old of both sexes?

The returns of the Registrar-General are also sufficiently conclusive as to the prevalence of "disease of the liver" among the aged in this country. And if Liebig's theory be true, that diseases of the liver arise from excess of carbon, then that organ ought to be unusually liable to disease in people advanced in life, seeing that in them the principal function of the lungs is but imperfectly discharged, and the blood always unduly loaded with that element.

Congestion and its Causes.—If acute inflammation of the liver is so rare in the aged that we may almost ignore its existence, congestion is in them one of the commonest affections of this organ. For the most part it is entirely passive, and is very generally the result of a mechanical obstruction to the free return of the blood to the heart. It is therefore a frequent consequence of chronic pulmonary affections, and is seldom absent in those numerous examples of chronic bronchitis, with emphysema of the lungs and dilatation of the right cavities of the heart, so often met with among the old of both sexes. Minor degrees of the same affection, proceeding from senile debility, torpor of the portal vascular system, and the tendency to venous congestion, long ago noticed by Cullen as characteristic of declining life, and variously explained by modern pathologists, also occur. These congestions generally escape detection, or are only suspected in the living.

Signs and Symptoms.—In the former cases, in proportion to the amount of congestion and absence of induration of the liver, the organ enlarges, and in spare subjects may be distinctly felt below the ribs. The patient himself complains of a sense of weight and fulness in this region, without actual pain. If accompanied or occasioned by cardiac or pulmonary asthma, the engorgement of

the liver is excessive during the paroxysms of difficulty of breathing, and for some time after their cessation. On these occasions it needs not the tact of a Piorry to detect the variations in the size of the organ, for though nothing approaching the rapid enlargement and diminution of the spleen in aguish attacks, it is sometimes nevertheless very remarkable. Hæmorrhoids and melæna frequently accompany it; and where the cause is permanent and the congestion persistent, the countenance is dusky and more or less jaundiced. The bowels are confined, and the evacuations either dark or paler than usual, seldom perfectly natural. Colicky pains are common attendants. Of itself it is rarely if ever fatal. It however leads to nutmeg-liver, granular degeneration, and other organic disease of this viscus, aggravates all existing affections, and materially interferes with the salutary operation of medicines.

Anatomical Appearances.—On *post-mortem* examination, the swollen liver externally is smooth, shining, and of a uniform dark-red or plum colour. Generally the whole organ is affected; but sometimes certain portions are more congested than others. Internally the same uniform reddish-brown or dark plum colour is observed, and from the cut surface great quantities of venous blood exude. After squeezing and washing the liver, its substance is usually in long standing cases found jaundiced, and the hepatic ducts are often distended with bile, as if the accumulation of blood in the organ interfered with their free evacuation.

Treatment.—When occasioned by disease of the heart or lungs impeding the circulation, in addition to the means used for the removal or alleviation of the original affection, topical bleeding or dry cupping may in certain cases be resorted to with benefit. Saline purgatives, diuretics, and counter-irritation may also be employed in most instances with good effect. No medicines so effectually disgorge the liver as those that procure copious watery evacuations. If the result of venous regurgitation and obstructed circulation through the heart, the application of a few leeches to the cardiac region, and occasionally the exhibition of tonic infusions with stimuli, are sometimes of great service, particularly where the action of the heart is feeble. When the skin or evacuations indicate the supervention of biliary obstruction, in addition to the means already advised, counter-irritation over the region of the liver should be persevered in, short of disturbing rest or provoking

reaction. Perhaps there is no liniment more useful in these cases than one composed of a drachm of croton oil to an ounce of the compound soap liniment. Lotions of nitric or of nitro-muriatic acid, largely diluted, are in high estimation with Indian practitioners, and baths of this acid have, since they were first recommended by Dr Scott in hepatic complaints, been much resorted to, with questionable advantage. The different preparations of taraxacum, whether employed as a laxative or diuretic, are deservedly in vogue in this and other affections of the liver. A careful regulation of the diet is now, as from the beginning, an essential part of the treatment. It should be plain, non-stimulating, and of easy digestion. Butter, cheese, sweets, and particularly preserves, should be avoided. Fermented liquors of all kinds are usually injurious. As a general rule, they increase the biliary derangement, and oppress the system; but there are exceptions, much depending on the previous habits of the patient, the absence of febrile disturbance, the degree of accompanying debility, and the simple or complicated character of the affection. There are numerous instances where, in withholding them entirely, we only add to the existing loss of strength, and by doing so promote both sanguineous and biliary congestion.

CHAPTER II.

CIRRHOSIS OF THE LIVER, GRANULAR, HOB-NAIL, SCIRRHOUS OR GIN-LIVER.

THE only organic lesion of the liver to which I purpose to refer is the one known by the various names above enumerated. This part of the work would be very incomplete without some notice of so common a disease, which is perhaps, with the exception of nutmeg-liver, cancerous degeneration, and certain forms of atrophy, the most frequent of the structural alterations to which it is liable in advanced life, and the importance of which can hardly be overrated.

Granular degeneration is essentially chronic in its development, and, though more frequent below fifty years of age than above it, is still very often met with in persons far above fifty, and is now and then seen in extreme old age. The male sex is peculiarly predisposed to it in earlier life; but in persons above seventy, male and female are nearly alike its victims, though the preponderance is still on the side of the male. The abuse of spirituous liquors seems to be the great exciting cause, and in this country it is familiarly known as gin-liver. In all countries, drunkards die from it in great numbers.

Anatomical Characters.—Involving the whole substance of the liver, ultimately metamorphosing it in displacing the glandular structure, and in obstructing or obliterating the capillary blood-vessels and gall ducts, the alteration in its textures is as complicated as complete. A firm cellulo-fibrous tissue is diffused through the liver, everywhere replacing the parenchyma. This is the capsule of Glisson, thickened and otherwise changed in every portion of its distribution, and by almost universal consent regarded as the primary seat of the disease, though the most accomplished pathologists are still undecided as to the fundamental

nature of the process of degeneration. Induration approaching to scirrhus mainly characterises the affection in advanced stages, the morbid textures creaking under the knife, and presenting in a less degree than on the external surface the granular appearance, from which a common name for it has been derived. In well-marked examples, the colour of the organ is ochrey, or pale brownish-yellow. Early, before the condensation and obliteration of its cells are effected, the liver is either slightly enlarged or of normal size, but with the progress of the metamorphosis the whole structure shrinks, so much so that in very old subjects it is occasionally not larger than a shut hand.

Such is a brief outline of the anatomical character of cirrhosis of the liver, some knowledge of which is essential to a due comprehension of its effects on the animal economy and the phenomena which attend it. A low degree of inflammatory action, invading the cellular tissue, perhaps best explains its nature; and this view of its origin is supported by a consideration of the causes which most generally induce it, but more particularly by the character of the symptoms which, in the very beginning, usually accompany the disease.

Symptoms.—These symptoms are variously modified, and generally more obscure the more advanced in age the sufferer may happen to be. Earlier in life, its onset is usually, though by no means invariably, announced by colicky pains some hours after meals, frequent "bilious attacks," then more or less fixed pain in the region of the liver and top of the right shoulder, with some acceleration of the pulse and febrile disturbances, at first nocturnal and remittent, but afterwards permanent, though sometimes disappearing on treatment, notwithstanding a progressive development of the local affection. In old age, equivocal as these symptoms are, they do not appear at all, or are so slight as to convey little or no information. There is seldom if ever any febrile movement, unless of an irritative kind, towards the termination; and the first stage of the disease has very generally passed, or has been so imperfectly developed, and so completely masked by co-existing chronic disease elsewhere, that in nine cases out of ten, if suspected, it is long after the liver has become extensively and irremediably disorganised.

The symptoms in the more advanced stages vary but little, if at

all, from what are then observed in younger subjects. They are such as might be expected from a disease which in indurating and disorganising the liver, impedes the circulation through it, impairs or destroys its functions, and throws back on the current of the blood the constituents of bile, which are but imperfectly eliminated. Hence arise faulty digestion, imperfect assimilation and nutrition, anæmia and emaciation, jaundice, and abdominal dropsy.

Diagnosis.—These last are important signs of the disease, and serve for the most part to distinguish it. Dropsy more frequently accompanies cirrhosis than any other disease of the liver. In time, the legs and hips become œdematous, but generally not until the collection in the abdomen is considerable. Ascites from this cause can seldom be confounded with renal or cardiac dropsy, even should the other symptoms of disease of the kidneys or heart be wanting. The disease for which it is most likely to be mistaken is chronic peritonitis, with effusion; but the persistent character of the ascites, and the dingy sallow complexion, with other hepatic symptoms—among these, not the least important in the diagnosis is the deposition of the purpurates in the urine—even in the absence of pain in the region of the liver, will generally serve to point out the difference. Occurring in drunkards, or in persons who moderately but habitually indulge in the use of spirits, these symptoms are almost conclusive that the dropsy is dependent on liver-disease, and on cirrhosis especially. Peritoneal dropsy, arising from subacute or chronic inflammation of the peritoneum, is very much less frequent than hepatic dropsy in the old, and is usually accompanied with severe griping pains, and more or less tenderness all over the abdomen, which is not the case in dropsy from disease of the liver—not, at least, till the peritoneal cavity becomes greatly distended.

Treatment.—If the above account of the disease be correct, it is obvious that in nearly all cases occurring in old people, the period has passed when topical bleeding, mercurialisation, counter-irritation, the abandonment of pernicious habits, and the frequent employment of saline purgatives, might have availed in retarding if not cutting short, the progress of the degeneration. Instead of antiphlogistic treatment, it will generally now be necessary to have recourse to invigorating measures, such as are required in other diseases of a cachectic nature. The state of the digestive

organs usually demand great attention. Some days the bowels are much relaxed, on others confined, the motions deviating at the same time from their natural colour, so that it is incumbent to suit both diet and medicine to the peculiar circumstances of each case. Mercury is prejudicial, except as a corrective or purgative. Occasional doses of the hydrarg. c. creta may be given with advantage, in exciting the liver to a more healthy discharge of its functions, and improving the condition of the secreting surface of the intestines; but the continued use of mercury, so as to affect the mouth, must be carefully avoided. The like may be said of iodine, a medicine which is extensively employed in this disease, both as a sorbefacient and diuretic. It cannot be long persevered in without adding to existing irritation; though at first it may improve the appetite, it at length impairs it. Once jaundice and dropsy have appeared, the case is one of the most serious we are called upon to treat. Most of the great functions of life are now implicated, and though for a time we may stay the onward march of the disease, the unhappy patient sooner or later falls into a pitiable plight. Confinement to bed is now almost inevitable. Debility and emaciation rapidly increase; and unless the effusion be arrested, the abdomen perceptibly enlarges from week to week, the appetite fails, occasional fits of vomiting occur, and the patient sinks. These consequences can only be averted or mitigated by stimulating the skin and kidneys to a vigorous discharge of their functions, by the daily exhibition of diaphoretic and diuretic medicines, and by the occasional use, two or three times a week, of cathartics, or, where the patient bears them, drastic purgatives. The latter drain off immense quantities of fluid, stimulate the absorbents, and are particularly serviceable in relieving the portal system. The compound powder of jalap not only acts powerfully on the intestinal mucous surface, but also on the kidneys, increasing the flow of urine, and aiding the operation of the diuretic in use. The infusion of taraxacum with the acetate of potash and the compound spirit of juniper, or the sweet spirit of nitre, is as good a diuretic mixture as any that can be prescribed in this disease. The taraxacum acts beneficially in promoting the secretion and expulsion of bile from the debilitated and damaged organ, while at the same time it is a valuable diuretic. But of this class of medicine, and in this disease espe-

cially, there is no combination that proves more generally serviceable than a pill composed of two or three grains of blue pill, one of digitalis, and one of squills, given every night at bed-time—the above mixture or some similar diuretic mixture being administered during the day. This is now an old remedy in dropsical affections, and one of the few that maintains its character with the profession. In giving it, care should be taken to modify the amount of the ingredients so as to suit the stomach, and the mouth must be watched lest it become affected. So essential is it to the well-being and comfort of the patient to preserve the digestive organs intact, that no medicine, however valuable as a diaphoretic, diuretic, tonic, or aperient, should be administered if it impairs the appetite or appears to weaken the powers of the stomach. And thus the food should be of the plainest and wholesomest kind. Generally soups, however carefully prepared, disagree, except in small quantity. A little roast mutton or fowl sits easier on the stomach than most other kinds of animal food, and is relished where jellies, beef-tea, and turtle-soup are rejected. To obviate the evil consequences of the absence of a due proportion of healthy bile on digestion and assimilation, pure inspissated bile may be given two or three hours after each meal. The victims of this disease derive much comfort from tepid sponging, a flannel belt round the abdomen, and the use of flannel garments all over the body. In some cases not too far advanced, the vapour, if not the Turkish bath, will be serviceable. Along with the means already advised, some benefit may occasionally be obtained by the use of gently stimulating liniments to the hepatic region. Friction with the iodide of lead ointment, and the application of the compound tincture of iodine, have also been recommended. Opiates are often imperatively demanded, wakefulness being a common and distressing accompaniment. When every means fail in removing the abdominal effusion, it becomes a question whether recourse should not be had to tapping the abdomen. This question should be decided with strict regard to the amount of distress and vital power still remaining. Very generally the operation is delayed too long, and but hastens instead of retards the fatal issue.

Ascites Venosus.—This is perhaps the most convenient place to notice a form of abdominal dropsy which has been described by

Canstatt,* Schönlein,† and other German writers, and after them by Dr Day,‡ as almost exclusively a disease of advanced life, apparently of arthritic origin, and dependent on passive congestion of the portal system. It is the *Ascites venosus s. periodicus* of the first-named authors. The following is Dr Day's abridgment§ of Canstatt's account of the disease, which I prefer extracting, as I confess not to be familiar with the symptoms characterising it, or of its history as given by these pathologists :—

"The disease attacks almost exclusively" (Canstatt says solely), "persons between sixty and seventy years of age, who have suffered in earlier life from gout or hæmorrhoids, but who no longer have attacks of acute gout or hæmorrhoidal discharges to carry off the *materies morbi* from the system. The general reaction which was previously capable of throwing off this matter is, however, now wanting; and we can trace its feeble remains in slight febrile reaction, and in irritation, and perhaps a slight eruption of the skin.

"The stagnant and loaded state of the portal circulation, combined with the absence of sufficient reaction to eliminate the peccant matter, gives rise in course of time to dropsical effusions, which usually make their appearance in the generative organs, buttocks, and thighs, before we can observe any œdema of the ankles. The urine becomes scanty, depositing a copious sediment of pink urates. Abdominal swelling is now perceptible, but at first is not constant. After existing for a few days, there is perhaps an increased action of the kidneys and skin, causing it to lessen or disappear for a short time. It soon, however, becomes temporarily persistent; that is to say, it lasts for a space of time varying from six or eight days to three or four weeks, or longer, when it usually disappears simultaneously with the occurrence of an abundant perspiration and a copious sediment in the urine. The patient feels better—well, perhaps, for a time; but the attacks recur with almost unfailing certainty, and gradually become more

* Die Krankheiten des höheren Alters und irhe Heilung dargestellt, pp. 317, 318; and Brit. and For. Med. Rev. vol. xvii. p. 117.

† Allgemeine und specielle Pathologie und Therapie, vol. iii. p. 200.

‡ On the Diseases of Advanced Life, p. 221.

§ The original translation may be seen in Brit. and For. Med. Rev. vol. xvii. pp. 116, 117.

and more aggravated, till at length there is confirmed ascites. This condition of the portal system often gives rise also to structural changes, which take a share in the production of the dropsy.

"This form of dropsy is apparently nothing more than an anomalous form of gout, developed partly in consequence of senile debility" (*sic in origino*), "partly by external depressing influences, as deficient nourishment, exposure to cold and wet, excessive grief or anxiety, great loss of blood, &c.

"The disease usually runs a very chronic course; and although, by judicious treatment, we can often greatly prolong the intervals between the attacks, we can seldom hope to effect a perfect cure. The appearance of a hæmorrhoidal discharge is a highly favourable symptom, and the more perfect the crises by the skin and kidneys are, the longer succeeding intermission we may hope for."

In the treatment, Canstatt recommends leeches to the anus, hypochondrium, and hypogastrium, and cupping along the spine; also small doses of chelidonia and aloes, with the view of exciting a hæmorrhoidal flux. To remove the effusion, cathartics should be administered two or three times a-week in conjunction with diuretics and diaphoretics. In the arthritic form, he says, drastic purges are dangerous. The kidneys and skin should then be acted on rather than the bowels. Sulphureous preparations, Dover's powder, acetate of soda, aconitum, rhododendron, guaiacum, and tincture of nicotiana topically, are further recommended. Schönlein's plan of treatment scarcely if at all differs from that pursued by Canstatt. He recommends a pretty sharp purgative, consisting of aloes, colocynth, scammony, and jalap, every fourth or fifth day, where the patient has previously suffered from hæmorrhoids, and in the intervals the exhibition of the confection of senna, sulphur, bitartrate of potash, &c., to keep the bowels slightly relaxed. Care should be taken not to depress the system, and as soon as nature, thus assisted by art, has thrown off the morbid accumulation, we must attempt to give tone by the use of tonics and a more nourishing diet. With patients who have previously suffered from gout, he advises a different course, and, with Canstatt, recommends diuretics and diaphoretics, Dover's powder, guaiacum, acetate of ammonia, sweet spirit of nitre, sulphureous waters and sulphureous baths.

CHAPTER III.

DISEASES OF THE GALL-BLADDER—ATROPHY AND RUPTURE —INFLAMMATION—GALL-STONES.

THERE is scarcely a disease of the gall-bladder which is met with in early or middle life that is perhaps not still more frequent in advanced age. The various textures composing it are liable to inflammation, the lining membrane more especially, and the most marked varieties of atrophy, hypertrophy, dilatation, and contraction, are alterations of form and structure to which the aged are very peculiarly subject. Cancer of this organ is almost exclusively a disease of advanced life, and as a primary affection is perhaps entirely limited to that epoch. The gall-bladder is also in old age very frequently firmly tied down to the liver and adjacent structures by old adhesions, the result of repeated partial inflammation of its peritoneal covering, very probably, in several instances, propagated from within, and induced by the presence of biliary calculi—these concretions often co-existing. With the exception of acute inflammation and extensive dilatation, these affections occur without any recognisable signs or symptoms by which their existence may be determined during life.

Atrophy and Rupture.—Atrophy of the gall-bladder is sometimes carried to such a degree that its walls become diaphanous, and predispose it to rupture on any sudden, violent effort, two instances of which I have myself seen in bed-ridden old men; in one of whom the rupture happened in falling out of bed, and in the other it seemed to be occasioned by the mere straining exertion of raising himself in it. Death speedily ensued in both instances through the supervention of peritonitis. No ulceration existed. The tear in the coats of the atrophied gall-bladder was extensive. Rupture has also occurred under like circumstances, during the act of vomiting.

Inflammation.—Both croupy and catarrhal inflammation of this sac very often originate in the duodenum, from whence it is propagated along the common and cystic duct, or it is occasioned by the immediate irritation of calculi. The inflammation, when thus situated in the mucous coat, escapes detection; but when the other tunics participate, and the attack is at all severe, along with more or less febrile movement there is pain in the region of the gall-bladder aggravated by pressure, and usually jaundice, the existence or non-existence of which, as well as its degree, must however depend on whether there is any obstruction to the natural flow of the bile, and the extent of such obstruction if any. But the diagnostic symptom, when present, is the appearance of a pyriform tender tumour in the site of the gall-bladder, below the margin of the eleventh rib. On two or three occasions I had a man sixty years of age under my care in Chelsea Hospital, who was admitted into the infirmary with pain in this region of the liver, slight bilious tinge of the countenance, high-coloured urine, and vesicular bronchitis to which he was liable. On each of these occasions the distention of the gall-bladder was such, after a few days, that it projected beyond the edge of the liver, where it formed a well defined, pear-shaped, moveable tumour of the size of a hen's egg, which gradually disappeared after free purging by colocynth and calomel and repeated leeching. This man died in one of his attacks of bronchitis without the gall-bladder at the time being affected, when on *post-mortem* examination both it and the cystic duct were found much thickened—the latter so much so that it was partly strictured throughout its whole course. Andral, in his Clinique Medicale, a mine of valuable information on almost every subject of practical medicine, and Dr Budd, in his work on the diseases of the liver, have alluded to analogous cases.

Gall-Stones.—Biliary calculi are very common in the aged of both sexes. M. Fauconeau-Dufresne,* as quoted by M. Durand-Fardel, found in 90 cases, the maximum presented in males of between seventy and eighty years of age, and in females between the age of fifty and sixty. In corpulent old females their absence is the exception; yet it seems, according to M. Beau and M. Durand-

* Sur la Bile et ses Maladies. 1848.

Fardel, that hepatic colic is extremely rare at the Salpêtrière, chiefly occupied by old women. They however suffer from obscure pains in the region of the liver attributable to the presence of gall-stones, which may exist in any part of the biliary apparatus, in the ducts or wherever the bile has access. The gall-bladder itself is however their most frequent seat. Accumulating with the advance of years, they sometimes occupy it in great numbers. A wine-glassful has occasionally been found, and half that quantity is not uncommon. More than a thousand have been counted. The smaller the calculi the more numerous they generally are. Sometimes two or three of large size almost entirely fill the gall-bladder, leaving but little room for its natural contents. I have seen it occupied with one the size of a pigeon's egg; and in the case of a late Deputy Inspector-General of Hospitals, one of that bulk had worked its way through the ulcerated structures into the intestines, causing death. They generally consist of inspissated bile, biliary resin, bile pigment, fatty matter, and albumen. I lately met one in an old man which was composed of pure cholestrine. It was of the size and shape of a nutmeg, whitish-gray, glistening, crystallised, semi-opaque, and beautifully speckled black.

Causes.—The greater prevalence of biliary calculi in the aged has been ascribed to senile atony of the gall bladder, and consequent stagnation of bile, an analogy being supposed to exist in this respect between this receptacle and the urinary bladder; but this explanation is too mechanical to be satisfactory in either case. No doubt the formation of biliary and urinary calculi may be promoted by a stagnant condition of these respective secretions; but it is to derangement of the processes of vital chemistry we must look for the true cause, to a vitiated state of the bile itself, originating in imperfect assimilation, both primary and secondary, according to Prout, of the oleaginous principle; and a sluggish action of the loins, produced and aggravated by full diet, generous living, and indolence. The greater tendency of females to these concretions, this eminent philosopher and distinguished author observes, arises in part from their being exposed in a greater degree than males to some of the predisposing as well as exciting causes just mentioned.

Diagnosis—Symptoms of Hepatic Colic.—So long as they remain

quiescent in the gall-bladder, or do not obstruct or occasion inflammatory irritation in any of the gall-ducts, when resident there, their existence cannot be diagnosed. Immense numbers are frequently found in the gall-bladder without their having caused pain, or the least symptom of illness referable to the liver; and yet, on the other hand, derangement of the general health, persistent chronic jaundice, vomiting and emaciation, without pain of any kind, have all, it is said, disappeared on the discharge of biliary calculi.

There is no pain more severe than that produced by the passage of a gall-stone. Men of the strongest nerve and fortitude may then be seen writhing under the excruciating agony, seeking relief in every possible position, their countenances pale and death-like, the skin covered with a clammy moisture, and yet, with all this suffering, the pulse is but little if at all accelerated. In the moments of comparative ease, the patient sits half bent, with the body resting on the knees, and the hand applied to the stomach or hypochondrium. Once an attack of this kind has been seen, there is seldom any difficulty ever afterwards in diagnosing the affection; for though the pain has its centre at the epigastrium, from whence it radiates to the spine and right hypochondrium, and may be confounded with spasm of the stomach, the urine is usually of a deep-brown colour, from admixture of bile pigment, and either while the pain is present, or soon after it has subsided, and the calculus has found its way into the duodenum or returned to the gall-bladder, there is more or less jaundice. The absence of this symptom, however, is no proof that the attack is not dependent on gall-stones. The obstruction may be incomplete or of too short duration for its production; and if the impaction is in the cystic duct, the only effects it will have on the course of the bile will be the prevention of the passage of that which had previously accumulated in the gall-bladder, from which it, or the colouring principle, is but slowly absorbed into the circulation. The bile secreted in the liver will still find its way to the duodenum through the hepatic and common duct, and jaundice need not necessarily ensue. This is exemplified by a remarkable case recorded by Abercrombie, occurring in a lady aged sixty, in which a calculus impacted in the common duct was fatal in three days, with symptoms of inflammation and ileus, without jaundice.

The suddenness of the seizure, its extreme severity, the absence of febrile excitement, and the quickness of the pulse, serve to distinguish it from inflammation; the pain also is usually, though not always, relieved instead of being aggravated by pressure, as in the latter instance severe vomiting is a common symptom; and where, together with the high-coloured state of the urine, the pain extends to the lumbar region, there is often confessedly much difficulty in discriminating between an attack from gall-stones and one occasioned by the descent of a stone from the kidney. The absence of irritability of the bladder, and the possible passage of a gall-stone at some former period, or an attack of jaundice, will assist the diagnosis, which is usually soon established by carefully watching the symptoms. When jaundice appears, if it does appear, the true character of the attack becomes obvious.

Attacks of the kind described are less frequent in advanced than at other periods of life; and the partial exemption of aged subjects has been attributed to the same atony of the gall-bladder which is presumed to favour the formation of biliary calculi. There is every reason to believe that old people not unfrequently pass gall-stones without any pain whatever, with perhaps slight nausea only, and some of the temporary attacks of jaundice to which they are subject may be justly attributed to the same cause; but on several occasions cases have occurred to me in which the symptoms were of the most intense character in men very far advanced in life; and I remember one instance in particular, presenting in a distinguished novelist then eighty-four years of age, who had also repeatedly suffered forty years previously, where I hardly think it possible for more severe symptoms to have shown themselves, during the twelve or fourteen hours the calculus was passing.

Generally from six to eight or ten hours elapse before the calculus finds its way into the duodenum, and the fit goes off as suddenly as it appeared. Occasionally, however, several days pass before this happens; and in one instance occurring to Heberden, the pain continued nearly a month without any intervals of ease, except what were procured by opium. In this, as in similar cases, it seems more than probable, however, that inflammation of the obstructed duct had resulted. Some years ago I attended the mother of several children who had for three or four days laboured under acute paroxysmal pain in the region of the liver, with slight

jaundice, vomiting, and extreme itching at the lower dorsal vertebræ. Early on the morning of the fourth day, when called to her, she was supposed to be sinking. The pulse was now about 112, she was slightly feverish, and a spot a little to the right of the epigastrium was so exquisitely tender that a minute examination could not be instituted. Nothing up till then had relieved her. A number of leeches were now applied, and in a few hours all pain suddenly disappeared, as if the inflamed duct had ceased to grasp the calculus, and permitted it to pass through into the intestine. This—the most desirable termination—is not always brought about. Sometimes the calculus sticks immoveably in the duct, and causes death either by the intensity of the suffering, the severity of the inflammation, or by the stone ulcerating through into the cavity of the abdomen, and there producing inflammation of the peritoneum. Ulcerative destruction of the gall-bladder or biliary ducts from impacted calculi is not, however, necessarily fatal. Many cases are now on record of perfect recovery after the discharge of a gall-stone through the abdominal parietes, or after its escape by stool, where, from the symptoms and size of the concretion, there could be no doubt that the inflamed gall-bladder had given way, and the ulcerative process, limited by effusion of lymph, had implicated either the duodenum itself or the colon. The gall-ducts admit of considerable dilatation, and there is reason to believe—nay, it has been demonstrated by *post-mortem* examination—that very large calculi have passed through them without any breach of continuity; and the most remarkable cases of all kinds have generally occurred in persons above fifty years of age.

Treatment.—In all severe cases, pain, vomiting, and exhaustion are three prominent symptoms, demanding immediate and earnest attention. Opium in full doses is almost the only remedy that relieves the first two of these, and with their suspension the faintness accompanying the attack soon subsides also. When vomiting is excessive, from one to two grains of solid opium should be given, with double the quantity of calomel, the latter being exhibited to promote the action of the bowels and counteract the constipating effect of the former. The opium should be repeated, with or without the calomel, in a few hours, if necessary; and if the symptoms still require opium, the calomel ought to be omitted, as on no

account should the patient be put under the influence of mercury for a simple attack of gall-stones. The inhalation of chloroform, in sufficient amount to abate pain but not to destroy all sensation, will be found most valuable, and may obviate the necessity of repeating the opium or giving it in excessive doses. An objection to it, however, in these and like cases, is its tendency to cause vomiting when continued a length of time, or too frequently used.

Along with these remedies, brandy and other stimuli must be given whenever signs of exhaustion show themselves. Many aged subjects have fallen victims to an attack for want of sufficient support, and they always require a certain amount of stimulants when the paroxysm is protracted or severe. If the stomach is not very irritable, instead of solid opium an equivalent dose of the tincture may be exhibited with more immediate relief. To this half a drachm or a drachm of the compound sulphuric æther, and ten or fifteen minims of chloric æther, may be added with advantage. The warm bath, laxative enemata, and tobacco injections have been recommended, with the view of facilitating the passage of the calculus. The latter are most dangerous, and ought never to be given in aged subjects. Emetics have also been advised, but they are nearly as dangerous as tobacco. Instances are not wanting where they have ruptured the gall-bladder, which it should be remembered is unusually liable to atrophy, and consequent weakness, in the aged. Some relief may be procured by hot fomentations, simple or medicated; and, at all events, they are satisfactory to the patient, who anxiously seeks them. Ice has been employed as an anæsthetic with benefit, and has been strongly recommended by Bricheteau, who states that he has seen it speedily soothe the most excruciating pains under a variety of circumstances. Dr Prout has seen more immediate alleviation afforded by large draughts of hot water, containing the carbonate of soda in solution, in the proportion of from one to two drachms of the carbonate to a pint of water, than by any other means. The alkali, he observes, counteracts the distressing symptoms produced by the acidity of the stomach; while the hot water acts like a fomentation to the seat of pain. Laudanum may be advantageously conjoined with the alkaline solution after it has been once or twice rejected. In the event of inflammatory symptoms appearing, leeches should be freely applied to the hypochondrium.

I have already referred to a case in which local blood-letting was of signal service in expediting the passage of a calculus where there seemed little doubt that the obstructed duct was in a state of inflammation.

After the concretion has found its way into the bowel, the immediate necessity for further measures ceases; but as constipation usually lasts some days afterwards, and the jaundice rather increases, a few doses of an aperient may be advisable. For the satisfaction of the patient, it may be expedient to examine the evacuations carefully, to discover the source of all his suffering. As biliary calculi are often lighter than water, they may occasionally be seen floating on the surface; but to insure their detection, it has been recommended that the evacuations should be passed on a sieve and washed away. A person that has undergone the torture of passing a gall-stone will not be deterred from adopting any measure that may discover the enemy. He should, however, be told that with all care it may escape, for the simple reason that it may never have reached the bowel, but may have fallen back into the gall-bladder, or it may remain for a long time lodged in some portion of the intestinal canal should it have reached it.

With the view of dissolving biliary calculi, or preventing their formation, a great variety of drugs have been recommended. Chemists, finding them soluble in æthers and essential oils, have advised the internal exhibition of turpentine and sulphuric æther, a mixture which at one time was conceived to be a specific; but which, like almost every other remedy formerly employed with this object, has justly fallen into disuse. Among these, soap had a high reputation for many years, but its utter uselessness is now acknowledged. It would be idle to mention other substances whose fame has passed away. If the formation of biliary calculi is to be prevented, the most likely means are, regular exercise suited to the condition of the patient, attention to the bowels, the use of plain easily digested food, avoiding as much as possible fat or fat-making substances, and the occasional exhibition of some one of the neutral saline purgatives, so as to obviate the congestion and torpor of the liver which often exist in these cases.

CHAPTER IV.

ICTERUS SENILIS.

Causes and Pathology.—Jaundice, like asthma and dropsy, is but a symptom of disease either organic or functional. The immediate cause of its most characteristic and prominent feature is the non-elimination of the elements of bile from the blood, or the absorption of bile, or rather bile-pigment, into the circulation, and its deposition by secretion or exudation into the different tissues. The remote causes are numerous. Among the most common is obstruction in some portion of the biliary apparatus, whereby the bile secreted in the liver is prevented following its natural course, and is either checked in its progress towards the gall-bladder, or, reaching that receptacle, is detained there by some impediment vital or mechanical. Spasm of the efferent ducts, or the blocking up of them by gall-stones, is a frequent source of this variety of the disease; so commonly do gall-stones occasion it, that by some they have been recognised as the sole cause; but neither spasm nor impacted calculi will account for a class of cases in which there is evidently no impediment to the onward flow of the bile into the duodenum, the motions being loaded with it sometimes in excess; nor will it explain other examples wherein, on *post-mortem* examination, no bile is discovered, the gall-bladder and ducts being empty and colourless, or, if found, the most careful inspection fails to detect any obstruction in any portion of the biliary organs, from the liver to the termination of the common duct in the duodenum. There seems therefore reason to believe, as before mentioned—and modern pathologists adopt the hypothesis—that in certain cases jaundice arises from paralysis of the bile-producing function of the liver, and the consequent retention of a portion of the ultimate constituents of that fluid in the circulation. I say a *portion*, for chemists have hitherto failed to

detect *all* the elements of bile in the blood, even in the most marked cases of jaundice.

Thus the disease may either be occasioned by retention, or, secondly, by suppression of bile. A variety of circumstances may combine to create the first and less obscure form, other than those already adverted to, and among these are every description of organic lesion of the liver; tumours of various kinds, springing from the neighbouring structures, and acting mechanically on the efferent ducts; inflammation of these ducts themselves, or of the gastro-duodenal mucous membrane, which may not only act sympathetically but mechanically, in closing the mouth of the common duct; lastly, congestion of the liver, passive or active, with consequent biliary engorgement. Organic lesions of the liver give rise to the more persistent and chronic forms of the disease; biliary calculi, and inflammation or irritation of the ducts or gastro-duodenal surface, to temporary attacks. In the absence of these causes, it seems reasonable to suppose similar temporary seizures result from suspension or partial failure of the bile-producing function. Are not those sudden and transient attacks of jaundice accruing from hysteria, from fright, from anxiety or depression of mind, and which authors have been accustomed to ascribe to spasm of the cystic or common duct, more likely occasioned by suppression of the biliary secretion, and consequent retention of the principles of the bile in the blood, than from any like cause? The analogy existing between this form of jaundice—jaundice proceeding from arrest of secretion—and ischuria renalis, is very striking in more particulars than one; but the most remarkable similarity is in regard to danger and the effects upon the brain, both diseases being liable to end in fatal coma. Suppression of urine is very peculiarly a disease of advanced life, and it is not improbable that future observers will find that suspension of the biliary secretion is also more frequently a cause of fatal jaundice in the old, as well as of some of their anomalous cerebral affections, than is at present supposed. What has been described under the appellation "*senile jaundice*," is in fact jaundice from organic changes in some portion of the biliary apparatus, more generally of the liver itself, and its most common source may therefore be set down to cirrhosis, hydatids, cancer, and congestion, with nutmeg degeneration.

Symptoms.—The symptoms of this disease are so well-marked,

and vary so little from what is observed in youth and manhood, that it seems unnecessary to dwell on them. Itching of the skin, sometimes exceedingly annoying, especially in young or middle-aged females, seldom occurs in old people. Nor is the disease so often accompanied with that extreme degree of nausea and lassitude which is usual in earlier epochs. Nevertheless, jaundice in the aged is a much more important disease than in the young, more obscure in its origin, tedious in its progress, and uncertain in its issue.

Differential or Special Diagnosis.—Whether as regards the treatment or prognosis, the differential diagnosis is all-important. Each case is a study in itself; and partly from blunted sensibility and the frequent co-existence of old-standing structural changes or functional disorders, immediately or more or less remotely connected with the disease, the desirable information is not so easily attained as might be imagined. Dr Harley, in his recent work on Jaundice, states that jaundice from suppression and jaundice from obstruction may be distinguished from each other by analysing the urine, which he finds contains different morbid products, according to the particular form of the disease. In jaundice from suppression it contains only those biliary ingredients which exist preformed in the blood; in jaundice from obstruction, on the other hand, it contains, in addition to these, the materials generated in the liver itself, and which have been reabsorbed into the circulation from the distended gall-bladder and ducts. The mode of attack, its duration, the absence or presence of febrile symptoms, the appearance of the evacuations, whether they indicate partial or complete obstruction to the flow of bile into the intestines, or, on the contrary, an excess and super-secretion of that fluid—these are important elements in forming a just estimate of the nature of the case. When jaundice occurs immediately after a feast, and is accompanied with distress at the epigastrium, it proceeds from gastric irritation acting sympathetically on the liver in assisting or augmenting the biliary secretion. In the latter case, commonly known as a *bilious attack*, the symptoms are so characteristic that there can scarcely be any mistake regarding them. If, under circumstances of unusual indulgence, or of indulgence beyond the enfeebled powers of the stomach, there are superadded thirst, a desire for cold liquids, tenderness in the epigastrium, with or without febrile movement, the affection of the mucous membrane

has passed the limit of simple irritation, and the active congestion or inflammation having very probably been propagated to the lining of the duodenum, and from thence into the common duct, has ultimately, to a greater or less extent, involved the hepatic and smaller ducts, if it has not penetrated to the acini of the liver so as to obstruct the ducts and impair the function of the liver itself.

This form of jaundice, the result of inflammation of the bile-ducts, is far from rare in elderly subjects, and is not necessarily accompanied with pain even on pressure, which, considering the nature of the textures engaged, is somewhat remarkable; but it is usually attended with considerable general oppression and a sense of fulness in the region of the liver, with eructations and sickness at stomach. The attack is generally preceded for a day or two by gastric disorder, then by some heat of skin and acceleration of the pulse, during which the icteric phenomena appear. If all goes on well, the febrile symptoms subside in three or four days, and in a week afterwards the patient is convalescent; but, slight as the attack may appear to be, jaundice from inflammation of the gall-bladder or biliary ducts is full of peril in the aged, and cases have been recorded by M. Boudet and others,* in which it terminated fatally in thirty-six hours and less, by the severity of the accompanying symptoms or by the supervention of coma through the circulation of the biliary elements in the blood. In most fatal cases of inflammatory jaundice, calculi have been found in the gall-bladder, or impacted in some one of the biliary ducts.

Of jaundice produced by the transit of a gall-stone, I have already spoken in the preceding chapter. It seems only necessary here to remind the practitioner that calculi frequently appear to escape into the duodenum with little inconvenience in the aged, with perhaps temporary jaundice only. Suddenness of seizure, acute pain without febrile disturbance, subsiding rapidly or as suddenly as it appeared, and followed by the characteristic colour of the skin and urine, are the most certain signs of this form of the disease; but jaundice from this cause, of a more chronic nature, lasting many months, has been known wholly to disappear on the evacuation of gall-stones, although their existence could only be

* Bull. de la Soc. Anat., 12 année, pp. 136, 152–3; and Dict. de Med., en xxx. tomes, tome v. p. 234.

surmised. Jaundice occasioned by structural changes in the liver, or adjacent and connected viscera, is usually, for a longer or shorter period, preceded by general ill health and functional disturbance of the organ or organs affected. Jaundice is often in these cases a late symptom, frequently not appearing, if appearing at all, till the evidence of extensive mischief is complete. It is sometimes the forerunner of a rapid termination of the disease inducing it. Once it presents itself, it usually continues to the end, but now and then it disappears for a time, to return again at uncertain intervals. Some curious examples of this kind have fallen under my observation. What is known as *black* or *green* jaundice, is usually a consequence of organic disease, and the most marked cases occur in scirrhous or fungoid cancer of the liver. Hence the unfavourable prognosis, professional and non-professional, of this kind of jaundice.

Treatment.—The treatment of jaundice occasioned by gall-stones has already been disposed of in the preceding chapter. When the disease is occasioned by a surfeit, the efforts of nature may properly be aided by the administration of purgatives, due restriction in diet being at the same time enforced. Should febrile symptoms appear, whether accompanied or otherwise by pain in the region of the liver or at the scrobiculis cordis, indicative of inflammatory action in the gastro-duodenal mucous surface, or in the bile-ducts, leeches, as a general rule, should be applied, the number being regulated by the severity of the symptoms, the state of the pulse, and the general condition of the patient. Vomiting, if it occurs, must be allayed by the usual means. A full dose of calomel may be given, and purgative enemata employed, so long as the stomach continues irritable. Attacks of this kind are frequently tedious and troublesome; but where there is no vomiting, and the bowels can be acted on by calomel and colocynth, and the inflammatory symptoms do not run high, it is often surprising how soon they yield, even in very old people. Dr Harley specially recommends the employment of benzoic acid in jaundice from suppression, and inspissated bile in that arising from obstruction. The bile should be given at the end of stomachical digestion.

Respecting the treatment of jaundice dependent on organic disease of the liver, I have nothing to add to what was said in considering that subject. The jaundice is then a matter of secondary importance; it complicates the case, but other symptoms are generally more urgent, and demand all attention.

PART VII.

DISEASES OF THE URINARY ORGANS.

CHAPTER I.

DISEASES OF THE KIDNEYS—CONGESTION—ACUTE AND CHRONIC INFLAMMATION.

Among the many diseases and infirmities incident to old people, there are hardly any of greater frequency, certainly none that entail more misery, than those belonging to the urinary organs. Popularly, they are considered as almost inseparably associated with advanced life, and the diseases, whether functional or organic, more immediately connected with the bladder itself, have from a remote period been justly regarded by the profession as peculiarly affecting the aged of our sex. A false delicacy, not exclusively confined to either sex, conceals many of these diseases through a long life, until, forced by increasing infirmities, difficulties, and dangers, the much-needed assistance is at length sought stealthily by some, and anxiously by all; while, in innumerable instances of a trivial or temporary nature, the aid of the physician or surgeon is solicited, so that the records of hospitals or the returns of the Registrar-General afford no clue to the frequency of the minor and less important affections of the kidneys and bladder.

These returns, however, confirm professional belief, and show in a conclusive manner that beyond sixty years of age the fatal

forms, at least of urinary diseases, are chiefly limited to the male, and almost exclusively affect this sex in extreme old age.

This proclivity, it is well known, is mainly due to the more complicated organisation of the bladder and urethra in the male. The deep-seated, wide, short, straight urethra of the female, serving only as a conduit from the bladder, exempts it from many accidents to which the long, narrow, superficial, and tortuous male urethra is exposed from youth onwards. Stricture and other diseases of the female urethra are as rare as they are common in the opposite sex, and the numerous consequences arising therefrom, implicating the bladder, ureters, and kidneys, are so much the less frequent. Above all, however, the greater prevalence of urinary diseases in advanced age in the male is owing to morbid alterations in the prostate, affecting immediately the neck of the bladder, and promoting structural and functional diseases in these organs.

Congestion of the Kidneys.—One of the most common appearances met on *post-mortem* examination in old people dying of diseases remotely or wholly unconnected with the kidneys, is congestion affecting their structure solely, but more frequently conjointly with other abdominal organs. In the former instance, it now and then occurs as a consequence of impaired nervous power, and accompanies paralytic weakness of the lower limbs; in the latter case, it is due to the same causes promoting and perpetuating abdominal venous plethora, so common in the aged of both sexes, and is frequently the result of an obvious mechanical impediment in the circulation. It is very generally met with in cases of emphysema of the lungs, with dilatation of the right cavities of the heart, and greatly interferes with the action of diuretics—a most useful class of medicines in the bronchial attacks to which patients suffering under this combination of diseases are peculiarly exposed.

Diminished secretion of urine, occasional transient attacks of hæmaturia and albuminuria, are the usual consequences. When these symptoms are associated or alternate, they are liable to occasion suspicion of the existence of granular degeneration of the kidney, and a sense of weight or weariness in the loins tends to confirm this impression. The diagnosis can only be cleared up by watching the progress of the case, and by repeated examina-

tion, chemical and microscopical, of the urine. The absence of fibrinous casts of the tubuli, and of epithelial fragments and oil globules, is strongly presumptive of the non-existence of Bright's disease. The bladder is also less irritable than in albuminuria, the constitutional symptoms are wanting, and the albumen is generally in less quantity and less constantly present than in granular degeneration. It is extremely satisfactory to be able to assure one's self that the kidneys are not thus affected; and it is important to be aware of the fact, that albumen is frequently present in the urine of the old, without organic changes in the structure of these organs, as a consequence of mere congestion or functional derangement.

Acute Nephritis.—Acute idiopathic inflammation of the kidney, comparatively rare at all periods of life, is extremely unfrequent in old age. There has not been a single instance among the in-pensioners of Chelsea Hospital these twenty-three years. When acute inflammation of the kidney occurs in advanced life, it is almost, if not invariably, secondary, and produced by renal calculi or gout. Its occasional connection with gout is unquestionable. Instances of misplaced gout attacking the kidney are by no means unfrequent; and here, as under other circumstances, the relief obtained by the outward manifestation of that disease is remarkable. In the great majority of cases, however, in which gout attacks the kidney, the inflammation, if any, is of a chronic kind, and the symptoms are obscure,—the most characteristic being deep-seated pain or uneasiness in the loins, not aggravated by motion, though occasionally by pressure, and the deposit of lithates or of pure lithic acid in the urine. Acute attacks are attended with similar phenomena, occasionally with hæmaturia. The urine is high-coloured, scanty, sometimes, though rarely, wholly suppressed, intensely acid, and speedily throws down lithic acid crystals, which are occasionally passed with it, having originally been formed in the kidney or deposited in the bladder. There is at the same time sickness at the stomach, frequent desire to make water, pain or retraction of the testicle, and more or less febrile reaction. It is the association of these symptoms, however, with the gouty diathesis that establishes the diagnosis of arthritic nephritis, and not the symptoms themselves, which are common to all forms of inflammation of the kidney.

Pyelitis, in its acute and primary form, is also very much less frequent in the old. Almost uniformly it is of a chronic, less frequently of a subacute character, from the commencement. Acute attacks are generally sudden aggravations of the more obscure or chronic varieties of the disease. Like inflammation of the substance of the kidney, it is usually connected with gravel or stone, or is secondary to catarrhal inflammation of the bladder, constituting a most important complication of this common disease.

Chronic Nephritis.—It is not always easy to define the limits of acute and chronic inflammation, more especially when the organ affected is one of the parenchymatous class; but if absence of febrile reaction and acute pain be regarded as indicating a low or chronic form of this disease, when the kidney is attacked, then assuredly, in almost every instance met with in advanced life, inflammation, whether confined to the kidney itself, or pelvis of the kidney, or affecting both structures in common, presents a chronic character from its onset. Very generally it is occasioned by the lodgment of calculi, to which the kidney has in some degree become inured, or is caused by the irritation produced by the frequent formation and discharge of gravel. Like acute nephritis, the chronic form of the disease is thus usually secondary. It is a not unfrequent concomitant of chronic gout, a common result of pyelitis, originally propagated from the bladder, and the last link in the chain of morbid actions dependent on prostatic disease.

Gouty Inflammation—The Gouty Kidney.—Of the existence of chronic gouty inflammation of the kidney, there seems no reason to doubt, though it is somewhat questionable whether this organ is ever the seat of genuine rheumatic inflammation. The so-called gouty kidney is chiefly met with in advanced life, though not entirely confined to it, and the appearances presented are occasionally seen in persons who have never suffered from that disease. It is even doubtful whether they are invariably the result of inflammation; more probably they are due in many cases to an abnormal nutrition, originating in irritative action occasioned by and accompanying the elimination of the products of mal-assimilation circulating in the blood—the *materies morbi* of gout and other diseases. And it is still more than probable that the organic change effected in the kidney, by impairing and impeding its depu-

rating function, is a chief element in perpetuating gouty attacks, or in retarding and rendering recovery from them less perfect.

We can only suspect the alteration in question in the living—we cannot, that I am aware of, diagnose it. The urine is oftener loaded with the lithates than clear; deposits of crystallised pure lithic acid are common; sometimes small quantities of albumen are present. With the exception of these signs of renal derangement, the symptoms of kidney-disease are as frequently absent as present. In the dead-house the "gouty kidney" is recognised by the following characters:—The whole organ is much contracted, sometimes reduced to half its usual bulk, firmer than natural, and fissured or lobulated. The capsule is opaque, thickened, and here and there united by strong fibrinous adhesions to the kidney, the surface of which, when exposed, has a granular aspect. The cortical substance is atrophied, darker than usual, frequently of a bluish leaden tint, deepening towards the outer edge of the cortex. The tubuli are healthy. Occasionally the calices and pelvis are sprinkled with fine lithic acid sand.

Abscess of the Kidney.—When renal abscesses form in old people, they are generally occasioned by impacted calculi. I once met with a scrofulous abscess in the kidney of an old man, who was supposed to be labouring under the remains of Walcheren fever, many many years after the original attack. He had never complained of pain in his loins till a distinct fluctuation was discovered there, and there was little or no irritability of the bladder, nor any pus in the urine. On *post-mortem* examination, the left kidney was found almost entirely destroyed, and converted into an abscess which had found its way into the muscles of the back. There were no calculi either in the bladder or kidney, and the opposite organ was healthy. Scrofulous inflammation and abscesses are common enough in the young of both sexes; but examples of the kind referred to are extremely rare in the aged, and for the most most part latent.

The symptoms in chronic abscess in the kidney, when the disease appears in the aged, are similar to those occurring at other periods of life, and chiefly consist in dull aching pain in the region of the kidney, hectic fever, sickness at stomach, and purulent urine.

A more complete outline of the various diseases of the kidney

met with in advanced life would embrace renal calculi, cancerous degeneration, and serous cysts, all of which are common at this epoch. The latter are peculiarly frequent, but they possess little interest except to the morbid anatomist, being unaccompanied with obvious vital phenomena.

I now proceed to offer a few remarks on the treatment of the nephritic complaints I have more particularly adverted to.

Treatment.—In acute inflammation of the kidney occurring in robust, wiry, or plethoric habits, it will be necessary to employ local or even general blood-letting, whatever may be the age of the patient, or precise nature of the attack, while the antiphlogistic regimen must at the same time be enforced. The bowels should be speedily opened by mild laxatives, or, when there is much sickness of stomach, by a full dose of calomel conjoined with henbane and followed up by large emollient enemata. When the cause or causes continue to act, we cannot expect to cut short the inflammation by bleeding or starvation, nor ought we to be over-solicitous in the attempt. By a too rigid adherence to antiphlogistic measures we run the hazard of lowering the constitutional powers to an undue extent, under circumstances and at a period of life when they are not easily set up again; we thereby incur the risk of permanently injuring the system, without the prospect of successfully contending with the disease. If, therefore, from the previous history of the case, we have reason to suspect the presence of a calculus in the kidney, generally indicated by pre-existing pain in the loins of long standing; occasional retching; numbness, or a dull pain in the buttock of the side affected, extending down the fore part of the thigh; pain or retraction of the corresponding testicle; uneasiness at the neck of the bladder or irritability of this organ; hæmaturia, or, in the absence of this symptom, blood-globules; and amorphous or sandy deposits in the urine,—cupping, or a single small bleeding from the arm, may in the first instance be advisable; its repetition is rarely necessary or expedient. In a great number of cases, bleeding may entirely be superseded, and the best effects obtained by perfect rest, laxatives, the hip-bath, tepid fomentations, or hot bran poultices to the loins, abstinence, and the judicious exhibition of sedatives with colchicum. The treatment in not a few instances assimilates to that required in a "fit of gravel," modified

by circumstances. On account of continued suffering from acute pain, it may be incumbent to give opium in repeated doses, but, as a general rule, henbane or conium should be substituted; for opium suspends the action of the kidney, and nothing proves more injurious to a secerning organ in a state of irritation than the suspension of its function by therapeutic interference. The question of the after-treatment of these cases belongs to the subject of calculous affections. In the meanwhile it may be stated, that when the urine is acid, potash or soda-water may be given with advantage as the ordinary beverage; and when the stomach is irritable, it is peculiarly grateful iced, either alone or with milk; a few drops of diluted hydrocyanic acid may occasionally be added with benefit. A moderate exhibition of diluents and demulcents may prove advantageous; but it requires little sagacity to foresee that whatever unduly determines to the congested and irritated organ is as likely to have an opposite effect, and may suggest the necessity for caution before some abatement in the symptoms has been perceived.

When the attack occurs in gouty or rheumatic habits, in addition to the measures above recommended, colchicum should be freely administered, and means employed to invite the constitutional disease to the extremities. It is more especially in gouty or rheumatic cases that benefit is derived from alkaline drinks and warm baths.

In managing the chronic form or forms of nephritis, it will frequently be necessary to resort to a tonic and restorative plan of treatment. The general health is usually much impaired in these cases: the majority are associated with old calculous or vesical affections, and not a few, less complicated, are entirely beyond remedial means long before they come under observation. The condition of the urine as to alkalescence or acidity affords an important indication, which must not be overlooked. It may be laid down as a general principle, that where the urine is alkaline the diet should be generous, and a moderate allowance of wine permitted. Bitter infusions, with the mineral acids, may then be administered with benefit; as, on the other hand, alkalies will prove valuable where the urine is intensely acid, particularly in those cases in which the lithates are abundantly deposited. Various symptoms require special attention. Anodyne liniments,

a belladonna plaster, warm baths, and warm epithems occasionally relieve the gnawing uneasiness so often complained of in the region of the kidneys. The feeling of weakness across the loins, not less constant and troublesome, is sometimes greatly benefited by friction with a hair-glove, or the application of a Burgundy pitch plaster. Irritability of the bladder, generally a most annoying accompaniment, may be alleviated by small doses of laudanum, or the liquor opii sedativus, conjoined with the tonic and alkaline or acidulated mixture prescribed. In gouty subjects, recourse must be had to alterative doses of the wine or compound tincture of colchicum. Occasionally quiet nights may be procured by a pill composed of half a grain or a grain of the acetous extract of colchicum conjoined with two or three grains of henbane. The Bath water and other mineral springs, famous in arthritic complaints, are sometimes resorted to in this variety of the disease with great benefit. Should the urine be purulent, and we have reason to suspect the co-existence of pyelitis, small doses of turpentine, or balsam of copaiba, alone or conjoined, are highly serviceable in moderating the discharge. The tincture of the muriate of iron is here also a valuable medicine. In these cases the strength requires to be sustained by a rich nutritious diet and wine in moderation, the effects of which, however, should be watched. Warm clothing is of the last importance in all diseases of the kidneys.

CHAPTER II.

ALBUMINOUS URINE—ALBUMINURIA—MORBUS BRIGHTII—NEPHRIA, OR GRANULAR DEGENERATION OF THE KIDNEYS.

It has been clearly ascertained, and is now perhaps universally admitted, that albumen occasionally exists in the urine without any appreciable lesion of the kidneys; not merely temporarily, but with more or less persistence, and in greater or less quantity. The importance of this fact can only be fully estimated by those who may remember, that after the great discovery of Dr Bright of the frequent connection of dropsy and albuminous urine, with a peculiar degeneration of these organs—a discovery first announced in his "Reports of Medical Cases," published in 1827,—the presence of that proximate principle in the urine was too generally regarded, in this country at least, as indicating structural change in the kidneys. There is scarcely an acute or chronic disease, however, which may not at one period or other be temporarily accompanied with albuminous urine from mere functional disturbance or irritation of these emunctories; and I am greatly deceived if an albuminous state of the urine is not much more common in advanced life than at any other epoch, independently of organic lesion of the kidneys. It is not unfrequently observed in gouty and rheumatic habits, especially during exacerbations of these complaints, in persistent functional disorders of the stomach, and in depraved states of the blood, manifested by a scorbutic or hæmorrhagic tendency, common enough in declining life. Perhaps its most usual source, exclusive of organic disease, is active or passive congestion of the kidneys; and, as remarked in the preceding chapter, we thus meet with it in cardiac and pulmonary affections, occasioning an impediment to the free return of blood from the abdomen, and affecting these organs in common with

other viscera. The frequency of functional disorder of the kidneys from associated vesical and prostatic disease may also account for the temporary appearance of albumen in the urine in not a few instances in the aged; nor is it unlikely that these affections themselves may directly give rise to it, by allowing the escape of the serum of the blood from some portion of the irritated urinary tract. The diagnosis has already been considered at p. 570 in the chapter referred to.

Granular Degeneration.—The habitual presence of albumen in the urine is usually, however, the result of granular degeneration of these organs. This disease is, I am satisfied, far more frequent in persons advanced in life than is generally supposed.* Out of a large number of cases, Dr Christison appears, however, to have met with no more than one instance in an old man of seventy-nine; and in 74 fatal cases, Dr Bright found but 13 above fifty, and 4 only above sixty years of age. Hospitals, it should be observed, furnish comparatively few examples in the old, because it is then very often latent, or only to be discovered when sought for, and the majority of patients in these institutions are young, or about the meridian of life, labouring under unequivocal diseases, offering some prospect of recovery. It is in workhouses or asylums allotted to the aged that we chiefly meet with it in advanced life. And the returns of the Registrar-General show, that though the fatality of the disease is at its maximum between the thirty-fifth and forty-fifth year, and gradually diminishes after that, it is nevertheless far from an unfrequent cause of death in extreme old age. In 17 cases coming under my observation in Chelsea Hospital, in all of which the diagnosis was verified by *post-mortem* examination, the majority occurred in persons above sixty years of age. The oldest was eighty-five and the youngest fifty-three. Males appear to be above twice more obnoxious to it than the opposite sex. My own experience of it

* Dr Prout has observed, in speaking of it, "Degeneration of living structures appears to be connected with or is the result of gradual decay of the vital processes in general, and particularly of the processes of assimilation; it is therefore the natural and universal consequence of age. About the age of forty," he further remarks, "many causes often co-operate with the natural tendency to degeneration which then begins to take place, and thus to induce or accelerate a change in the condition of organs, and particularly of the kidneys." (*Stomach and Renal Diseases*, pp. 127, 131.)

is almost entirely confined to the former; and what I may have to say on its clinical history refers exclusively to the male, though the symptoms do not appear to be influenced by sex.

Causes.—With scarcely an exception, granular degeneration of the kidney in advanced and declining life is in the strictest sense a chronic disease. It is subject, however, to exacerbation. Originating in a morbid condition of the blood—with the precise nature of which we are still ignorant, and presumed by many pathologists to consist in a catarrhal inflammation of the lining of the uriniferous tubes in one form of the disease, and a perverted nutrition or low inflammatory irritation of the intertubular structure in another—exposure to cold, the abuse of spirituous liquors, and irregularities in diet are, singly or combined, its most obvious exciting causes. Gout predisposes to it; and in constitutions hereditarily liable to that disease, no cause seems so frequently to give rise to albuminuria as extreme cold. In an instance of this sort occurring in a well-known publisher, fifty-six years of age, whom I attended with Dr Bright and Dr Prout, and who was afterwards, on leaving London, under the care of Dr Christison and Dr Begbie of Edinburgh, the first symptoms of the renal affection were distinctly traced to this cause; pains in the lumbar region, with turbidity and diminished secretion of urine, having occurred immediately after dressing unusually early in a winter morning when the thermometer was below zero.

Symptoms.—Commencing insidiously, and creeping on slowly and silently, its origin is in most cases involved in obscurity; instances, like the above, are comparatively rare, in which it begins with well-marked renal symptoms, such as uneasiness in the loins, sickness at stomach, and irritability of the bladder, with or without scantiness or complete suppression of urine, hæmaturia, anasarca, and febrile disturbance. Very often the aged sufferer is first driven to seek relief for some of the secondary affections produced by the circulation of the urea in the blood, and deterioration of this fluid through the escape of its albuminous principle. Of these, the most common are, dyspepsia, vertigo, headache with confusion of thought, dimness of sight, and drowsiness; persistent chronic bronchitis, obstinate chronic rheumatism, irregularity of the bowels, with colicky pains and flatulent distension. If there is more frequent desire to make water than usual, this symptom

has so slowly appeared that the patient himself is inclined to make light of it; and the attendant, who is not on his guard, is apt to attribute it to an enlargement of the prostate. There is neither pain nor difficulty in the act, and the urine as it flows does not present any notable change to the patient, nor does it ordinarily deposit any sediment likely to attract an unpractised eye. Usually it is unnaturally frothy and pale, sometimes perfectly clear, but more generally cloudy and opalescent. It is occasionally alkaline, but oftener acid or neutral. If boiled, it first becomes cloudy and then throws down flakes of albumen, or it coagulates *en masse* according to the quantity of albumen present. The addition of a drop or two of nitric acid to each drachm of the urine thus treated not unfrequently discovers albumen which otherwise does not appear, and this addition is essential where the secretion is decidedly alkaline. A microscopic examination of the urine shows fibrinous casts of the tubuli empty, or containing granular matter, fragments of epithelium, mucus, and occasionally blood or oil-globules. These appearances, together with the albuminous state of the urine, are quite pathognomonic.

The quantity of urine varies, and in this respect there are two distinct classes of cases as in earlier life, one in which it is decidedly diminished, the other in which it is as decidedly increased, or is of the normal amount. In the former class, its specific gravity is high, attaining 1021, 1027, or even 1033, and it generally contains a large quantity of albumen; in the latter, its density is habitually much lower than natural, sometimes falling to 1002, but ranging between 1006 and 1010, while the amount of albumen is much less; it is even at times, in the progress of the disease, entirely absent. The cases in which the urine is diminished in quantity and of higher density than the healthy standard, are considerably less frequent than those of the opposite kind. According to Dr Johnson*—whose labours in this portion of practical and pathological medicine have greatly increased our intimate knowledge of the disease, and won for him the thanks of the profession—the first class of cases, those in which the urine is diminished and its density increased, are connected with what is generally known as the "large white kidney;" those of the

* On Diseases of the Kidney.

second class, in which its quantity is augmented and its specific gravity lower than natural, with the "small contracted kidney." Both these, our author maintains, constitute two distinct forms of the disease, which opinion the subsequent microscopic researches of Dr Dickinson* serve to confirm. The contracted kidney is the variety most usually met with in advanced life, and my own experience coincides with that of Dr Johnson, as to the fact that in many instances this form of the disease proceeds to its extreme limit of degeneration, and at length destroys its victim without giving rise to dropsy in any form or in any degree, while the large white kidney seldom proves fatal without the previous occurrence of dropsy, usually one of its most prominent and distressing symptoms. "In only 2, out of 26 fatal of this kind, had dropsy been wanting at some period of the patient's history; whereas, of 33 fatal cases of contracted kidney, there had been dropsy in only 14, and in most of these the dropsy was very slight and partial."†

This absence of dropsy is an extremely important feature, which cannot be too strongly impressed on the mind, as where the disease proceeds slowly and silently, with little or no irritability of the bladder, and with only one or more of the secondary affections already referred to, it is liable to be entirely overlooked. Frequent desire to make water is usually, however, one of the earliest and most constant symptoms, and generally increases as the disease advances. This symptom is especially troublesome during the night. There is seldom pain in the loins, but weakness and coldness are often complained of. In the most obscure cases, the patient is sensible of failing health and strength; he suffers from thirst, especially towards morning, when his tongue is generally dry and parched; the skin also is almost uniformly dry, rough, and imperspirable, and assumes a peculiar pallor, not the straw-colour accompanying malignant disease, but rather a dull pale hue so characteristic in the face that the experienced practitioner, with the slightest hint from other symptoms, at a glance suspects and fixes on the actual disease.

The immediate cause of death is for the most part inflammation of the pleura, pericardium or peritoneum, diarrhœa, convulsions, or

* Med. Chir. Trans. 1860. † Johnson in Med. Chir. Trans. 1860.

apoplexy. The great majority die in a comatose state. Bronchial, cardiac, and hepatic affections are very common complications; but as these are among the ordinary maladies of old age, it is often difficult to say whether they are effects or mere coincidences. That they are greatly influenced by the disease there is no doubt, and when present they accelerate the tendency to dropsy of the cavities as well as anasarca. Generally speaking, the supervention of cerebral symptoms portends a speedy termination; but I have known vertigo, loss of memory, formication, and threatenings of paralysis come and go for a period of two years in a man of eighty years of age, and epilepsy occur in another old man for several months before dissolution.

There is usually great difficulty in determining the duration, or average duration, of the disease. While in some instances a few months seem sufficient for its course, it has in others appeared to exist for eight or ten years, even at advanced periods of life. That it is invariably fatal, I will not take upon myself to assert. All I can say is, I have not seen recovery where the diagnosis was fairly established. It may be a consolation, however, to know that the victims of this disease among the aged generally suffer less than younger subjects.

Treatment.—Although we cannot expect to restore the diseased organs to their normal state, nor effectually check the progress of degeneration at an epoch when the vital energies are on the decline and degeneration is the rule, we may, by attending to the general health, and abjuring the causes which are known to accelerate the disease, avert intercurrent affections, prolong life, and render it more endurable. The diet should be highly nutritious and easy of digestion; wine and spirits should be prohibited in the early stages of the disease, and only cautiously permitted, if at all, at more advanced periods. In many cases, however, a moderate allowance of bitter ale, weak brandy and water or gin, when this spirit has been previously indulged in, is beneficial in maintaining the strength, improving digestion, and promoting the normal action of the kidneys. The preservation or restoration of a healthy condition of the skin is of primary importance. Vapour, Turkish, hot-air, or warm baths should be frequently employed, and flannel should invariably be worn. On the same principle, mild diaphoretics are beneficial, more particularly the citrate of ammonia and

the compound ipecacuanha powder. The patient should, as much as possible, live in a warm dry locality, sheltered from easterly winds, which parch the skin and determine to the diseased organs. His debilitated state and pallid aspect suggest the exhibition of tonics of the chalybeate sort. The best of these are the ammonio-citrate of iron, and the tincture of the sesqui-chloride, either of which may be given simply in spring water two or three times a day, or added to an infusion of quassia, the usual care being taken to prevent constipation. Local applications to the loins are nugatory, and except during exacerbations accompanied with lumbar pains and bloody urine depletion, ought never to be resorted to.

The coincident and secondary affections demand constant care. These must be treated on general principles, with due regard to the primary and fundamental disease. *Dyspepsia* may be alleviated by great attention to diet, regulating the action of the bowels, and the exhibition of bitters. *Chronic vomiting* sometimes gives way to a milk diet. When severe, it may occasionally be checked by prussic acid and the bicarbonate of soda, or by creosote conjoined with opium. *Attacks of diarrhœa* also require attention to diet, the occasional exhibition of a mild laxative, and, when persistent, the free use of vegetable astringents with opium. The sulphate of copper is occasionally of great service in these cases, when ordinary astringents fail. *Pleuritic,* or *pericarditic affections,* are extremely dangerous, and should be met by cupping or by leeches. As a general rule, mercury should be avoided in this disease; but where life is in jeopardy, as in these attacks, it would perhaps be unwise to withhold a remedy on which so much reliance is placed in arresting inflammation of serous membranes. Opium, in the form of Dover's powder, and counter-irritation by warm turpentine epithems to the chest, are of the greatest service, and ought on no account to be omitted in these cases. *In gouty habits,* it will be necessary to administer colchicum, the vinous tincture, compound tincture, or the acetous extract. *Acute cerebral symptoms,* indicating inflammation or irritation of the meninges, demand the local abstraction of blood by leeches to the temples, forehead, or back of the ears; also cold to the scalp. When *coma* supervenes, blisters should be applied to the back of the neck, and the action of the kidneys encouraged by turpentine epithems to the loins. *Epileptic and apoplectic attacks* must be treated according to

the state of the pulse and the special character of the symptoms. As a general rule, these cases do not demand nor bear active treatment, even in persons still possessing certain vigour of constitution. Very frequently, on *post-mortem* examination (in these cases), there is no evidence whatever of cerebral congestion, the symptoms proceeding entirely from the poisoned state of the blood. *Dropsy*, whether it affects the cavities or cellular tissue only—and it generally begins and often ends here—should be treated by saline diuretics, conjoined with the infusion of digitalis, and tincture of squills. When hydrogogues are admissible, they are sometimes of the greatest service. They are even more beneficial here than in cardiac dropsy. It is remarkable how well they are occasionally borne, even in reduced states of the system, if the patient is obliged to keep his bed during their operation. With this precaution, I have given the compound jalap powder in doses of two or three scruples, with a drachm of the tincture of jalap and a table-spoonful or two of gin twice a week, in persons above sixty years of age, with decided relief. Many stomachs will not endure either squills or digitalis, and in not a few instances any attempt to promote the action of the kidneys by diuretics proves more hurtful than beneficial, or entirely fails. We must then fall back upon diaphoretics, and particularly the vapour bath. Acupuncturation becomes necessary when the œdema of the limbs increases so as to threaten gangrene. Excepting under great and urgent distress, the trochar should never be employed for the removal of fluid from the cavities.

CHAPTER III.

THE URINE OF THE AGED—ITS QUANTITY AND PHYSICAL CHARACTERS—"ANURIA SEU URODIALYSIS SENUM."

The quantity, appearance, and density of the urine vary almost as much in old age and in the decline of life as at other epochs. It may be broadly affirmed that elderly people in a state of health secrete less, and that it is generally paler, less rich in its solid constituents, of lower specific gravity, and more abundantly mixed with mucus and fragments of epithelium from the bladder and other portions of the genito-urinary tract, than in youth or middle age. Lecanu, quoted by Dr Bird* and Simon† found that, while the quantity of urea excreted in twenty-four hours averaged, in adult men, 431·9 grains, and in adult women 294·2 grains, it only amounted, in very old men, of eighty-four to eighty-six years of age, to 124·8 grains, rather less than a third of the quantity excreted by children of eight years of age. The uric acid excreted in the same number of hours averaged, in adult men, 13·09 grains; in adult women, 10·01 grains, while in old men of the above age it was but 6·77 grains. The fixed salts occur in the following proportions:—In men, mean quantity 260 grains; in women, 222 grains; in children, of about eight years of age, 135 grains; in old men, 124 grains—that is to say, the amount is less than a half in aged men than in adult men. Instead of 40 or 45 ounces, as in men in the prime of life, the quantity of urine discharged in twenty-four hours sometimes does not exceed 15 or 20 on an average in old men enjoying good health.

A still more marked diminution in the amount of this secretion not unfrequently occurs without obvious injury. When, however, it is habitually much less, say 6 or 8 ounces, the whole system

* On Urinary Deposits.

† Animal Chemistry, by Sydenham Society, vol. ii. pp. 166, 167.

suffers, and a train of symptoms, evidently arising from the imperfection of the depurating function of the kidneys, and the retention of the urinary elements in the blood, are observed—headache, dyspepsia, languor, and muscular pains being the most prominent, and various cutaneous eruptions of a pruriginous character among the most troublesome.

ANURIA SEU URODIALYSIS SENUM.—An aggravated degree of this affection, occurring among persons in the decline of life, has been described and systematically considered by Autenrieth, Schönlein, Jahn, and Canstatt, and adverted to by Willis* and other writers, under the appellation, "Anuria seu Urodialysis Senum." "It consists in almost total suppression of urine, not occurring suddenly, but gradually, so that the system, in becoming charged with the urinary secretion, becomes also accustomed in some degree to its presence, and an imperfectly vicarious excretion takes place from different organs. The skin is dry, the urine small in quantity and scalding, and there is frequent micturition. The digestive organs are deranged, the tongue covered with a white fur, and the rest broken by the frequent calls to pass urine."† Canstatt says it assumes various forms, which he has described, according to its effects upon particular systems or organs. In common with some of his countrymen, he ascribes to it a long catalogue of diseases, such as "*rheumatismus urinosus*," affecting especially the course of the sciatic nerve; *prurigo, epinyctis senilis, pemphigus, herpes exedens;* cancer of the tongue, and chronic ulcers of the lower extremities, or "salt fluxes;" *lippitudo senilis;* persistent dyspnœa, short and anxious breathing, palpitation, "*asthma urinosum*," chronic pneumonia, and "*periodical phthisis;*" apoplexy, &c.

The treatment of this affection is but a modification of that pursued in the more serious form of the complaint about to be considered in the next chapter, adapted to its chronic character and the diminished urgency of the symptoms. It mainly consists in the exhibition of diluents, with saline diuretics, dry cupping, tepid baths, purgatives, and the occasional administration of colchicum. To that chapter the reader is referred for further details.

* On Urinary Diseases, p. 31.

† Brit. and For. Med. Rev. vol. xvii. p. 117.

CHAPTER IV.

ISCHURIA RENALIS.

The entire or almost total suppression of the function of the kidneys, commonly called Ischuria Renalis, but more appropriately designated by Willis, Anuria, is, strictly speaking, a disease of advanced life, though not solely confined to it. For the most part, it shows itself in persons above fifty years of age; and judging from the comparatively few recorded cases, but especially from the returns of the Registrar-General, the predisposition to it appears to increase with advancing years up to seventy or seventy-five. Males are its principal victims, almost in the proportion of three to one. The majority of cases occur in persons long subject to gout or calculous complaints. Many, however, of those attacked appear to have possessed sound and vigorous constitutions. All Sir Henry Halford's patients were fat, corpulent men, between fifty and sixty years of age, only one of whom had complained of previous nephritic ailment. Nevertheless the disease is not unfrequently connected with old-standing renal mischief, such as chronic, gouty, or calculous inflammation, or granular degeneration. In some few instances it seems to have proceeded from disease of the brain or spinal marrow. In a genuine form, it is altogether so uncommon that many practitioners in extensive practice have never fallen in with it. Mr Hay, of Leeds, who had long enjoyed that advantage, only met with a very few cases, all of which ended fatally. Sir Gilbert Blane saw but two cases in the course of a long life. Dr Abercrombie appears to have met with only a very few; and Sir Henry Halford mentions having seen but five in twenty-seven years. It is liable, however, to be overlooked, particularly in feeble, bed-ridden old subjects; though it must be admitted—and the returns of the Registrar-General establish the fact—that altogether it is, with very few exceptions, one of the

rarest diseases to which man is liable, while at the same time the results of clinical observation prove it to be one of the most fatal.

Genuine ischuria renalis is almost always of an acute character, seldom lasting more than ten or twelve days from its first appearance, rarely above four or five after the kidneys have entirely ceased to act. So long as the secretion is not completely suppressed, there is hope; immediately it wholly ceases the danger is great: in the former case, if the patient do not ultimately recover he may live for weeks, passing, it may be, no more than two or three ounces of urine in twenty-four hours; in the latter case, death is certain in a period, as before mentioned, varying from one or two to four or five days.*

Symptoms.—The pathognomonic indication of this disease—viz., the absence, or almost total absence, of urine, is generally accompanied from the beginning with sympathetic disturbance of the stomach, and not necessarily by pain in the region of the kidneys. If there is any pain at all, it is generally so undefined as hardly to attract attention; while there is usually, though by no means invariably, an entire absence of desire to pass water. The character, however, of the local symptoms is greatly influenced by antecedent and existing circumstances, by the presence or absence of inflammation, or the existence or non-existence of renal calculi. Generally speaking, the disease sets in insidiously with more or less general discomfort. The stomach and bowels are frequently blamed in the first instance, as they are early out of order, the patient complaining of nausea, eructations, loss of appetite, and constipation. These symptoms are sometimes of only a few days' duration, when the urine is perceived to be greatly deficient. On other occasions this symptom is observed from the very beginning, and not unfrequently exists for several days before the stomach becomes affected. To nausea succeeds vomiting, which is very often one of the most distressing accompaniments of the disease. As the urine diminishes in quantity, and the malady advances, the brain and nervous system suffer. The countenance assumes a dull unmeaning aspect: a universal torpor occurs, affecting alike the mental and corporeal faculties. The pulse is generally slower than natural. About this period, earlier or later, the perspiration ex-

* See a valuable memoir on this disease by Dr William Weir of Glasgow, in vol. ii. Northern Jour. of Med.

hales a strong urinous smell, though in most cases, as Dr Weir has remarked, the secretion from the surface being deficient as well as from the kidney, this symptom is by no means common. Sir Henry Halford noticed it, however, in three out of five cases. The first indication of stupor or drowsiness is almost a certain sign of approaching coma; but in some rare instances the patient shakes it off, and recovers through a renewal of the excretory function of the kidneys. If this fortunate event does not shortly happen, the torpor increases, and is soon accompanied with low muttering delirium, a brown tongue, a rapid pulse, and other typhoid symptoms, terminating in a few days in hiccough, convulsions and death. There is no symptom so full of evil omen as stupor or drowsiness, and once the brain becomes deeply engaged, recovery is all but hopeless.

Pathology.—The exact nature of this disease is still a vexed question. The majority of pathologists regard it as connected in some way with inflammation of the kidneys, and *post-mortem* examinations have occasionally shown this connection; but in numerous instances these organs have been found either perfectly healthy, or free from any trace of recent inflammatory action; and although a diminution of the normal quantity of the urine is a usual accompaniment of different varieties of nephritis, or of mere congestion, this symptom is by no means constant, nor is entire suppression necessarily present at any period, however severe the inflammation, or however great the congestion. In the usual acceptation of the term, the disease seems often to be purely functional or idiopathic; for though the kidneys generally exhibit signs of pre-existing lesions of different kinds, especially granular degeneration, gouty induration, serous cysts, and frequently contain calculi, all these occasionally exist where, instead of suppression, we have diuresis. It is a common sequence of cholera and choleraic diarrhœa, and is then almost always fatal in a few days.

Treatment.—Influenced by preconceived notions of the proximate cause of the disease, regarding it as of an inflammatory and spasmodic nature, most writers advise bleeding, both local and general, the warm bath, calomel purgatives, and other antiphlogistic measures. These means are obviously only permissible in certain states of the system; and in constitutions still possessing considerable vigour, they perhaps ought not to be omitted, as in

several instances they appear to have been followed by a complete restoration of the renal function, but they come recommended to us less by successful results than theoretical considerations, and care should be taken to employ them discreetly and cautiously. Local depletion or dry cupping should generally be preferred to blood-letting. Indeed, it will usually be found that all depressing measures are forbidden by broken-down habits or the absence of sthenic inflammatory symptoms. Under these circumstances, we must endeavour to promote the action of the kidneys by diluents, saline diuretics, digitalis, and squills, aided by the tepid or warm bath. As a general rule, opium should be avoided, even guarded by ipecacuanha, since one of its most obvious effects is to paralyse the function of the kidney and check the amount of urine.

Colchicum is indicated in many cases occurring in gouty subjects not only as a diuretic, but as promoting the elimination of urea and uric acid, and thereby arresting stupor and coma. Small doses of turpentine may be administered where the stomach will bear this medicine; turpentine epithems may, at the same time, be applied to the lumbar region. A large blister may be employed instead, and kept open by the ointment of Spanish flies, as still more effectual in stimulating the kidneys. Cantharides have been supposed to exert a peculiar influence over this disease. Dr Elliotson* refers to "two cases in other hands" which occurred nearly together in old people, in one of which Sir Astley Cooper was consulted, and both perfectly recovered after the internal exhibition of this medicine. Having no confidence in the tincture in so serious a disease, where no time should be lost, Dr Elliotson recommends the internal exhibition of the powder to the extent of a grain once or twice a day, or every eight hours, so long as it does not appear to do harm. Nothing short of a restoration of the secreting function of the kidneys is so effectual in warding off head symptoms as occasional purging. The belly should be kept rather open throughout, and the action of the skin promoted by saline diaphoretics. The vapour or hot-air bath, where the patient is too weak to undergo the fatigue of the warm bath, is a valuable auxiliary in determining to the surface, encouraging free perspiration, and relaxing spasm. Galvanism might in certain cases prove beneficial.

* Prin. and Pract. of Med., by Rogers, p. 975.

CHAPTER V.

DIURESIS, DIABETES INSIPIDUS.

Of a precisely opposite nature, and beyond all comparison more frequent than suppression of urine, is the diuresis incident to the aged of both sexes, though more especially affecting old men. Characterised by a superabundant secretion of urine, without any trace of sugar, it is generally called diabetes insipidus. Three conditions of the urine occur in these cases,—one in which it is simply diluted, containing more than its normal proportion of water and less than its normal quantity of solid matters; a second, in which the urea, in particular, is absolutely and relatively deficient; and a third, in which this constituent of the urine is in excess. Each of these states, which Dr Prout was the first accurately to describe and discriminate, Dr Willis, whose valuable work on urinary diseases has not, in my humble opinion, been sufficiently appreciated, has respectively and very appropriately named Hydruria, Anazoturia, and thirdly, Azoturia. To the first and second of these varieties, belong the vast majority of cases of diuresis in old people; the third form, comparatively unfrequent at all epochs, is rare in advanced life. I therefore limit myself to a brief consideration of the two first forms of diuresis—viz., hydruria and anazoturia.

It has already been shown that the urine of the aged is remarkably deficient in urea, lithic acid, and in the fixed salts. In other words, it is watery and deotised, and necessarily of lower specific gravity. It possesses the physical and chemical qualities of *hydruria* and *anazoturia* in a normal state, and only requires further dilution, with a preternatural activity of the kidneys, to constitute disease.

Symptoms.—The inordinate flow of sugarless urine, mainly

characterising these varieties of diuresis, is generally accompanied with excessive thirst and dryness of the skin, depression of spirits, peevishness, constipation, a gnawing sensation in the stomach, and a morbid craving for food, languor, general debility, and ultimately emaciation. The quantity of urine varies: in some instances it amounts to six, ten, or even to twenty pints in twenty-four hours. Dr Christison states,* that in a case under his care, from twenty-four to thirty pints of urine, of the density of 1·004, were passed daily for several weeks; and some years previously he was shown a case by the late Dr Duncan, junior, where, for a very long period, the daily discharge was forty pints, and the density generally 1·001. The ages of these patients are not given. In old persons, the quantity very seldom exceeds fifteen pints. In a case given by Dr Prout, of deficiency of urea accompanied with diuresis, in which, however, all the other urinary ingredients were at the same time deficient in quantity (hydruria of Willis), and which occurred in a female between sixty and seventy years of age, the quantity of urine rapidly increased, by indulging in the use of drinks, to sixteen or eighteen pints in the twenty-four hours. The urine was limpid and colourless; its specific gravity ranged from that of spring water to about 1·005. One of the best marked cases—which was of a precisely similar character to the one now alluded to—I ever met with, presented in an in-pensioner of Chelsea Hospital seventy-four years of age, who had undergone amputation of the leg several years before in consequence of an inveterate ulceration. The remaining leg was almost wholly occupied with a deep indolent foul ulcer, and his purpose on seeking admission was to have this limb also removed. We did not feel justified in complying with his repeated solicitations, more especially as he was the subject of a most immoderate diuresis, accompanied with great thirst, irritability of temper, and disorder of the stomach and bowels. This excessive flow of urine assumed a remittent form; at all times preternaturally abundant, it occasionally amounted to twelve or sixteen pints in the twenty-four hours,—the largest quantity being voided in the night-time. Generally the urine was paler than natural; at times it was perfectly limpid, and it varied in density from 1·003 to 1·008. It

* Library of Medicine, vol. iv. p. 243.

was faintly acid. A singularity in the case was a generally moist condition of the skin easily turned into profuse perspiration by exercise. Dr Prout has observed, that this peculiarity sometimes accompanies diabetes mellitus. The remittent or intermittent form the affection presented has been remarked in other cases. After twelve months the man left the establishment, apparently because we would not consent to the loss of his leg.

Pathology.—Speaking of the diuresis of old people, Dr Prout* says, "That in all the instances in which he had noticed the affection, it was associated with some apparent organic disease, either of the kidneys or neck of the bladder, or with both, to which, as causes, the diuresis appeared to have been chiefly referable. The urine," he adds, "is often alkalescent or slightly serous (albuminous?), and hence the affection is more frequently sympathetic than idiopathic. It is sometimes connected with, and dependent on, incipient granular degeneration of the kidney." Dr Willis regards it as intimately connected with the nervous temperament. Becquerel calls it "polydipsia," and, adopting a view of it previously suggested by Heberden, says the affection consists in a perversion of the sensation of thirst, the gratification of which necessarily augments the urine. This is however a very limited notion of the malady, if not erroneous.

Prognosis.—Dr Prout and Dr Willis agree in regarding the diuresis of men somewhat advanced beyond the middle period of life as a disease of great obstinacy, yielding with difficulty to medical treatment, and of serious import. "It may indeed," says Dr Willis,† "go on for years, in some cases, without apparently affecting the general health; but it always tells on the system in the long run; and the prognosis, though it may not be immediately, is never otherwise than remotely unfavourable." As one of the most frequent terminations of diuresis, with a deficiency of urea, seems, according to Dr Prout, to be disease of the kidneys and its consequences, this form generally proves fatal from dropsical effusion or coma.

Treatment.—The treatment of both forms of diuresis to which I have more particularly referred, is based on similar general principles, and may be conveniently embraced under one head.

* On Stomach and Renal Diseases, 5th ed. p. 107.

† On Urinary Diseases, p. 9.

Individual cases may require modification to suit particular circumstances, but the main indication to be fulfilled in both are the promotion of a healthy tone of the stomach, and of the functions of the skin; and lastly, the avoidance of all sources of irritation of the kidneys determining to and necessarily augmenting their action. The first of these is to be sought by a careful adjustment of the diet to the precise wants of the system, with especial reference to the irritated or morbid condition of the stomach usually present; for which purposes it ought to be light, easy of digestion, and moderate in quantity: the second may be effected by tepid baths and diaphoretics, particularly Dover's powder: the third object—viz., the avoidance of irritation of the kidneys—is of great importance, and demands total abstinence from spirituous and fermented liquors, with certain exceptions occurring in persons debilitated by far advanced years, privations, &c.; and also self-denial in gratifying the excessive thirst which usually attends the affection. Drinks slightly acidulated with the mineral acids allay this symptom better than plain water, and may occasionally be allowed with advantage. They are more particularly indicated in cases manifestly exhibiting deficiency of urea. Anodynes are sometimes of signal service in moderating the excessive secretion of urine. Opium, it is well-known, has a powerful influence in diminishing the action of the kidneys in health; and in the complaint under consideration, small doses of the tincture of opium or of the muriate of morphia have proved of great value, especially when the desire for liquids has at the same time been restrained, and their quantity limited to the utmost. Tonics of various kinds are also beneficial. Those derived from the vegetable kingdom ought generally to be preferred, but some of the preparations of iron appear to be peculiarly suitable. In the case I have alluded to, as occurring in an in-pensioner of Chelsea Hospital, the tincture of the sesquichloride of iron was given with unquestionable benefit. Gallic acid would seem to be an appropriate remedy, though the thirst it creates militates against its use in a disease where this symptom is generally so very prominent and troublesome as in not a few instances, according to Becquerel, to be in reality its immediate cause.

CHAPTER VI.

DIABETES MELLITUS SENILIS.

ALTHOUGH advanced life has pretty generally been recognised as predisposing to saccharine diabetes, the disease is nevertheless, in its marked forms, more peculiarly incident to middle age. Still there is reason to believe that it is very much more frequent in the aged than is generally supposed. In old people, it oftener assumes a periodic or intermittent form, and is generally less obtrusive than in the prime of life. Some of these patients, for a long time after the disease appears to be fully formed, retain flesh and strength, perspire freely on exertion, and preserve a ruddy, healthy look. The flow of urine, though generally excessive, is sometimes, perhaps in about half the cases, very little if at all beyond what is passed in health in the prime of life; and the other symptoms are occasionally masked by co-existing organic lesions of the urinary organs, with consequent derangement of the stomach and general health. When the bladder or prostate is diseased, and the diabetes is of an intermittent character or modified in intensity, it is indeed very liable to escape unnoticed.

The returns of the Registrar-General show a close approximation in the number of persons carried off by diabetes in each quinquennial period from forty to sixty-five years of age, especially in males, in whom it appears to be more prevalent in the proportion of three to one. The greatest mortality occurs in this sex between sixty and sixty-five years of age, and earlier in life between forty and forty-five. In the female, the mortality is at its height between fifty and fifty-five. Judged by the number of deaths it occasions, the disease seems to increase in frequency with advancing years up to sixty-five at least. Dr Bence Jones states, in a valuable paper on intermitting diabetes and on the diabetes

of old age, published in the thirty-sixth volume of the Medico-Chirurgical Transactions, that among notes of 29 cases he found 11 were above sixty years of age, and 6 of these were above seventy years old. Of these 11 cases, in 2 the disease was intermitting; in 6, the quantity of urine was scarcely if at all increased; in 1, the quantity was increased, but the disease had probably existed for sixteen years; in 1, albuminous urine was present, and the diabetic symptoms were very slight; in 1, above seventy-four years of age, the disease existed in its intensity; *in* 10 *of the* 11 *cases, it was so slight that the general symptoms hardly declared it;*—an important observation which should be borne in mind, as the frequent absence or diminished intensity of the constitutional symptoms is a chief cause of the disease being overlooked in persons of advanced age, and points out the necessity of a chemical examination of the urine with the usual tests whenever there is reason to suspect, from its augmented specific gravity, the existence of sugar.

The tendency to saccharine diabetes at advanced periods of life has of late years been still further elucidated by the important discovery that sugar is very often found in the urine of old people apparently in a state of perfect health, without either increase of urine or constitutional disturbance. Dr Prout had many years ago remarked that "a saccharine condition of the urine exists in gouty and dyspeptic individuals much oftener than is supposed, and hundreds who are quite unaware of it, pass many years of their lives with this symptom more or less constantly present." Dr Venables and other observers have also satisfied themselves of this; but it was reserved for M. Dechambre to make the remarkable statement that sugar occurs naturally and habitually in the urine of old people. In a paper on this subject read before the Academie de Médicine de Belgique in 1852, an analysis of which may be found in Ranking's Abstract of the Medical Sciences, vol. xvi., M. Dechambre mentions that in 19 out of 20 aged women (sixty to eighty-one), in the Salpêtrière, sugar was decidedly present in the urine. The tests used were the sulphate of copper and occasionally yeast. Dr Bence Jones, however, says, in the paper above quoted, he has failed to discover any proofs of sugar being habitually present in the urine of the aged, as alleged; and I may observe that similar experiments at Chelsea Hospital have also been

alike unsuccessful; nevertheless, that sugar is much more frequently present in the urine in advanced life than earlier, all inquiries fully corroborate, and the fact is not without value in estimating the duration and probable issue of the disease. Bruecke, writing six years after Dechambre, indeed asserts that sugar is constantly present in healthy urine.

Pathology and Prognosis.—I purposely abstain from entering on the question of the precise nature of this disease, which is still, and long is likely to remain, unsettled. The numerous theories hitherto propounded seem only to increase the difficulty. The stomach and liver have alike been considered the source of the sugar in the urine, the kidneys being regarded, and justly, as but the depurators by which it is eliminated from the blood. Recently clinical observation and experimental physiology would appear to countenance the supposition that the disease has its chief source in remote disease of the nervous system, sometimes in irritation of the pons Varolii, or lesion of the floor of the fourth ventricle. Dr Venables, after a quarter of a century's study of urinary diseases, has declared his conviction in the "London Medical Times and Gazette," May, 1863, that we really know little or nothing of the essential nature of the disease, and that he can come to no other conclusion than that, however the milder cases may be kept in check, the cure of confirmed diabetes, in the present state of our knowledge, is beyond the reach of our art. The prognosis is always unfavourable, but not so hopeless, since there are many cases on record, some by medical men who had themselves laboured under the disease, wherein recovery took place under apparently the most unpromising circumstances. After middle age the disease may be protracted many years, and in assuming an intermittent form life may be enjoyed without much suffering, debility and emaciation being then its principal attendants, while in the intervals a certain amount of strength and flesh are often regained. A physician in a fashionable watering-place south of the Thames was seriously indisposed when about fifty years of age, with all the symptoms of the disease. He was fast losing flesh, passed immense quantities of saccharine urine, suffered intensely from icy coldness of the lower limbs, with at times so much weakness that they with difficulty sustained him in getting into or out of his carriage. Things went on this way several months, when the diagnosis he had

arrived at was at once confirmed by two physicians of eminence in the metropolis. A man of resolution and firmness, he instantly abandoned a lucrative practice and retired to Ramsgate, where he commenced a series of warm salt-water baths, drove an hour or two daily in a shut carriage, attended rigidly to the state of his bowels, abjured all sugary or sugar-making substances with few almost unavoidable exceptions, took a glass or two of sherry daily, or a little brandy and water, lived principally on eggs, milk, cream, poultry and game, with brown bread or ship biscuit, and "plenty of fresh butter." He took no opiate, and with the exception of an occasional mild laxative, the only medicine he prescribed for himself were one or two draughts daily of the citrate of ammonia. Under this system the sugar rapidly disappeared, the urine greatly diminished in quantity, he gradually recovered flesh and strength, and in nine months he was able to resume work. A few months after that I saw him an active, robust, ruddy-complexioned gentleman, inclining to corpulency, without, as he affirmed, any but an occasional faint trace of sugar in the urine. Upwards of a year has elapsed. He considers himself free from the disease, but prudently abstains from sweet wines, fruit, starchy and saccharine matter, living plainly but well, and occasionally indulging in bitter ale, or even champagne, with impunity.

Treatment.—The treatment of saccharine diabetes in elderly people differs but little, if at all, from that pursued in younger subjects. As the disease is often greatly modified, of a decidedly chronic nature, and unaccompanied with the urgent and harassing symptoms generally characterising it in middle life, blood-letting, so strongly advocated by Dr Watt of Glasgow and others, is rarely advisable, and should only be resorted to locally, to relieve tenderness at the pit of the stomach, or pain in the region of the kidneys or liver. A less rigorous diet than is usually prescribed may generally be allowed aged patients. As far as practicable, it should, however, mainly consist in animal food of easy digestion, varied from day to day in kind as well as in the mode of preparing it, so as to render it agreeable and less likely to cloy the appetite. Fish, poultry, eggs, and game of all description are unobjectionable. Milk is supposed to be peculiarly suitable, particularly just as it is becoming sour. Milk, butter, and cream formed important articles of diet in the case of recovery above alluded to. Vege-

tables and amylaceous substances are only permissible now and then in limited quantities, when a strictly animal diet is becoming repulsive, or when it induces diarrhœa, feverishness, or increases thirst. The least objectionable kind of vegetable aliment is stale bran bread, also spinach and greens. Dr Camplin, within a few years past, cured himself and others by using a cake consisting of finely-powdered bran, butter, and eggs, and otherwise restricting his diet to fish, milk, fresh cruciferous vegetables, tea, and occasionally claret; while he abstained from wine and everything saccharine and amylaceous as much as possible. Stolen indulgences are dearly purchased. The intelligent patient soon sees the absolute necessity of seconding by every means in his power the views of the physician, and exercises self-denial in abstaining from pastry and confectionary of every kind, as well as from fruit and liquids. Pears, peaches, grapes, and apricots are peculiarly hurtful. Thus the rule of diet is great moderation and abstinence from all substances likely to occasion acidity in the stomach, or to produce sugar. Generally speaking, spirituous and fermented liquors should be prohibited; but, where these have been long indulged in, we are occasionally forced to sanction a limited use of them medicinally. Of these, small quantities of brandy in soda or potash water are grateful, and even useful in promoting digestion and correcting acidity. Excessive indulgence in liquids, even pure spring or distilled water, should however be forbidden, as nearly as hurtful as excess in food. A mixture of claret and Vichy water, Dr B. Jones says, allays the thirst in diabetes better than any liquid he has prescribed.

Next to diet, the promotion and preservation of a healthy condition of the skin is of the greatest importance. In the preceding chapter I have pointed out the means conducive to this end—indeed, the general principles of treatment in simple diuresis and diabetes are similar. Proper clothing is regarded by Bouchardet as not inferior in importance to diet in the management of this disease. Residence in a mild climate should be enjoined.

Of the numerous remedies recommended in diabetes, alkalies and opium are those in which the greatest number of medical men place the most confidence. The carbonate of ammonia, in doses of ten grains three times a day, alone or conjoined with an equal quantity of the carbonate of soda, may be given in numerous cases

with decided benefit. Dover's powder is the preparation of opium generally administered in the disease, and is highly serviceable in quieting nervous irritability and subduing many morbid sensations, while it relieves the kidneys partly by a specific action over their functions, and restricting the secretion of sugar, and partly by determining to the surface; it also exerts a beneficial influence over the liver in this disease, in diminishing the activity of its sugar-forming function. Yeast and rennet have of late years been strongly recommended—the first with the view of converting the sugar formed in the stomach into acetic acid, and the latter of turning it into lactic acid; but neither has come up to the expectations originally formed of it, in permanently diminishing the amount of sugar in the urine, and curing the disease. In many cases tonics and astringents of various kinds will be found useful. The ammonio-citrate of iron and the citrate of iron and quinine are appropriate. An expectant method of treatment is often more successful in mitigating the disease than following out any particular plan too rigidly. While adhering as much as possible to animal diet, abstaining from drink, and giving at the same time alkalies and opiates, new symptoms should be watched and attacked with appropriate remedies, to be omitted in turn as soon as they have accomplished their object.

CHAPTER VII.

AMORPHOUS AND CRYSTALLINE DEPOSITS IN THE URINE.

Amorphous Deposits.—The healthy urine of the aged is usually, as already remarked, clear, pale, opalescent, and of low specific gravity. In some individuals, however, it is habitually discoloured or cloudy, of rather high density, and throws down on cooling a fine impalpable powder or amorphous mass, generally speaking, composed of the lithate of ammonia, soda, or lime, or of all three, though more frequently of the first only. The colour communicated to the urine by these, commonly called lateritious deposits, varies. Generally, it is more or less brown or yellow, or of a brick-red tint. Sediments of this kind are common in bulky, aged persons who live luxuriously, and lead an indolent life from inclination or incapability of taking exercise. They are also frequent in dyspeptic cases, and are peculiarly common in gouty and rheumatic habits. Any disturbance of the primæ viæ promotes them. They show themselves in some individuals every time aperients are taken, while in others they are invariably produced by certain beverages or certain articles of diet. Females who have passed the critical period of life are subject to them, more especially such as are hereditarily predisposed to gout, and have it lurking in their constitution. Most persons in whom these sediments are habitual suffer a variety of anomalous symptoms on the urine becoming clear: they are never so well as when this secretion is turbid, and a return of its usual appearance is, in them, often one of the first signs of amendment.

Deposits of the lithate of ammonia, or soda of a brown or yellow tint, may generally be regarded as unimportant; it is not so, however, with the pinkish and purplish deposits occasionally met with. The former are often the forerunner of gravel of the lithic acid variety, or the actual substance itself thrown down in exceedingly minute crystals, scarcely feeling sandy to the finger,

but at once brought into view by a low magnifying power; the latter, the purpurate of ammonia of Prout, the murexide of Liebig, is very frequently connected with serious structural disease of the liver, latent or recognised. The best examples, in old people, occur in cancer of that organ, or in advanced cirrhosis. Transient pinkish deposits appear to be owing, in some instances, to abdominal congestion, with intestinal derangement interfering with primary assimilation. The more marked variety, the bright deep carmine or purple deposit, is also at times temporary, but much less frequently—it is its persistence that lends force to it as a sign of serious organic change in the liver. Deposits of this character appear also sometimes to precede organic uterine disease about the critical period of life. Prout has made a similar observation in regard to lithic acid formations occurring for the first time in middle-aged females.

Treatment.—The amorphous deposits alluded to seldom become special objects of treatment. Certain anxious old people, however, are apt to take alarm on any unusual appearance in the urine, associating it in their minds with some serious affection of the kidneys or bladder, which organs are generally known to be peculiarly liable to disease in advanced age. Attention to diet and the exhibition of an alkali, the bicarbonate of potash or soda, three or four hours after meals, will usually prevent these sediments from appearing, by correcting the slight acidity of the stomach on which they generally depend, and keeping them dissolved in the urine. Diluents also promote their solution. The prophylactic treatment consists in strict attention to diet, small meals, the avoidance of all substances inducing acidity, and last, though not least, bodily exercise, tepid baths, and the use of the flesh-brush, to promote the excretions of the skin. The means recommended in the treatment of gravel are equally adapted for the prevention of these sediments, and are laid down in the following section :—

Crystalline Deposits, i. e., *Sand or Gravel in the Urine.*—The occurrence of crystalline formations in the urine, familiarly called sand or gravel, and of which the amorphous deposits above referred to are occasionally but the early indications, is of great frequency at or beyond the middle period of life—between forty and fifty—and still more so between sixty and sixty-five or seventy. Common in childhood, the tendency decreases in youth and early

manhood; passing over this period, as it were, again to appear in advanced and declining age with renewed and still greater frequency.* Occasioned, among other causes, by those above noticed, as productive of urinary sediments in general, the circumstances usually regarded as promoting crystalline deposits are pre-eminently operative at this epoch. It is now that the active man of business ceases to toil, and thinks himself entitled to repose. The appetite, too, is indulged beyond the wants of the system or the powers of the stomach, and the gratification of the palate is sought very often at the expense of disturbing the function of that organ, more or less permanently and more or less severely. High feeding, added to sedentary habits and occasional fits of dyspepsia, well known and fully recognised sources of gout and gravel, are thus common incidents past the meridian of life, and one or other of these affections, or both, are usual results. In old age, if excesses at table are no longer committed, or the individual belongs to the poor classes of society, and has not the opportunity, the progressive impairment of the depurating functions of the skin, liver, kidneys, and glandulæ of the intestines, affecting alike the processes of assimilation and metamorphosis, conduce to the same end.

Special Diagnosis.—Of the most familiar kinds of gravel met with, viz., the *lithic* or *uric acid*, the *phosphatic*, and lastly, the *oxalic*, the two first are the most common, and on these only do I purpose to offer any observations—the oxalic form, viz., the oxalate of lime, being rare in advanced life, though recently ascertained to be more frequent than was heretofore supposed. The lithic and phosphatic species are vulgarly known as *red* and *white* gravel, the colour generally serving to distinguish the one variety from the other, but not invariably, as lithic acid gravel is sometimes free from colouring pigment, and the phosphatic at times possesses the appearance usually presented by the lithic form.

Urine depositing lithic acid gravel is usually of a golden or dark copper colour, concentrated and highly acid. The urine in which phosphatic gravel is precipitated is generally as copious as the other is deficient or scanty, greenish, or pale and turbid,

* For some pertinent observations on the influence of *age* and habits on the production of red gravel and urinary sediments, see Prout on "Stomach and Renal Diseases," pp. 20–29.

subacid, neutral, or decidedly alkaline, immediately it is voided, or very soon after; it speedily decomposes, giving out a strong fœtid, ammoniacal smell. "Uncombined lithic acid is known by being insoluble in muriatic acid, sparingly soluble in solutions of the alkaline carbonates, easily soluble in solution of potash, without evolving ammonia, and convertible by heat and nitric acid into a solution which leaves a red residuum when evaporated, and then forms a purple solution with ammonia."—(Christison.) Under the microscope, crystals of lithic acid present various forms, modified by the nature of the urine from which they are deposited, the fundamental being rhomboidal, and the most common lozenge-shaped laminæ or tables of various thickness. The phosphates are known by being soluble in acetic acid and in muriatic acid, but insoluble in aqua potassa. If ammonia is disengaged by the potash, the ammoniaco-magnesian phosphate may be presumed to be present. If the solution in acetic acid precipitates with oxalate of ammonia, phosphate of lime is present. If, after the addition of oxalate of ammonia, a precipitate be occasioned by ammonia, the ammoniaco-magnesian phosphate is present. If both re-agents occasion a precipitate, the sediment contains both phosphates. A mixture of the two is remarkably fusible before the blow-pipe flame."—(Christison.) The triple phosphate of ammonia and magnesia crystallises in beautiful rhombic vertical prisms, resembling, as the lamented Dr Golding Bird has observed, a sarcophagus-lid, but, like the crystals of uric acid, they assume various forms, depending on the exact state of the urine and the conditions under which they are precipitated.

The well-known phenomena of what is usually called a "fit of gravel," or the local and general symptoms accompanying the discharge of sand in the urine, are almost always sufficiently obvious to render a misapprehension of them unlikely. Suffice it to say, that the lithic acid variety, consisting either of pure lithic acid singly, or slightly combined with the lithate of ammonia, is not unfrequently met with in persons apparently in the enjoyment of good health. On the contrary, the phosphatic or white variety of gravel, usually composed of the phosphate of lime with ammoniaco-magnesian phosphate, is but too frequently the evidence of serious constitutional derangement—disease of the spinal marrow, or of important disease of the kidneys or bladder. It is

a common accompaniment of persistent catarrhal inflammation of these organs, sometimes apparently deriving its source from the alkaline mucus secreted, or the decomposition of the inflammatory products; though, in other cases, it is the primary disease, and the inflammation of the mucous membrane is the consequence of the irritative action of the alkaline state of the urine. While lithic gravel may generally be regarded as proceeding from or indicating a *sthenic* state of the system, this, the phosphatic variety, may be viewed as arising from and representing an *asthenic* condition. The first is frequently a consequence of over-feeding, of excessive indulgence in animal food, rich in the ultimate constituents of lithic acid; and its discharge from the body is often, in these circumstances, a beneficent provision of nature to avert still more important results arising through the retention of poisonous elements in the blood. The second is oftener observed in debilitated, worn-out old subjects, reduced in health by exhausting diseases, anxiety of mind, indifferent and insufficient food, bad clothing, &c., and is never conservative. Persons habitually accustomed to the discharge of the lithic form of gravel, as in instances of amorphous deposits of the lithates, not unfrequently enjoy better health while it is coming away; which is never the case, so far as I am aware, when the gravel is composed of the triple phosphate of ammonia and magnesia; and the sudden suppression of the excretion has been followed by apoplexy, angina pectoris, gout, and a host of minor affections, attributable to the morbid condition of the blood, hitherto purified, to a certain extent, by the elimination of uric acid. In a singular instance of this kind, presenting in a robust old man, eighty-four years of age, whom I frequently saw with several practitioners in Chelsea, the patient was in the habit of taking a rough drive "over the stones" whenever he suffered from a retention or suppression of the accustomed discharge, generally emitted in fine, beautiful, red, glistening crystals, familiarly called cayenne pepper gravel—finding, by this means, that large quantities immediately appeared in the urine, to the manifest relief of pains in his loins, sickness at stomach, and other symptoms. A general officer, who was under my care for many years, was equally successful on similar occasions by indulging in nitrogenised food to excess for a day or two, and taking a few glasses of champagne.

The occurrence of lithic acid, either secreted in the kidney and passed in the crystalline form, or only appearing as a sediment in the urine shortly after it has left the bladder, occasionally alternates with a paroxysm of gout, or is associated with it, and the connection between these two affections is perhaps universally admitted. In numerous cases, however, of this disease assuming a persistent form, gravel has never been seen in the urine. In twenty cases of chronic gout, some with chalk deposits, deposits of the lithate of soda, in the joints, occurring among the old in-pensioners of Chelsea Hospital, and taken indiscriminately, sand was said never to have been observed at any period of life. Indeed, cæteris paribus, when there is no concomitant disease of the urinary organs, persons labouring under chronic gout appear to be very generally exempt from gravel; and once chalk-stones have formed, they usually remain entirely free from the calculous affection. Earlier in life, when acute attacks of gout are common, and considerable intervals are observed between the paroxysms, deposits of lithic acid sand are frequent enough; but once the disease takes a firm hold of the constitution, the kidneys are materially relieved from their vicarious action, and lithic acid sand is rarely deposited, though in its stead the lithates frequently abound. The urine is in most of these cases, however, generally perfectly clear and limpid. The exemption of gouty subjects, with chalky deposits, from lithic acid gravel, quite accords with Sir Benjamin Brodie's experience. "A patient," he observes, "may have been in the habit of voiding lithic acid calculi; he becomes affected with gout, and the formation of the calculi ceases. In a few cases the two diseases go on together. But I do not remember an instance of a gouty patient who was troubled with the gouty concretions commonly called chalk-stones, being also troubled with lithic acid calculi."

Treatment.—Speaking generally, the two forms of gravel referred to, originating in or associated with directly opposite states of the system, and manifested by equally distinctive characters of the urine in regard to acidity or alkalescence, demand opposite modes of treatment. While a stinted diet, mainly composed of non-nitrogenised substances, abstinence from alcoholic beverages, and the exhibition of alkalies, such as the bicarbonates of potash and soda, or as recommended by Dr Prout and Sir Benjamin Brodie,

the bicarbonate and nitrate of potash conjointly, are usually indicated in lithic, or red gravel, a generous diet, with wine, porter, or ale, and tonics, including the mineral acids, particularly the muriatic or nitro-muriatic, are as generally required in phosphatic or white gravel. In both forms attention to the state of the digestive powers is of the first importance, and the treatment must frequently be modified, in respect to diet and remedies, to suit individual peculiarities. A diet composed chiefly or entirely of farinaceous food, so appropriate in the generality of cases of red gravel, cannot be persevered in in many instances occurring in aged subjects; and alkalies, in other examples, more frequent at this than at other periods of life, are more or less pernicious, if long employed, in weakening the tone of the stomach and leading to a translation from the lithic to the phosphatic diathesis. So, on the other hand, where a generous highly azotised diet is indicated, in most examples of white gravel, and acids are the most appropriate remedies, the stomach is frequently unable to support either, and the associated affections which often accompany this variety of the disease are sometimes aggravated by the means which, under ordinary circumstances, are usually beneficial in mitigating or removing it. The practitioner who is satisfied in treating cases of red or white gravel on purely physiological and chemical considerations often deceives himself, and at length discovers that he meets with more success in the prevention and mitigation of the evil by adopting measures for the improvement of the general health, and the alleviation or removal of any existing malady with which the more prominent affection may be allied; so that here, as in many other instances, physiological or so-called scientific medicine at times yields to practical experience with the most satisfactory results.

Having thus stated the general outline of treatment, I think it inexpedient to enter into further details. In both forms of gravel the skin is usually disposed to be dry and rough, though occasionally bedewed with a cold clammy moisture in the phosphatic diathesis. In either case its functions should be promoted by tepid, vapour, or hot-air baths, and the use of the flesh-brush. The Turkish bath is peculiarly serviceable in lithiasis. Sometimes gravel of this kind disappears for days from the urine after its employment. Flannel should be worn next the skin, and, when

convenient, the patient should reside in a mild climate, and in a situation sheltered from cold piercing winds. Diaphoretics are generally prescribed with the view of determining to the surface, and exciting the skin to a vigorous discharge of its offices. Dover's powder is chiefly resorted to for these purposes; but opium in any form tends to diminish the secretion of the kidneys, and consequently to weaken the solvent power of the urine. To counteract this effect, diluents should be freely indulged so long as it is considered advisable to exhibit an opiate. In phosphatic gravel, not unusually accompanied with an increase in the normal amount of the urine, the objections to the exhibition of opium in lithic acid gravel become arguments in its favour, more especially, as is often the case, where there is considerable irritability of the bladder. Indeed, in this form of the disease, when fully established, there is generally so much local and constitutional irritability that the administration of sedatives forms no unimportant part of the treatment.

CHAPTER VIII.

HÆMATURIA.

THE voiding of blood with the urine is an affection of great frequency beyond middle age. Like other diseases of the urinary organs, it more particularly occurs in the male sex. Nevertheless it is common enough in females, especially about the period of the cessation of the menses. The most profuse attacks I ever saw occurred in a lady at the critical period, who was also subject to bleedings at the nose. She afterwards died of sanguineous apoplexy, having exhibited a hæmorrhagic tendency for two or three years after the catamenia had disappeared. Hæmaturia, in aged persons of both sexes, is also said, on good authority, occasionally to replace the hæmorrhoidal flux, and to assume a periodic form.

Pathological Causes.—The bleeding may proceed from any portion of the urinary tract,—from the kidneys, ureters, bladder, or urethra; but, in advanced and declining life especially, the kidneys and bladder, including the prostate, are its chief localities. Excepting from ulceration, benign or malignant, urethral hæmorrhage in old age is extremely rare. Hæmorrhage from the ureters is generally the result of abrasion from the passage of calculi. Renal hæmorrhage also very frequently proceeds from the same cause, or from the displacement of a calculus previously impacted. In many instances, however, there is reason to believe that it is entirely the result of passive or active congestion of one or other of the kidneys or both, affecting them solely, but more commonly conjointly with congestion of the abdominal viscera generally. A man, upwards of seventy years of age, in Chelsea Hospital, used to suffer from excessive hæmaturia with every attack of Walcheren fever, which he had contracted more than forty years before. On one of these occasions we nearly lost him. We thus meet with it in

persons who have never passed gravel or shown any symptom of disease of the kidney up to the moment of attack, but in whom, from the absence of vesical symptoms, and prostatic disease, and the existence of pain or a sense of weight in the region of the kidney, during the time that blood has appeared in the urine, there can be no reasonable doubt that the hæmorrhage is renal.

Renal hæmaturia, it must be repeated, is however more generally connected with stone in the kidneys, or disease of that organ, than simply the result of congestion. Its diagnosis may be deduced from associated symptoms of renal irritation, as above hinted. Cullen, and after him Prout and others, mention as characteristic of renal hæmorrhage the diffusion of the blood throughout the urine voided, and the frequent occurrence of elongated masses of fibrin, resembling worms, which had been moulded in the ureters and passed with the urine.

By far the most usual seat, however, of hæmorrhage from the urinary organs is the bladder itself, or the enlarged prostate. A varicose condition of the veins of that sac is common in the aged of both sexes, and congestion of the whole of the pelvic viscera is almost a normal state, inasmuch as it is seldom wanting in old people. Hence proceed spontaneous hæmorrhages from some portion of the lining membrane of the bladder, and especially from the neighbourhood of the verumontanum and surface of the prostate, where small varices are very common. The evacuation is fostered, on the one hand, by debility of constitution and sedentary habits, and, on the other, by stimulating food and condiments, and by gouty irritation of the parts about the neck of the bladder.

Vesical hæmaturia is, however, in old persons, much more generally connected with chronic catarrh of the bladder, ulceration of the mucous membrane, calculus, cancer of some of its structures or fungus of its lining, exclusive of disease of the prostate, than the sole consequence of the congestion referred to. Of the differential diagnosis of these various affections I do not mean to speak. For the present purpose, it is sufficient to state, in general terms, that the seat of the disease may be presumed to be the bladder, and not the kidneys, when local symptoms of irritation of that organ are present, such as pain in the region of the pubis, frequent desire to make water, pains in the hips, &c., preceding or coetaneous with the attack, and independent of renal uneasiness and

sickness. Enlargement of the prostate and catarrh of the bladder are generally sufficiently indicated by the attending or antecedent symptoms to show the complicated or precise nature of the disease.

Hæmaturia from malignant disease of the bladder or kidney may often be diagnosed by its rebellious character and the peculiar cachectic hue of the countenance, or whole surface, accompanying cancerous growths generally, as well as by the absence of the usual symptoms of stone or gravel. It is at this period of life that these malignant diseases are most rife, and therefore most to be suspected. The microscope may also afford assistance by discovering the presence of cancerous cells in the matters voided. Dr Prout observes that the red particles of the blood in the earlier stages of fungoid disease often appear to the eye larger than natural; and by this peculiar appearance, the presence of malignant disease, he says, may be often suspected before the symptoms assume a decided character. In these, as well as in other cases of vesical hæmaturia, the first few ounces of urine voided are frequently perfectly natural, and it is only towards the end of the operation that blood and sanies are discharged. Coagula also sometimes block up the urethra, and assume various forms. In a case of scirrhus of the sub-mucous coat of the bladder, presenting in an aged in-pensioner of Chelsea Hospital, accompanied with abiding hæmaturia, the coagula thus discharged, while lying in the urine, could hardly be distinguished from gorged leeches.

Treatment.—Excepting in robust and plethoric habits, it seldom happens that even local blood-letting is required in hæmaturia occurring in advanced life; but when the hæmorrhage continues excessive, and is accompanied with uneasiness in the loins, and other symptoms indicating the kidney or kidneys to be affected, it may now and then be expedient to employ cupping, and have recourse to other antiphlogistic measures. If the attack is accompanied with lithic acid gravel, as it often is in gouty subjects, sedatives, with the bicarbonate of soda or potash, and small doses of the vinum colchici, should in the first instance be administered, unless in profuse attacks where styptics and astringents may be imperatively called for from the beginning. In all cases perfect rest should be enjoined. When the bleeding is copious, and occurs in broken-down constitutions, or in asthenic states of the system,

after opening the bowels freely with castor-oil and turpentine, some one of the several astringents usually exhibited in other forms of hæmorrhage should at once be given, and repeated at such intervals as the exigencies of the attack may demand. Of these, small doses of turpentine, the acetate of lead conjoined with opium, the tincture of the hydrochlorate of iron, and gallic acid, enjoy the greatest reputation. The latter is a most efficacious and safe remedy given in doses of 5 or 8 grains every four or six hours.

Hæmaturia derived from the bladder or prostate demands similar measures. When the hæmorrhage is abundant, and does not yield to ordinary means, the application of ice over the region of the bladder, the injection of cold water into the rectum, and of solutions of the sulphate of alum into the bladder sometimes prove beneficial.

I have not deemed it necessary to refer to hæmaturia dependent on scurvy, purpura, typhus, or other constitutional maladies. It must be clear to the practitioner that in passive hæmaturia, the result of senile decay and debility, a restorative plan of treatment, including a guarded allowance of stimuli, is required. The cure will be materially aided, in such cases, by residence in a dry and elevated situation, the use of cooling acid drinks and ferruginous mineral waters, and by warm clothing.

CHAPTER IX.

CHRONIC ENLARGEMENT OF THE PROSTATE GLAND.

THE prostate is extremely prone in advanced life to two distinct and opposite changes; one in which its structure acquires additional development, the other in which it wastes away. Both are chronic alterations well known, the first as hypertrophy, and the second as atrophy of the prostate. Forcing itself upon our attention by the sad train of symptoms accompanying it, chronic enlargement of this gland has long been recognized as a malady of great frequency and extreme importance. It is a rare occurrence, says Home, for a man to arrive at eighty years of age without suffering more or less under it; and so common has it been supposed, that one of the greatest of British surgeons, lately passed away, seemed to regard it as an invariable accompaniment of old age. It may safely be asserted, however, that nine-tenths of those who reach the age of seventy and upwards die without ever having exhibited any symptoms of prostatic disease. The accurate observations of Mr Henry Thomson, on the "Anatomy and Pathology of the Adult Prostate,"* in which he shows by statistical research the fallacy of the usually received opinion that enlargement of the prostate is one of the changes natural to old age, have been corroborated by the still more extended inquiries of Mr Cockburn Messer, in his "Report on the Condition of the Prostate in Old Age," founded on the dissection of 100 specimens in individuals over sixty years of age,† by which "it appears that 35 per cent. of all prostates after the age of sixty are abnormally large, 20 per cent. are abnormally small, and 45 per cent are within the limits of the normal weight." Mr Thomson found an appreciable enlarge-

* Med. Chir. Trans., 1857. † Ibid., 1860.

ment at the rate of 32 per cent. in persons above fifty years old, and notable enlargement, causing symptoms during life, at that of 12 per cent. Long before these results were obtained, I had satisfied myself that enlargement of the prostate was the exception. I had commenced a series of observations among the living and deceased in-pensioners of Chelsea Hospital, which were interrupted, the rough notes of which I still possess. I can confirm Mr Messer's statement that the proportion of men in advanced life suffering from the consequences of enlarged prostate is indeed small. In 1600 old men, with an average sick-list of 200, he found not more than 10 under treatment for this disease in Greenwich Hospital when his inquiries were instituted, and a half of these only occasionally. A similar immunity exists at Chelsea Hospital among a still older body of men than in the sister establishment.

Symptoms.—The earliest indications of enlargement of the prostate may briefly be stated to consist in more or less irritability of the bladder, and difficulty of voiding the urine. These symptoms are often accompanied with uneasiness or actual pain, generally of a pricking kind, extending along the penis, and affecting more especially the glans. The stream of urine is smaller than natural. Generally it is passed slowly, and though the desire is urgent, a longer interval than usual elapses before it makes its appearance, a greater effort being required to expel the urine. As the disease advances these symptoms increase. Fugacious pains are now complained of in the hips, limbs, and about the pubis, augmented by the jolting of a carriage or by riding. The urine, at first clear and natural, is sooner or later mixed with mucus, produced partly from the gland, partly from the lining of the bladder. A sense of weight or fulness is frequently experienced in the perineum, and the enlarged prostate pressing on the rectum occasions analogous symptoms in this bowel, with occasional tenesmus on going to stool. The impediment to micturition becomes more and more obvious, and yet, either from relaxation of the sphincter, or from the changes effected in the origin of the urethra by the enlarged prostate, there is often more or less incontinence of urine. The bladder gradually seems to lose power. The urine, instead of being forcibly propelled, drops perpendicularly from the penis, to the great annoyance of the patient; and a portion of it,

varying from 2 or 3 to 6 or 8 ounces, is now invariably left behind. The bladder, being never perfectly emptied, its irritability increases. This irritability is sooner or later further augmented by structural changes in its muscular and mucous coats, occasioned by the progressive enlargement of the prostate, the constant efforts at expulsion, and, above all, by the decomposition of the retained and stagnant urine, through which it acquires an ammoniacal and acrid character. The most important of these effects is chronic inflammation, with purulent discharge from the lining membrane.

Often long before the anatomical changes alluded to take place, and sometimes without obvious exciting cause, but more generally after exposure to cold, or excessive indulgence at table, or after venereal excitement, the usual dribbling is changed for complete retention of urine, generally requiring the use of the catheter. If the bladder is still in a tolerably healthy condition, and the enlargement of the prostate is not of such a form as to offer great obstacles to the flow of urine, this occurrence may be quite temporary. In a day or two, the power of evacuating the bladder to the usual extent returns, and sometimes the catheter is not required more than once; but in other cases weeks or months elapse before this fortunate result is obtained, and in not a few examples it is never attained at all, the patient being obliged for the remainder of his life to have recourse to the instrument. With the progress of the local changes referred to, the patient's general health declines. Cysts form in the thickened and fasciculated bladder, which secrete large quantities of pus. The surface of the projecting lobe or lobes ulcerates, and, together with the adjacent lining of the bladder, discharges bloody purulent matter, having an intolerably strong ammoniacal fœtid smell. The kidneys soon begin to sympathize with the condition of the bladder. At first their secretion is generally speaking augmented. Ultimately structural changes ensue, affecting, in the early stage, more especially the calices and pelvis, which are frequently inflamed and ulcerated long before the substance of the kidney itself is invaded. By degrees a slow inflammatory process attacks it; its tissue softens and breaks down, or becomes firm and contracted. In the former case, it is sometimes studded with small abscesses; in the latter, the organ is often reduced to half its size, creaks under the knife, and presents a leaden hue in its cortical portion. Granular degeneration occa-

sionally accompanies enlargement of the prostate, but not so frequently as these changes.

In advanced stages of the disease, when the mucous membrane becomes inflamed and ulcerated, the urine scanty, bloody, and purulent, and the kidneys affected, the countenance tells the sufferings of the patient, and assumes the sallow hue so strongly indicative of severe organic disease. At length, worn out by continued pain, sleepless nights, exhausting, purulent, bloody and offensive discharges, he gradually sinks, retaining his faculties to the last, or he dies more rapidly through the intervention of typhoid symptoms with coma. It is here worthy of remark that old persons, the victims of chronic enlargement of the prostate, and consequent disease of the bladder, frequently show typhoid symptoms, a dry brown tongue, with more or less general prostration and quickness of the pulse, on any aggravation of the local phenomena, through exposure or indulgence in fermented liquors. Notwithstanding the threatening aspect of these attacks, even very old people, with long-standing disease of the bladder and prostate, often recover, and again fall into their ordinary state of health. I have known a man of eighty experience many such attacks, passing over two or three years before he ultimately sank under them.

It is surprising to what extent the prostate is sometimes found enlarged in old age. Cases are recorded, or referred to, in which it had acquired the bulk of two fists, or even a child's head, and nearly filled the lower basin of the pelvis; but it very seldom exceeds the size of an orange, and is generally not larger than a hen's egg, however long the disease may have existed. The enlargement may take place in any direction, be partial, and affect one of the lateral lobes only; but more generally both are implicated, and the hypertrophy is uniform. The so-called third lobe in some instances acquires the size of a nutmeg or a pigeon's egg, without any obvious enlargement of the remaining portion of the gland, though enlargement of the third lobe without the remaining portion of the gland being somewhere implicated is very rare. A knowledge of these irregularities in the growth of the enlargement is of great importance, as they produce corresponding deviations in the prostatic portion of the urethra, and induce the surgeon, in cases of difficulty, "after trying gently one side, to go to the other with the point of the catheter, when he is often rewarded by the

instrument slipping into the acquired bend or obliquity of the passage, and thus finding its way into the bladder." (*Wilson.*)

Diagnosis.—The diagnosis of enlargement of the prostate is seldom attended with any difficulty. The affections with which it is most likely to be confounded are, stricture of the urethra, and stone in the bladder, or mere irritability of this organ. Stricture is not a disease of advanced life: it has generally appeared before the age of fifty, and if present, its existence has been long known to the patient. The gradually increasing difficulty in expelling the urine serves in a great measure to distinguish it from stone, and the stream of urine is much less liable to stop suddenly in enlargement of the prostate than in the former disease. Both incontinence of urine and irritability of the bladder very frequently proceed in old people from enlarged prostate. Whenever it becomes desirable to ascertain with certainty whether the symptoms are the result of this affection, the introduction of a catheter into the bladder, and examination by the finger in the rectum, seldom fail to procure the required information.

Causes.—As to the determining causes of chronic enlargement of the prostate, scarcely anything is known satisfactorily. The disease has been ascribed to pelvic congestion, sedentary habits, full living, gout, by some to excessive indulgence in the venereal passion, and by others to continence. Hard riding has been supposed to produce it; but among the old dragoons of Chelsea Hospital it is not more frequent than in men who have all along served in the infantry. The subjects of organic stricture of the urethra usually escape the disease. Civiale declares that in them the prostate is generally healthy; and Mercier thinks that so far from being a cause of hypertrophy, stricture of the urethra is calculated to produce atrophy of the gland. One thing is certain, that the two diseases, organic stricture of the urethra, and chronic enlargement of the prostate, seldom co-exist, and this is a fortunate circumstance, for there are few cases in surgery more perplexing. The instrument which will pass through a stricture is turned aside by an enlarged prostate, and the catheter best adapted for cases of chronic hypertrophy of this gland will not enter a stricture.

Chronic enlargement of the prostate may promote the formation of stone in the bladder, particularly phosphatic calculus; but it can hardly be regarded as a cause of that disease, though occasion-

ally accompanied by it. In 35 cases of enlarged prostate, phosphatic calculi were found in 2, the largest weighing 7 drachms 45 grains; in another 2, uric acid calculi of about 30 grains each were found (Messer). By preventing the stone from lying on the most sensitive part of the bladder, the enlargement of the prostate greatly modifies the symptoms of that disease, and we frequently find a calculus of considerable size where its existence had never once been suspected,—where, indeed, the symptoms of the prostatic affection itself never assumed a severe form, and chiefly manifest themselves by persistent incontinence of urine.

Treatment.—Some writers and practitioners recommend, as a means of retarding and removing the enlargement of the prostate, local blood-letting, cupping the loins, and the application of leeches to the perineum, or margin of the anus, or to the prostate itself; the introduction of sedative suppositories into the rectum, containing the iodides of lead or potassium; the use of similar remedies externally to the sacrum and perineum, setons in the same regions, pressure by means of an ivory pessary maintained in the rectum, &c. &c. but it must be admitted that these and like measures utterly fail in their intentions, and some of them at least are worse than useless. It may safely be affirmed that we possess no means of removing the slowly advancing chronic enlargement of the prostate almost peculiar to the old, notwithstanding the positive assertions of an author not many years deceased, and who had gained some notoriety in the treatment of urinary diseases, that by suppositories, consisting of the iodide of potassium and the extracts of conium and henbane, and the introduction to the prostate of bougies charged with that preparation of iodine, he had always obtained the most satisfactory results, and that he had had no case where these remedies had not succeeded! The most likely means of checking the progress of the enlargement are the avoidance of stimulating articles of diet; moderation in the use of alcoholic beverages, or, in certain cases, their entire abandonment, occasional tepid baths, regular walking exercise, implicit attention to the calls of nature, and an open state of the bowels. The mildest laxatives only are admissible.

As all sources of vesical irritation are to be shunned, it is almost unnecessary to observe that instruments ought never to be passed without sufficient reason, and not without the utmost gentleness.

Again and again officiousness and carelessness have been followed by urgent strangury, or complete retention, in cases where there was every reason to believe no such symptoms would have appeared, or were at least far off.—A retired medical officer of Chelsea Hospital, seventy years of age, had for twelve or eighteen months suffered from some difficulty in passing urine, and occasional enuresis. Having in early life laboured under organic stricture of the urethra, he attributed these symptoms to a return of this disease, and would not be persuaded of their more probable origin in enlargement of the prostate. By entreaties a neighbouring surgeon was induced to pass a bougie, which only encountered opposition at the prostate; it could not be pushed on to the bladder; no force was used. Slight bleeding attended the operation; complete retention of urine, with much suffering, followed it, and from that time forward it was necessary to employ a catheter daily. The prostatic symptoms had received an impetus, the bladder became diseased, and the patient died a miserable death two years afterwards.—A general officer, almost similarly circumstanced, had a catheter passed by a skilful and cautious surgeon, contrary to the advice of the ordinary attendant. Retention followed; and though the patient was enabled to void water occasionally without assistance in a fortnight, several months elapsed before the bladder regained its usual tone, or rather before the prostate recovered from the irritation which the contact of the instrument had occasioned.—Captain F., eighty years of age, partially paraplegic, was long known to labour under prostatic disease, with irritability of the bladder. The latter symptom increasing, it was suggested that it arose from partial retention, and he was recommended to have the urine drawn off occasionally. At first he refused, but many months afterwards he submitted to the proper treatment. Although the catheter seemed to glide into the bladder easily and without pain, still a little blood followed the operation, and next day complete retention ensued. Much difficulty now arose, and it was not without considerable but unavoidable injury to the prostate that the instrument succeeded in reaching the bladder. The difficulty increased, and the patient died in less than a fortnight, after much suffering.

It is by no means intended by these examples, which might be multiplied, to deter the practitioner from introducing an instru-

ment into the bladder, but only to caution him not to employ it heedlessly, and only when it is necessary to relieve complete or partial retention of urine, since, however carefully passed, the operation appears to be liable to cause mischief in certain states of the enlarged prostate, dependent on temporary attacks of congestion or inflammatory irritation.

If the disease of the prostate is not much advanced, the daily introduction of the catheter, in cases attended by partial retention of urine and consequent irritability of the bladder, is of the greatest benefit in averting inflammation of the mucous coat, and offers the only prospect of relieving the patient. Nay, under this treatment the progress of the enlargement is apparently suspended in some cases, and in many the bladder recovers its power, though the patient remains liable to a return of the symptom, or to complete retention of urine, which may occur at any moment when least expected. When this happens, surgical aid is almost always necessary, the catheter only procuring the much-required relief. Warm baths, antispasmodics, bleeding, and enemeta seldom succeed, and except where there are signs of local inflammation, it is mere waste of precious time, and a practice founded on an erroneous view of the nature of the retention, to persevere in these measures.

Why it is that in certain cases, with but moderate enlargement of the third lobe, or of one or both of the lateral lobes, retention is common, and the passage of the catheter extremely difficult, while in other cases of excessive enlargement, the patient experiences but little if any difficulty in making water, and the surgeon gets the instrument easily into the bladder, it is often impossible to explain. In one or two fatal cases, where these difficulties were great, I have been surprised to find the prostate but very slightly altered. In one case, in which it was nearly of the size of a cricket-ball, and the termination of the prostatic portion of the urethra was in a cul-de-sac, the patient was seldom the object of surgical treatment, and the catheter was generally passed easily. Sometimes the hypertrophy crops outwards when both lateral lobes are affected, leaving the prostatic portion of the urethra elongated, but perfectly free, the opposing surfaces of the lobes remaining smooth and flattened, and presenting no obstacle whatever to the escape of the urine or the passage of the catheter,

notwithstanding that the prostate thus affected occasionally acquires the bulk of a large shut hand. When the posterior portion of the gland, the third lobe, is enlarged, the tendency of the growth is almost always inwards; hence it is this form that causes the chief impediment both to the flow of water and the introduction of the instrument, and the portion of all others most liable to injury and perforation by the catheter.

Almost every surgeon has his predilection in the form, size, and material of the catheter he employs in enlargement of the prostate. It would be out of place to offer any observations on this subject, but it may be mentioned that at Chelsea Hospital the instrument generally in use is the ordinary No. 9 silver catheter, moderately curved. Sometimes the larger silver prostatic catheters, Nos. 10, 11, and 12, are employed, but the instrument first mentioned seldom fails. Gum catheters are not much used, in the first instance at least, where there is considerable impediment to the passage of the instrument. Several of these catheters, which belonged to the late Sir Everard Home, formerly surgeon to the Hospital, are still preserved, but they do not seem to possess any advantage over silver catheters, and are seldom had recourse to, except in protracted cases, where there is much irritability of the urethra. Whichever instrument is employed, it should, generally speaking, be a rule to retain it in the bladder for a day or two, or more, if much difficulty has been encountered in introducing it. Having plugged the orifice of the catheter, the urine should be drawn off two or three times a day, or oftener if necessary. A silver catheter may thus be left in the bladder for a week or even ten days with advantage, should no symptoms of irritation be produced by it; but as it is liable to become oxidised and incrusted, it ought generally to be withdrawn on the third or fourth day at farthest, and a gum catheter substituted if necessary. There is some risk of injury to the bladder by the presence of a metallic catheter. I have known it occasion ulceration of the mucous coat, where, owing to paralysis and loss of sensation, the ulceration never was suspected. There is also a risk of the instrument penetrating the walls of the bladder, by the patient striking its extremity forcibly while turning in his sleep or getting out of bed to the close-stool, and it is hardly safe to let it remain when he is delirious, or when he is not possessed of sufficient

intelligence to be warned of this danger. These accidents can scarcely occur, at all events the last, with a gum-elastic catheter. This instrument soon, however, corrodes, becomes rough, and occasions pain in withdrawing it through the enlarged gland, the sensitiveness of which, as well as the membranous portion of the urethra, is now usually greatly exalted.

A bladder which has been much and long distended by retention is frequently weeks or months in recovering its tone, though the enlargement of the prostate is moderate, and the passage of the catheter may have been easily effected. In more favourable cases, after the first or second catheterism, the urine is voided naturally. The patient then falls into his usual state, and the further introduction of the catheter becomes unnecessary, until there is a relapse. These relapses are frequent in the winter season, and a debauch is almost sure to be followed by retention.

In the advanced stages of prostatic enlargement, when the gland is ulcerated or the bladder diseased, the remedies required in chronic catarrh of this viscus must be prescribed. Opiates are of the greatest service in allaying the extreme irritability; and so long as they succeed when given by the rectum, this method of administering them should be adhered to. When opiate enemeta fail, or suppositories prepared with lard or spermaceti ointment, which is, in these cases, a more convenient and efficacious mode of using them than when prepared in the usual way with soap, chloroform may be occasionally inhaled with remarkable relief to the violent seizures of strangury, so common in ulceration of the prostate, extending to the verumontanum and neck of the bladder, but unfortunately its effects are temporary. It is needless to observe, the strength must be supported by wine and nourishing food. By the judicious use of opiates, attention to diet, the frequent employment of the tepid hip-bath, warmth and rest in the recumbent posture, it is remarkable how much good may be obtained in retarding the progress of the disease or ameliorating its severity.

CHAPTER X.

CATARRHUS VESICÆ.

Except as a purely accidental circumstance, acute inflammation of the mucous coat of the bladder is extremely rare in advanced life. We meet with aggravations of the chronic form, where, from a variety of causes, the symptoms assume an intensity that leave little doubt of the supervention of acute inflammation; but as a primary and independent disease, this form is as unfrequent as the other is common. The disease is almost limited to the male sex. Assuming "Cystitis" to represent it, we find that in England, in the seven years 1848–54, it caused the death of 624 males between fifty-five and seventy-five years old, and of only 127 females of the same age.*

Causes.—Chronic inflammation of the lining of the bladder is very generally, in elderly persons, connected with and dependent on chronic enlargement of the prostate, or stone in the bladder. In earlier life it is often produced by stricture of the urethra. Occasionally it appears to proceed from the poison of gout, and gouty catarrh of the bladder is, in its different shades, as frequent as gouty bronchitis, and still more common than gouty disease of the kidney or cæcum. In other cases, where none of these sources of the disease are discoverable, it may often be traced to persevering indulgence in alcoholic liquors—a most fruitful origin of renal and vesical disease, all beverages of this kind having a specific influence over the urinary organs.

Symptoms.—In its milder forms, the inflammation is accompanied with little or no pain in the region of the bladder. A sense of weight, tension, or dull-aching, sometimes affecting the

* Eighteenth Annual Report of the Registrar-General, pp. 154, 155.

perineum and rectum, is then complained of. Frequently, however, there are shooting pains from the pubis to the glans penis, with urgent desire to pass water. In the intervals of these paroxysms, the patient is plagued with what he regards as an over-flow of urine, but which is merely increased irritability of the bladder and impatience to its natural stimulant. The urine is generally cloudy or whey-coloured, and loaded with epithelium from the irritated membrane. On standing it becomes clear, and deposits more or less of what is often regarded as mucus, but which is very generally pus altered, so as to assume this appearance, by the alkaline condition of the urine, not unusually attending the disease from its very commencement. A microscopic examination will frequently discover, at an early period, pus and blood globules before the exact nature of the disease is evident; and as this state of things is always accompanied with albumen, heat and nitric acid cause cloudiness or coagulation of the urine. In aggravated, protracted, and fully established forms of the disease, immense quantities of thick, glairy, ropy, inodorous, or intolerably offensive purulent matter are voided, the whole contents of the bladder apparently, in some cases, consisting of pus, the expulsion of which is painful, difficult, and occasionally impracticable. Emaciation and general debility early appear. Walking becomes irksome, and the jolting of a carriage adds much to the sufferings of the patient. Thus by degrees, more or less rapidly, the symptoms are aggravated. The irritability of the bladder increases. A low typhoid condition ensues. The urine becomes scanty, dark, and, if possible, more offensive than before. If the kidneys are not already diseased, they ultimately become so. To the more characteristic phenomena of the complaint itself are now added pains in the loins, a continual feeling of weakness or weariness there, variously described, and sometimes a sense of numbness or coldness, extending to the hips and thighs. A total disinclination for food occurs, retching and vomiting succeed, and the patient sinks under marked typhoid symptoms, or slowly through sheer prostration and exhaustion.

Treatment.—Chronic catarrhal inflammation of the bladder is generally extremely obstinate, and in the majority of cases occurring in advanced or declining life, it resists the best directed efforts for its removal. This persistence is chiefly owing to the frequent co-

existence of sand or stone in the bladder, and chronic enlargement of the prostate, or to the disease appearing in broken-down constitutions, in sufferers from confirmed chronic gout, &c. Much benefit, however, may be obtained even in old standing cases, by appropriate means; and in recent, uncomplicated attacks, almost exclusively met with in the female, the disease is not less amenable to treatment than the other chronic catarrhal affections to which the aged are liable.

The same remedies that are useful in these catarrhal affections are also beneficial in this. Accordingly, the various vegetable and mineral astringents, as well as terebinthinates, are appropriate and more or less successful in moderating the excessive secretion of purulent matter, or in removing the inflammatory condition on which it depends. Some of these seem to possess a specific influence over the mucous membranes in general, such as the infusion of cascarilla, tormentilla root, serpentaria, uva ursi, diosma, and pareira brava. The three latter have long enjoyed a well-merited reputation, and the two last especially form the vehicle or principle of most of the mixtures exhibited in catarrh of the bladder. When the urine is alkaline, as it generally is in long standing cases, small doses of nitric or muriatic acid, or of nitro-muriatic acid, should be added to the infusion selected; and where at the same time there is much irritability of the bladder, the prescription will be improved by conjoining it with a sedative tincture, such as the tincture of henbane, conium, or opium. No medicine is so effectual in allaying the irritability of the bladder accompanying this disease as opium, and none of its preparations so effectual and unobjectionable as the liquor opii sedativus. Opium should, however, be reserved for severe attacks of pain or strangury, or so long as other sedatives succeed in relieving the irritability. The tincture of the sesqui-chloride of iron, and small repeated doses of the sulphate of zinc, are occasionally highly beneficial, and may now and then be substituted with advantage for the above-mentioned vegetable astringents. They are best suited to old-standing decidedly chronic attacks. I know of no medicine, however, so effectual in moderating, or in entirely checking, the inordinate secretion of pus and mucus as the balsam of copaiba. Where the stomach bears it well, and it otherwise agrees with the patient, a few days hardly elapse, in comparatively recent and

mild cases, before the most beneficial results are obtained from it. Even in instances complicated with and proceeding from calculus in the bladder, I have seen it so effectual in allaying the irritation and dispelling almost all trace of pus or mucus from the urine, that the patient has again and again fancied himself perfectly well. In a case of this kind occurring in an intelligent shopkeeper, about fifty years of age, who was under my care in 1854, so effectual was a mixture consisting of the balsam of copaiba, sweet spirit of nitre, and mucilage, to which was occasionally added turpentine, in removing the symptoms for a time, that the fears entertained of a stone in the bladder vanished, and a distinguished surgeon as well as myself were deceived, so great was the benefit derived. Mr Coulson, however, subsequently discovered a calculus, and had the merit of curing the patient by lithotrity. In another example connected with old standing fistulæ in perineo, equally satisfactory results followed the use of this medicine, though the patient was above seventy years of age. Creosote, in the form of a pill, with henbane and gum tragacanth, is also occasionally beneficial in restraining the inordinate purulent secretion, and increasing the tone of the bladder.

If there is anything that shows more clearly than another the intractable nature of this disease, it is the long list of remedies and means that authors have recommended in its treatment. In addition to the medicines above mentioned, various injections have been employed with more or less benefit. A weak solution of the nitrate of silver (one grain to a grain and a half in eight ounces of distilled water) is much resorted to in France, and by not a few practitioners in this country. Lallemand, and, after him, Dr O'Bryen,* strongly advise cauterisation of the bladder with the solid nitrate of silver itself. Sir Benjamin Brodie and others have seen excellent effects, in old standing cases with an ammoniacal state of the urine, from the injection, once or twice a day, of nitric acid, in the proportion of one or two drops to an ounce of pure water. Dilute solutions of the sulphate of zinc and of the sulphate of alum have also been thrown into the bladder with benefit. Devergie has succeeded in curing several cases occurring in old people by injections containing the balsam of copaiba. Washing

* Dublin Medical Journal, September 1838.

out the bladder with simple warm water, once or twice a day, is sometimes of service. Cold water has also thus been employed with advantage, and has the high authority of Civiale to recommend it. Setons and counter-irritants are now seldom if ever used. Leeches over the pubis may occasionally be employed, together with tepid fomentations or the hip-bath, where there is much pain or tenderness in the region of the bladder. As a general rule, however, depressing measures should be carefully avoided. On all occasions, when there is much difficulty in expelling the tenacious glairy or naturally-coloured purulent matter, the catheter should be employed. More harm accrues from the straining consequent to the impediment than arises from the passage of the instrument, and much suffering may be averted by its judicious and timely introduction.

The debility accompanying advanced stages of the disease warrants and demands tonic treatment consistent with the character of the local symptoms. The diet should be nutritious, easy of digestion, and varied. Wine should not be withheld. Nay, the disease itself sometimes appears to be much benefited by a moderate allowance of this beverage. Spirit drinkers crave for their accustomed stimulants, and occasionally really seem to improve under them. The bowels should be kept open by the very mildest laxatives.

In early stages of the disease, occurring in gouty and rheumatic habits, where the urine is still acid, neutral, or but faintly alkaline, much good may be derived from tepid baths, alterative doses of colchicum, and a course of the celebrated mineral waters of Vichy. In all forms and stages of the disease warm clothing is indispensable.

CHAPTER XI.

ENURESIS.

LIKE catarrh of the bladder, incontinence of urine occurring in elderly people is very generally a secondary affection. It is a frequent accompaniment of chronic enlargement of the prostate, more particularly of advanced degrees; it is common in stone of the bladder or gravel, and is more or less frequently present in almost every form of structural lesion, benign or malignant, affecting it, while it is also often met with in connection with disease of the uterine organs and rectum. Aged females, especially mothers with pendulous abdomens and corpulent tendency, or who in earlier life suffered much from hysteria, are peculiarly prone to it. Some are subject to the inconvenience only on sudden muscular exertion as on the impulse of coughing; others are permanently affected, and not a few aged males and females are thereby forced to relinquish society.

Paralytic weakness of the sphincter vesicæ, and not improbably senile atrophy of this muscle, with consequent diminished power, seem, in the absence of mechanical or irritating causes, the more immediate sources of the infirmity. No symptom more generally attends paraplegia from its commencement. Many aged persons, both male and female, suffer under it during sleep, when the whole mucular system is in a state of relaxation. Excessive indulgence in fermented liquors very often causes it, though in the interval there is no indication whatever of disease of the bladder or of the infirmity itself.

Treatment.—An affection originating in so many different sources is not likely to be benefited by any one particular mode of treatment. In selecting his remedies, the practitioner must mainly be influenced by the precise nature of the infirmity. To employ the same means in a case originating in enlargement of

the prostate as in one apparently unconnected with any recognisable disease, would be manifestly absurd. The first consideration should be a just appreciation of the case. Generally intimately associated with important changes, the affection is for the most part extremely difficult of cure. Excluding temporary attacks proceeding from over-stimulation of the urinary organs and others depending on functional irritability of the bladder, incontinence of urine in old persons is usually to be palliated only. Supposing it connected with enlargement of the prostate, the introduction of the catheter, *cæteris paribus*, once or twice a day, offers the best prospect of alleviating the symptom. Where stone exists, it is needless to say the removal of this the exciting cause, by lithotomy, or its destruction by lithotrity is essential,—nothing short of this will prevent the trickling of urine, though opiates may in some degree prove useful. In allied cases, resulting from excessive irritability of the bladder, functional or organic, no remedies are so much to be relied on. When we hear of cures effected by Dover's powder and other anodynes, it is in like instances. If uterine or rectal disease be present attention must be directed to it. The removal of hæmorrhoidal tumours by operation has been completely effectual in some old-standing cases. Where the affection appears to proceed from general debility and gradual decline of physical power, a tonic and invigorating plan of treatment is required. Chalybeates may then prove serviceable. Injections of cold water, perseveringly employed, the urine being first drawn off, are said to have been successful in numerous instances. The cold hip-bath, and dashing cold water on the region of the bladder and sacrum, have also been recommended as highly useful. Vesicatories and stimulating liniments are sometimes more or less serviceable. The internal exhibition of cantharides occasionally proves beneficial. Creosote is said to have been perfectly successful. Strychnine and electricity have been recommended by various writers. It would be waste of time to enumerate other remedies that have been vaunted. As in catarrh of the bladder, the list is sufficiently extensive to prove the obstinacy of the complaint. Generally speaking all fail, and the unhappy patient is obliged to submit to his condition, satisfied to wear one or other of the various contrivances which ingenious surgical-instrument makers have invented to ameliorate the inconvenience.

CHAPTER XII.

PARALYSIS OF THE BLADDER.

THE infirmity treated of in the preceding chapter is, in the great majority of uncomplicated cases, mainly, if not entirely, due to weakness, senile or paralytic, of the sphincter of the bladder, by which the antagonism naturally existing between it and the muscular coat is either so much impaired or so entirely destroyed, that the urine escapes from the bladder on any undue exertion, or steals away from it as it flows drop by drop from the ureters. The malady now to be considered is of a more important nature, consisting, as it essentially does, in paralysis of the muscular tunic, whereby the contractile power of the bladder being impaired or lost, according to the degree of the paralysis, retention of urine instead of stillicidium follows, assuming that the sphincter preserves its function. When both are affected,—when, together with paralysis of the muscular coat of the bladder, the sphincter is paralysed,—we have a combination of incontinence and retention, paradoxical as it may appear, a part only of the urine passing off by its own gravity, aided by the action of the abdominal muscles, after it has accumulated to a certain amount in the bladder.

Almost exclusively limited to the aged of both sexes, but chiefly affecting males, the predisposition to paralysis of the bladder appears to be owing to that general decline of muscular energy and blunting of nervous sensibility, justly regarded as physiological, witnesses of which we may often observe in other hollow viscera, *i. e.* the stomach and intestines, causing in the one instance slow indigestion, in the other case constipation. Sometimes for a considerable period before the characteristic symptom or symptoms appear, the patient himself has discovered a gradual diminution in the power of emptying the bladder; not only a longer time than heretofore being required before the will can be

obeyed, but the process itself being slower, and the urine dropping perpendicularly.

Paralytic weakness of the bladder in advanced life is usually, however, a secondary disease; it is very frequently associated with enlargement of the prostate or paraplegia, of which it is one of the most ordinary accompaniments. Apoplectic and epileptic old persons are peculiarly liable to it. Some experience temporary attacks from trivial causes, which at former epochs made no impression. Passing from a heated room to the open air is sometimes sufficient to produce the disorder; the slightest excess at table is also frequently followed by it. One of its most usual causes is inattention to the calls of nature, neglect of which aged persons should most particularly guard against, as in them the least over-distention of the bladder or forced retention is extremely apt to occasion total loss of power to expel the urine, and consequent retention.

As along with paralysis of the motor nerves of the urinary bladder, there is also generally more or less paralysis of the sensory nerves, retention proceeding from paralysis is peculiarly distinguished by absence of that extreme agonizing distress that accompanies retention of urine from mechanical causes, such as enlargement of the prostate, stricture of the urethra, or spasm of the neck of the bladder. Where the anæsthesia of the bladder is complete, there is indeed little or no suffering; and as after a time, when the bladder has become much distended, some urine usually trickles away involuntarily, an inattentive observer is very apt to mistake the case, and regard it simply as one of incontinence of urine,—a view which nurses and bystanders are almost sure to have previously formed, and with confidence stated. Almost every day patients labouring under paralytic retention may be seen lying surprisingly easy with enormously distended bladders, with or without dribbling of urine. The most remarkable cases of this kind occur in emaciated and enfeebled old men, especially in those who at the same time are affected with paralytic weakness of the abdominal muscles. On withdrawing the urine by means of the catheter, if any doubt of the nature of the retention previously existed, it is now cleared up by the evident want of power, the stream falling perpendicularly from the instrument, and pressure from the hand being required to empty the

bladder thoroughly. When the patient has been unrelieved the urine becomes ammoniacal, and inflammation of the lining membrane of the bladder ensues, with all its serious consequences. It is surprising, however, how long the retention may last and yet perfect recovery speedily take place, under proper treatment, where there is more or less involuntary escape of urine, the continuous oozing or sudden gushes, amounting to a teaspoonful or more at a time, preventing decomposition of the urine and over-distention of the bladder, and thus averting two of the most influential causes of inflammation of the organ.

Treatment.—The principal remedies already advised for incontinence of urine are those usually had recourse to in paralysis of the bladder. Among them the most valuable are stimulating embrocations to the sacral, lumbar, and hypogastric regions, occasional blisters, and the use of the cold hip-bath, or the injection of cold water into the rectum or bladder itself. Internally, the tincture or powder of cantharides has been found very useful, so have creosote and turpentine in small doses. Nux vomica, or its alkaloid, strychnia, has proved serviceable in a few instances. Galvanism or electricity deserves a trial. The ergot of rye has, in the hands of several practitioners, been very successful. In the London and Edinburgh Monthly Journal of Medical Science for January 1844, a case is recorded of an old man, seventy years of age, who had complete retention of urine from paralysis of the bladder, without any enlargement of the prostate, for nine days before he was relieved by the catheter, but who subsequently entirely recovered under the exhibition of this medicine, the dose being 10 grains of the powder in a glassful of warm water every morning, gradually increased to 15, 20, 25, and 30 grains, on reaching which dose there was so much irritability of the bladder, with increased secretion of urine, as to cause constant desire to have it drawn off. Dr Houston of Dublin * has also spoken equally favourably of the efficacy of the ergot in this disease.

Taking advantage of the sympathy that exists between the umbilicus and the bladder, which is very remarkable in some subjects, I have for many years been in the habit of recommending the stimulant lotions or embrocations employed to be

* Dublin Med. Press, Feb. 28, 1844.

applied to that region, instead of to the sacrum or hypogastrium, and with the best effects. I have known a single blister, not larger than a crown piece, placed over the navel, to be followed in a few hours by restoration of the lost power of the bladder, not once, but again and again, though complete retention, requiring the catheter, had existed for ten days or a fortnight. The acetum cantharides is a most convenient preparation, and should be brushed round and into the navel. Tickling this part by a feather, or more roughly irritating it with the nail, sometimes produces pricking pains in the hypogastrium, extending along the penis, with urgent desire to pass water, which can then occasionally be accomplished.

These measures are however secondary to, or at least must go hand-in-hand with, the judicious use of the catheter. It has been recommended to leave this instrument in the bladder, so as to keep it always empty. It is not desirable, however, to do so. After long-continued distension advantage may be gained by this practice, entire rest being thus given to the dilated and over-strained organ, to enable it to recover its lost tone; but as in other instances the total disuse of a paralysed muscle tends to perpetuate the evil, so in this discontinuing the functions of the bladder, converting it into a mere passage, not even a receptacle for the urine, rather promotes than removes the inertness of the organ. The urine should be allowed to accumulate in the bladder to a certain amount, and drawn off morning and evening, or oftener, according to the quantity secreted, the will at the same time being exerted, and contraction of the bladder excited by friction of the abdomen. While the urine is thus being drawn off from day to day, the means above recommended should be steadily persevered in. Romberg says the invigorating warm-mineral baths of Gastein and Wildbad deserve a trial.

CHAPTER XIII.

SPASM OF THE BLADDER.

Spasm of the bladder, occurring in old people, and unconnected with stone, structural disease in that organ, kidneys, uterus, or rectum, is very often produced by suppressed or retrocedent gout. Like other urinal affections, it is chiefly met with in male subjects. Rheumatism also predisposes to it, and the combination of these two diseases, commonly called rheumatic gout, not unfrequently exists in an acute or modified form at the moment of attack. It is generally after several paroxysms of gout have occurred that the first seizure is observed; but in two or three instances presenting beyond the middle period of life, that have fallen under my care, the bladder was primarily attacked. In one of these cases, several months elapsed before gout made its appearance, and then it was the knee, instead of the toe as usual, that was affected. It was not until this outward manifestation that the exact nature of the urinary symptoms was ascertained or suspected. A subsequent appearance of these symptoms, accompanied with dyspepsia, palpitation of the heart, and gout in the foot, confirmed the diagnosis.

Symptoms.—Spasm of the bladder, from whatever cause originating, is in aggravated cases productive of intense suffering. The neck of the bladder is its most common seat, though the whole organ is generally affected in violent attacks. The most prominent symptoms are sudden detention of urine, severe constrictive pain in the region of the bladder, constant desire to pass water, and great agony in the attempt. Up to the present moment there is usually not much difficulty in introducing a catheter; but by degrees the neck of the bladder becomes more and more sensitive, and the muscles surrounding the membranous portion of the urethra engaged in the spasm, so that it is now firmly grasped

both in its introduction and withdrawal. The retention of urine is complete, but is now and then partially relieved by frequent violent convulsive efforts, so severe and agonising at times as to occasion retching, cold sweats, faintness, and not a little anxiety. Should these symptoms continue, the kidneys become paralysed, and the patient dies from suppression of urine.

As the attack is usually sudden, so it as generally suddenly disappears. Frequently one such attack, and no more, is experienced; but on the other hand, a person who has once suffered from the affection is very liable to a return of it, and many, even temporary, seizures lay the foundation for structural disease of the bladder.

Treatment.—The treatment of this affection must harmonise with the causes which seem to produce it, the removal of which must early engage our attention ; but whatever may be the remote origin of the complaint, the symptoms attending it are generally so violent that immediate relief is imperative. Knowing that the proximate cause of distress is cramp, or spasm of the bladder, appropriate remedies at once suggest themselves, and foremost among these is opium. According to the severity and duration of the attack, from 15 to 20 or 25 minims of laudanum, or the equivalent of solid opium or Dover's powder, should be given. Tepid fomentations should at the same time be applied to the hypogastrium, or the hip-bath may be substituted with advantage. The opiate may be combined with camphor and other antispasmodics ; but our chief reliance is in the opiate itself. When no perceptible benefit follows the exhibition of a full dose by the mouth, the best effects may occasionally be obtained by an opium suppository prepared with the unguentum cetaceum. Specifically aiding in relaxing spasm, the unguentum belladonnæ may at the same time be rubbed into the perineum and around the anus, or introduced into the urethra by means of a bougie, and allowed to dissolve there. Should the case present itself in a robust individual given to the luxuries of the table, or should there be any febrile excitement indicating more or less inflammatory action, leeches should be liberally applied to the perineum, or even general blood-letting resorted to. The urgency of the symptoms sometimes demand no less an heroic remedy. From what I have witnessed of its effects in analogous cases, I have no doubt chloroform might occasionally be used with benefit, and very probably

the efficacy of the opiate above recommended would be enhanced by the addition of chloric æther. The bowels should be opened as soon as possible, care being taken to use the mildest laxatives only, such as castor oil, the action of which may be accelerated, and the pain and spasm allayed, by throwing into the rectum a pint or more of tepid water. As a powerful means of relaxing the spasm, tobacco injections have been recommended, and no doubt they may prove highly serviceable ; but their great danger in old people should not be overlooked. In addition to the means advised in arthritic and rheumatic cases, colchicum should be administered, and every effort diligently employed to elicit gout in the feet by warm water pediluvia, &c.

When owing to continued retention of urine, the introduction of the catheter becomes necessary, the instrument should previously be smeared with belladonna ointment, and the patient placed under the influence of chloroform. Sometimes, nay frequently, less difficulty is experienced in introducing a full-sized catheter than a small one, the pressure of the former rather relaxing than exciting spasm by its presence.

The recurrence of the affection can only be averted by strict attention to hygiènic means. When the urine is acid, scanty, or of high specific gravity, and loaded with lithates, a course of the waters of Vichy and other alkaline springs are useful. Moderate but regular exercise, and occasional warm baths, will also be of great service ; but in all cases the prophylactic treatment requires to be modified by the peculiarities of the associated and co-existing functional or organic maladies.

PART VIII.

THE SKIN AND ITS DISEASES.

CHAPTER I.

PITYRIASIS.

As years advance, the skin gradually loses the delicacy, softness, high organisation, and elasticity observed in the prime of life, and becomes dry, rough, tawny, corrugated, and scaly in old age. These changes are partly owing to the absorption and attenuation of its different textures, the wasting and disappearance of the subjacent adipose and cellular substances, and of the progressive induration and contraction of its sebaceous and sudoriperous glands, the results of diminished vascularity and impaired organic and animal sensibility. Its important functions are thereby impeded, absorption and perspiration are interrupted; the lungs, kidneys, and liver are called upon for additional efforts to throw off the impurities retained in the circulation, which would otherwise be excreted from the cutaneous surface; and many diseases of these organs in advanced life are protracted by, if not due to, the inefficient discharge of its salutary offices.

In the following outline, I purpose referring only to those skin diseases which, occurring in old persons, are from their importance or frequency deserving notice, or which are modified in their characters by advanced age. Perhaps I ought not to omit lepra and psoriasis; but, judging from my own experience, these diseases,

when met in advanced life, are not unfrequently found to have lasted continuously, or off and on, for periods of twenty or thirty years and upwards. Pemphigus, especially in its chronic form, is another cutaneous affection which, though very rare at every period of life, is said to be encountered in old age with as much frequency as at other epochs. There has not been a single instance, however, these twenty-three years among the aged inmates of Chelsea Hospital. Herpes occasionally assumes so severe a character in the aged, especially herpes zoster, that it should hardly be passed unnoticed. The eruption is then frequently accompanied and followed by violent neuralgic pains requiring opiates. The bullæ are filled with sero-sanguineous fluid, and the skin underneath gangrenous. These cases are attended with much general debility, and convalescence is often protracted. The eruption is liable to return periodically, sometimes with remarkable exactness both in regard to time and locality.

Pityriasis.—Foremost among the diseases of the skin as of frequent occurrence, though seldom the cause of much inconvenience, is that peculiarly obstinate affection distinguished by an abundant production of minute, branny scales, accompanied with more or less itching, and known under the name of pityriasis.

In elderly subjects this disease is almost always local, and for the most part limited to the scalp, forehead, eyelids, hands, forearms or lower extremities, particularly the lower third of the legs. It sometimes precedes other cutaneous eruptions, especially prurigo. Much oftener it is a sequela of chronic eczema, boils, or erysipelas. Still more generally it is independent. When general, or occupying a wide area, it often seems to be but an exaggerated condition of that process whereby the epithelium or cuticle is constantly being thrown off when it has served its purpose, or is worn out, to be renewed by a sounder surface. It is almost always chronic, and unaccompanied with inflammatory irritation or redness, indicating vascular action. The affected surface is then of a dull white or ash-gray colour, or of a pale drab tint. The latter appearance is more common on the chest and upper part of the forehead, fringing the roots of the hairs, and is sometimes, in this situation, productive of enormous quantities of exceedingly fine furfuraceous scales, powdering the shoulders.

Treatment.—The inflammatory form of the disease is benefited

in the first instance by saline, cooling aperients, soothing applications, moderation in diet, and abstinence from stimuli. The decoction of marsh mallow, linseed, barley, or oatmeal, with or without the decoction of poppies, and the addition of hydrocyanic acid, will be found beneficial in allaying the irritation. When the eruption becomes chronic, or presents itself from the beginning in this form, tonic aperients are more appropriate, and instead of soothing, relaxing lotions, astringent washes, and slightly stimulating unguents are indicated. Solutions of the sulphate of zinc, the acetate of lead, or the sulphate of iron, are then serviceable, and generally more effectual in checking the disease than greasy applications. Alkaline lotions, particularly a lotion of the sulphuret of potash, a drachm to ten ounces of water, or a drachm and a half of the sub-borate of soda, are occasionally very successful. In a troublesome case, affecting both hands, and accompanied with stiffness of the fingers, occurring in a general officer sixty years of age, a rapid cure was effected by bathing the hands three or four times daily with barley water containing five minims of dilute hydrocyanic acid to the ounce, discarding soap, and constantly wearing during the day thin kid gloves. In the night time the hands were enveloped in lint dipped in this solution, and covered with oil-silk mittens closely tied round the wrists. A weak form of citrine ointment completed the cure, which was effected in five or six weeks. The complaint had previously been of as many months duration. In a second case, where the same plan of treatment was pursued, presenting in an officer of Chelsea Hospital, seventy years of age, almost equally satisfactory results were obtained, although, as the disease was situated on the legs, it could not be so effectually carried out. Much benefit ensued in this instance from diluted glycerine smeared over the legs, and washed off in the morning by the sub-borate of soda lotion. Brown soap should generally be set aside in this affection, and glycerine, or some equally mild soap, substituted.

CHAPTER II.

PRURIGO SENILIS.

If the importance of a disease is not solely to be estimated by the mortality it occasions or the organic lesions it entails, this tormenting, rebellious, and frequently incurable affection is unquestionably one demanding the most attentive consideration. Embittering existence by the "maddening" itching that attends it, almost unceasingly harassing the sufferer, and sometimes, in its intensity, depriving him for weeks together of rest, it occasionally breaks down the general health, and fatuity itself is said to have flowed from it.

Prurigo senilis has been accurately described by most writers on the diseases of the skin since Willan clearly portrayed it and assigned it this name. It is chiefly characterised by an eruption of papulæ, larger but more isolated than those of *lichen*, larger and more confluent than those of the *prurigo mitis* and *prurigo formicans* of this author, nearly if not quite of the same colour as the skin, and accompanied, as above remarked, with excessive itching. The papulæ are flattened, roundish, hard, and sometimes only to be felt, not seen. In recent cases, the skin is often shining and granular. When prurigo follows erysipelas or erythema, this is generally observed. A form of the disease is occasionally met with in which the skin is to all appearance perfectly healthy. In certain cases the papulæ are limited to one region, perhaps to the chest or outer portion of the upper or lower extremities, while another part of the body, equally the seat of the most harassing pruritus, seems entirely free from them.

The disease is essentially of a chronic nature, and may exist for weeks or years without febrile disturbance. As it advances, and as it generally presents itself to our observation, the summits of the papulæ are occupied by little black scabs from abrasion of the

cuticle and the drying up of the discharged exudation of blood and serum. The skin acquires a harsh dry character in protracted cases, and throws off furfuraceous scales. The incessant scratching induces inflammation, so that pustules and vesicles are often intermingled with the black scabs and colourless papulæ. The slightest bodily exertion, whatever determines to the skin, the heat of a fire, stimulating viands and condiments, increase the itching. Mere allusion to the subject sometimes brings on a violent attack of pruritus more intolerable than pain. The heat of the bed almost constantly obliges the unhappy sufferer to forego part of his night's rest, and he is often compelled to expose himself naked to procure some temporary alleviation. Among the poor and ill-fed, brought to a state of imbecility and cachexia by continued torment and want of sleep, the disease is sometimes accompanied with swarms of pediculi, infesting the skin and resisting the most powerful applications to destroy them.

All parts of the body, apparently with the exception of the scalp,* palms of the hands, and soles of the feet, are liable to this disease. It chiefly, however, fixes on the outer aspects of the limbs. The bosom, shoulders, and arms are commonly, and sometimes simultaneously, affected; or the upper and lower extremities are, together or individually, its seat. Frequently it is still more limited, being confined to the scrotum, the pudendum, or to the parts around the anus, constituting the local manifestations of the disease known as prurigo *scroti*, prurigo *pudendi muliebris*, and prurigo *podicis*. When the disease is thus localised, the skin, particularly of the scrotum and pudendum, becomes after a time inflamed, rough, and indurated from the incessant scratching, and the precise characters of the eruption merge or are lost. Nothing can exceed the misery the disease occasions when it affects the pudendum, and extends, as it generally does in persistent cases, to the adjacent parts. So intense was the irritation in a case affecting the scrotum in a broken-down old man in Chelsea Hospital a few years ago, that on several occasions he begged that the parts might be removed by the knife.

* I have met with a solitary instance in which the scalp was affected. So intense was the itching that the patient carried about with him a comb which he used vigorously. No papulæ were seen on the scalp, though the chest and back were covered with them.

Causes.—The disease sometimes attacks healthy individuals. In general, however, it has long been preceded by disorder of the assimilative and depurative functions, associated with anæmia and atrophy. The most inveterate cases occur in debilitated old persons in impoverished circumstances. Among the upper ranks of society it appears to be occasionally connected with suppressed gout. A deficient secretion of urine, and consequent retention of morbid elements in the blood, is not unfrequently observed. I had remarked this in several cases long before I was aware that it had been recognised by others as an occasional cause of the disease. Cazenave considers, and with apparent justice, that prurigo is primarily dependent on irritation of the cutaneous nervous fibrillæ, and that the papulæ are subsequently produced by the continuance of the irritation. Spring and summer are the periods at which most recent cases appear; but it occurs at all seasons. The local forms are perhaps more frequent in the female. Prurigo of the vulvæ and anus is often complicated, if not induced, the first by uterine disease and leucorrhœa, the second by hæmorrhoids and ascarides in the rectum.

Diagnosis.—The diseases with which senile prurigo are most likely to be confounded are lichen and scabies. It is distinguished from the first by the papulæ being larger, flatter, in general more isolated, of the same colour as the skin, and by the greater intensity of the itching, as well as by the numerous little black incrustations on the abraded papulæ. From scabies it may still be distinguished by the flattened and colourless papulæ peculiar to prurigo, whilst that disease is characterized by acuminated rose-coloured vesicles, which, being destroyed by friction, form thin yellow incrustations, instead of the black scabs referred to. The situation of the eruptions too is different. Prurigo attacks the outer aspects of the limbs, psora the inner, and is often, if not most frequently, seen between the fingers, where prurigo very rarely exists. Prurigo is non-contagious, scabies is remarkably so, and this it is that renders the diagnosis, independently of the prognosis and treatment, far from unimportant.

Treatment.—The pathology of cutaneous diseases, generally at best very obscure, is in this instance remarkably so; for though prurigo senilis is frequently associated with general ill-health, accidentally or as cause or effect, anomalous gouty and dyspeptic

symptoms, and especially deficient secretion of urine, the disease appears in some cases in robust and apparently healthy individuals. Amid such obscurity, the treatment must often be empirical; nevertheless the necessity for inquiring into the condition of the various functions is obvious. Whenever we have evidence of co-existing disorder of the digestive organs, or a morbid state of the secretions, the means best adapted for the removal of these various disorders should be resorted to. Generally speaking, heating articles of food should be eschewed, and beer, wine, and other stimuli forbidden. The sensations of the patient on taking any of the stimulating condiments or indulging in fermented liquors, usually warn him of their prejudicial effects. Pure spring water is therefore the best beverage, and copious libations have had a beneficial influence on the disease. A milk diet is well suited to a variety of cases. In far advanced life, however, and in feeble cachectic states of the system, a generous diet, including porter or wine, is frequently required.

Rigid cleanliness, not only as regards the person, but the wearing apparel and bedding, is of the first importance. The patient should sleep on a hair mattress. A perseverance in baths, of a temperature about 96°, has removed some very obstinate pruriginous eruptions, apparently of this nature, which, until they were resorted to, had resisted a variety of constitutional and local treatment. On the other hand, warm or tepid bathing occasionally increases the itching so much that the patient cannot be persuaded to continue it sufficiently long to effect a salutary change.

The great variety of internal remedies advised for the cure or relief of senile prurigo is indicative of its obstinacy. Mercury as an alterative, sarsaparilla, the decoction of dulcamara, arsenic, the iodide of potassium, and alkaline drinks, are among the number. Of these, a mixture consisting of the decoction of dulcamara, with iodide of potassium and the bicarbonate of potash, has on various occasions appeared serviceable, where arsenic and the oxymuriate of mercury were unavailing. But although alkalies are frequently appropriate remedies, and are occasionally called for by excessive acidity in the prima viæ, acids or acidulated drinks are on the other hand demanded where there is much constitutional debility, and together with bitter infusions are beneficial. I have never prescribed the tincture of cantharides, but its efficacy in some

analogous cases points it out as a remedy worthy of a trial in this intractable malady. By increasing the urine, it might very probably act beneficially where there is a deficiency of this secretion. Dr Graves recommends it in combination with turpentine in such cases. Other diuretics are also sometimes beneficial. Sedatives, in many instances, afford relief to the incessant itching, and the compound ipecacuanha powder has procured a respite when all other means had failed. Prussic acid has also proved serviceable. But of this class of medicines I have found none so generally useful as the extract of aconite, in doses of a quarter to half a grain three times daily. Combined with the acetous extract of colchicum, it not unfrequently procures relief where other medicines have made no impression. Dr Elliotson has also found colchicum of greater benefit than any other remedy. Sulphur is another medicine that has been strongly recommended; but its specific influence in itch does not extend to the pruritus of the papular eruption; and if it possess any virtues at all in senile prurigo, they are so limited that much confidence is not to be placed in it, certainly not such as to warrant reliance on it alone, though, combined with the supertartrate of potash and confection of senna, or with magnesia, it is a cooling and appropriate laxative. The various sulphureous waters, particularly those of Harrowgate, taken internally and employed externally, have occasionally proved beneficial, but much less frequently than has been represented.

Though secondary to the means above adverted to, the local treatment of the disease ought not to be neglected. Various external applications, sedative and stimulating, have been recommended as beneficial in subduing the torment it occasions. Upon the whole, sedatives have the advantage. Among these, cold spring water, a direct sedative, is peculiarly grateful, and at once suggests itself to the sufferer, as a means of relief of which he sometimes incessantly avails himself. The ingenuity of the practitioner will be sorely tested in innumerable cases in prescribing a local remedy, more especially as to it the patient looks for immediate ease, and is too often grievously disappointed. Alkaline lotions of the liquor ammoniæ, the liquor ammoniæ acetatis, the sub-carbonas, or the sulphurus potassæ, the chloras sodæ, or the sodæ subboras, with or without acidum hydrocyanicum, are occasionally serviceable; so is much diluted vinegar, a weak lotion of nitric

acid and water, a solution of the oxymuriate of mercury in pure water or in lime water (the yellow wash). The almond emulsion, with hydrocyanic acid, is another wash which is now and then useful. Spirituous lotions are also recommended. Where the papulæ are not much abraded, I have found sponging with equal parts of laudanum and brandy or whisky, as recommended by Graves, occasionally beneficial; also diluted vinegar with laudanum. Glycerine and greasy applications, even pure olive oil, have been found very soothing; but the ointments of zinc or the nitrate of mercury are more generally useful; and still more useful are ointments containing opium, belladonna, aconite, or an ointment of the acetate of lead with opium and hydrocyanic acid.

Dr Watson mentions that in one instance where the ingenuity of another practitioner had been fruitlessly exhausted, he was fortunate enough to effect perfect relief by smearing the itching surface with an ointment containing a small quantity of aconitine. I have already observed, that of sedative medicines exhibited internally, I have not found any so generally beneficial as the extract of aconite. In a letter to Dr Watson, Dr Bowling of Adairville, in Kentucky, avers that he has never failed in a single instance to effect a permanent cure by sponging for a minute or so the affected parts with good apple vinegar, and, when dry, smearing them over with citrine ointment. These applications are made twice a day, and Dr Bowling states that the cure is usually effected in a week. Would that it were so!

In the treatment of the local forms of the disease, every attention must be paid to the condition of the adjacent organs. In prurigo of the pudendum, the uterus is frequently engorged, hypertrophied, ulcerated, or otherwise diseased, and the pruritus of the external parts is merely an outward manifestation of the mischief within. Leucorrhœa is then a common accompaniment. In general, the coldest spring water—if iced so much the better—affords greater comfort than any other external application in quelling the harassing itching of this peculiarly distressing and pertinacious form of the complaint. Opiates are often imperatively required. The sedative ointments, particularly an ointment containing aconitine, must be used when lotions are inconvenient. On the same principles, the treatment of prurigo affecting the scrotum and parts around the anus is to be conducted. Frequent

enemata of cold water, together with the external application of the same remedy, or one or other of the various lotions or ointments above referred to, will be necessary in prurigo podicis. Should hæmorrhoids be present, they must be treated in the usual manner. If ascarides are observed, aloetic and terebinthinate injections will be beneficial in removing them. Where such obvious causes of the pruritus exist, the means of relief are generally effectual. After repeated purgative enemeta, a lotion of the sulphate of zinc, two or three grains to the ounce of rose-water, with five or six minims of hydrocyanic acid, is, in a large number of recent cases, sufficient to remove the complaint; but in chronic cases, recourse must be had to a variety of means, both external and internal. Leeches will be of much benefit where there is redness and fulness of the parts engaged. When the eruption is accompanied with the pediculi, a solution of the oxymuriate of mercury in rectified spirit of wine, in the proportion of two or three grains to the ounce, and afterwards diluted with three or four ounces of plain water or rose-water, will generally be successful in destroying them.

CHAPTER III.

ECZEMA.

This disease is common among the aged of both sexes, in whom it usually appears in a chronic form. Very generally it is limited to a particular region, but occasionally it occupies a wide extent. In shattered constitutions it sometimes affects the upper and lower extremities, or other parts of the body, simultaneously, and is then productive of much distress, general debility, and exhaustion, occasional feverishness with a dry tongue, and ends by still further impairing the health. The anterior aspect of the lower extremities, particularly the lower third of the legs and parts about the ankles, are its most frequent seat. Next to that, in the aged, perhaps the fore-arms and fore parts of the neck are most generally affected. However chronic, the eruption is ever liable to periodic exacerbations with acute symptoms, and for practical purposes it is important to consider the disease under the heads of acute and chronic eczema; but as these forms are readily distinguished by the accompanying symptoms, I omit detailing the various appearance of the eruption, observing that chronic eczema is often consequent upon the acute, though more frequently in the aged than in the adult it assumes that character from the commencement, and maintains it notwithstanding the liability to and frequent occurrence of acute relapses. The variety known under the name of *eczema impetiginodes* is not very common in the aged.

The disease in its limited form appears to be compatible with sound health. It is often seen in aged individuals of robust and vigorous constitutions. More generally, however, the digestive functions are impaired, the secretions defective or deranged, and in persistent cases, implicating a large extent of surface, an anæmic or cachectic state of the system is frequently observed. Partial

eczema of the legs, especially, appears to be a common complaint in gouty habits. It is often associated with the oxalic acid diathesis.

That the eruption is occasionally and not unfrequently salutary there can be no doubt, and the cure of chronic eczema is sometimes succeeded, as in other chronic cutaneous eruptions, by severe pectoral ailments, and still more alarming cephalic symptoms, vertigo and apoplexy itself. The propriety of attempting its removal is therefore occasionally a question of no mean importance.

Treatment.—The diet must be regulated with care. Irritating and stimulating articles of food and drink should be prohibited. In acute cases, or in acuto-chronic states of the disease, it may even be necessary for a time to employ antiphlogistic measures, short of blood-letting. Usually a few smart purgatives, an open state of the bowels, rest, and abstinence from animal food and alcoholic liquors, succeed in subduing these inflammatory attacks and restoring chronic cases to their usual condition, when aided by soothing local treatment, emollient applications, tepid fomentations, the warm water dressing, &c. When the disease has appeared in several regions, frequent tepid or vapour baths are highly beneficial.

In later periods or chronic forms, the principle to be borne in mind is, that the eruption is still inflammatory, and ever subject to severe exacerbations. Often without perceivable cause, a fresh outbreak happens just as we had reasonably indulged in the belief that for a season the disease was about to yield. The importance of regulating the diet in chronic cases is as great as the avoidance of stimulating viands is essential in acute attacks. Where the digestive organs are in fault, or the secretions depraved or deficient, means should be taken to improve them. In broken-down subjects, tonics are demanded. Wine and animal food, so injurious in acute eczema, are often serviceable in chronic cases. Acidulated drinks are frequently of decided benefit in mitigating the itching and checking the excessive exudation. Some of the most intractable cases I have met with have been cured by this method of treatment. In two very similar cases which, presenting about the same time a few years ago, and being extremely troublesome, made a deep impression on me, the one occurring in a female aged sixty-one, the other in a male aged seventy-two, both

gouty and corpulent, but otherwise hale and hearty, and in whom the eruption occupied the parts below the chin, perfect recovery ensued in five or six weeks by persevering in half-drachm doses of diluted sulphuric acid in barley water, with three or four minims of hydrocyanic acid, three times daily, after the alkaline treatment with colchicum, suggested by the gouty diathesis, had signally failed. This plan also succeeded beyond expectation in another case, presenting in an octogenarian, in which the eruption occupied the legs. Scruple doses of the bicarbonate of potash had been taken twice or three times a day, and washes composed of the sulphuret of potash and the sub-borate of soda, industriously used for upwards of six weeks without any benefit. Although I have not yet had an opportunity of fairly testing it, I am inclined to believe a combination of opium and alum, or of opium and gallic acid, taken three or four times daily, would prove useful in many cases accompanied by copious exudation and much itching. The decoctions of sarsaparilla and dulcamara are now and then serviceable. Occasionally I have found the tincture of cantharides—a remedy first prescribed in this complaint by Biett—of signal benefit in very obstinate cases.

Even in the most chronic forms or stages of the disease, mild external applications are usually alone advisable, and in this respect the local treatment hardly differs from that which experience recommends in acute attacks. Wrapping the part affected in a soft cloth dipped in tepid water, and then covering it with oil-silk or gutta percha, is generally the best of applications, softening the encrustations, soothing the raw and inflamed surface, and encouraging a healthy action in the diseased integuments. Occasionally, however, astringent lotions and ointments are now beneficial,—such as weak tepid solutions of the sulphate of iron, the sulphate or acetate of zinc, or of the diacetate of lead, a grain or a grain and a half to the ounce of distilled water, or proportionately weak ointments prepared from the same substances, with lard. Neither in acute nor chronic cases has glycerine appeared to me useful. Arsenical lotions and the internal use of the arseniate of iron are sometimes successful in certain rebellious cases, presenting in anæmic, debilitated subjects.

CHAPTER IV.

ERYTHEMA AND ERYSIPELAS.

THESE modifications of one and the same disease are very frequently met with in aged subjects. The former, chiefly characterised by superficial redness of the skin, unaccompanied in general by febrile disturbance, is often symptomatic of gastric derangement and torpor of the bowels. It is entirely free from danger, though now and then a troublesome complaint. Aged females of costive habit, and such as labour under uterine irritation, are peculiarly prone to temporary attacks. It is common about the period of the cessation of the menses, and, altogether, females are its principal sufferers. The face and lower extremities are its usual site. Occasionally it assumes an intermittent and chronic form. The erythema nodosum of systematic writers is seldom met with in the aged, though common enough in debilitated females about the middle period of life.

Treatment.—In recurring erythema, attention to the digestive organs will generally succeed in arresting the attacks. Where the complaint proceeds from habitual constipation, a brisk action of the bowels, their thorough relief from all accumulations, seldom fails in removing the affection, and its return will likely be prevented by mild laxatives and avoiding exposure to the more immediate exciting causes, such as the heat of a fire, sun heat, or cold winds. Local applications of a cooling nature generally afford relief to the hot sensation attending the inflammation, and are quite safe. A lotion of the liquor am. acet., with water, is perhaps the best application of this sort, but cold spring water is as good as any.

Erysipelas.—Like erythema, this dangerous and treacherous complaint may attack any part of the body, but it is most frequently seen on the face, scalp, and lower extremities. The observations I have to offer on it will chiefly refer to the disease

as affecting the former parts, as an idiopathic or constitutional malady, irrespective of accidental injury—the traumatic erysipelas of surgical writers.

Symptoms.—The disease not unfrequently commences in the aged insidiously as a case of common erythema, without marked constitutional disturbance. I have known it to advance rapidly over the face, and form extensive vesications, without any acceleration of the pulse or impairment of the appetite, the patient sitting up all the while, and complaining only of the heat of the local affection. In analogous cases, when febrile symptoms are observed, they arise during the progress of the attack, and appear to be consecutive to the inflammation of the skin. Usually, however, the disease in its severest forms is preceded by general malaise, with disorder of the the chylopoietic organs, indicated by nausea, rarely by vomiting or diarrhœa. Still, rigors and violent constitutional symptoms are now much less frequent than at other periods of life. The redness of the affected parts is also less vivid; often it is a dull red, disappearing slowly and imperfectly on pressure; the pain is stinging and burning, but the parts seem less sensitive when touched than when the disease attacks younger subjects. Œdema is a common accompaniment of the inflammation.

The duration of the attack is very variable. In slight cases, where the disposition to an extension of the inflammation is moderate and the constitution is but little affected, the redness begins to subside on the third or fourth day, and by the fifth or sixth the attack has disappeared. In other cases, the inflammation of the integuments does not attain its height till the sixth or seventh day, and is proportionately late in passing away. A succession of inflammatory attacks prolongs the disease much beyond that. While the inflammation of the skin has in the course of three or four days passed through various stages, say on the ear and malar region, it may be but commencing on the side of the nose, to be followed by like changes on other parts of the face progressively invaded. Ten days or a fortnight may thus elapse ere the local affection has departed. This form or modification of the disease is oftentimes encountered in aged, gouty, or rheumatic habits, and it appears to be frequently associated with albuminuria and other renal or urinary complaints. In invalids of

this class, erysipelas sometimes assumes a chronic character, and it is very liable to return or be exasperated on the slightest cause.

When the inflammation is severe, the constitutional symptoms are correspondingly high, but, as above hinted, they rarely present the intensity observed in the adult, and the more advanced the age of the patient, the less likely is the accompanying fever to be of a sthenic type. Frequently it presents itself in this form, but speedily becomes asthenic. The tongue, from having been yellow or white and moist, becomes dark and dry. The pulse is rapid, easily compressed, and often irregular. A low muttering delirium is present. The bowels are confined. The hands are tremulous and the prostration is great. The redness of the skin acquires a dusky hue; the bullæ, when they exist, are filled with a darkish serum, and the cellular tissue of the eyelids is very apt to suppurate or to slough. In cases accompanied with inflammatory fever, a diarrhœa occasionally, but more frequently an abundant and critical sweat, generally so rare in the aged, puts an end to the disease.

Causes.—The spring and autumn are the seasons at which the disease is most frequent; one attack seems to predispose to another. The temperate are less liable to it than the intemperate; but I knew once two water-drinkers, also very moderate eaters, the one eighty years of age and the other upwards of seventy, who had for years been subject to attacks of facial erysipelas. I am disposed to think that the disease is less contagious or infectious when occurring in persons of advanced life than at other periods. I have never seen the disease propagated in this manner in the infirmary of Chelsea Hospital, where the inmates are almost all bordering on seventy years of age.

Prognosis.—At all epochs of life, a dangerous and deceitful disease, erysipelas, when it fixes on the face or scalp, is one of the most serious to which the aged are liable. When all seems to be going on favourably, when the general symptoms and the state of the affected parts warrant a belief that the patient is going on well and likely to do well, a change often takes place, sometimes suddenly, by a transference or communication of the morbid action to the membranes of the brain, that leaves little hope of recovery. This is one mode of dissolution. In other cases, the powers of life give way, and the patient sinks more or less rapidly without the

induction of cerebral symptoms, merely through the depressing influence of the disease on the system. Again, in a third class of cases, the patient suddenly dies suffocated, through the extension of the inflammation from the throat and fauces to the epiglottis, and rima glottidis, and the supervention of œdema, or suppuration of the submucous areolar tissue. This form of the disease is not unfrequently epidemic, there being a greater disposition to the propagation of the inflammation to the trachea and œsophagus than usual. The aged then do not escape, and several examples of this sort, perhaps a majority, occur in persons bordering on sixty.

Sthenic attacks are much less dangerous than those of an opposite tendency. It is peculiarly fatal in drunkards and persons of broken-down habits labouring under pre-existing maladies; in all such cases the prognosis should be very guarded though the inflammation of the skin may have ceased to spread. The disease is more serious when it affects the scalp than when it is limited to the face, chiefly from the greater risk of its extension or metastasis to the membranes of the brain. Frequent recurring attacks indicate a cachectic state of the system, and not rarely presage a speedy break-up of the constitution. It follows from data furnished by the returns of the Registrar-General,* that erysipelas is nearly five times more fatal to people above sixty than to people of between fifteen and sixty years of age.

Treatment.—The pathology and treatment of this disease are still vexed questions; yet there is nothing so very peculiar in it as to warrant the positive and directly opposite practice which certain incautious advisers recommend. On one hand it is regarded as an ordinary inflammation, and treated as such by the usual remedies, by blood-letting, purgatives, and the antiphlogistic regimen; on the other, it is considered as an inflammation of a specific nature, an exanthematous disease dependent on a poisoned state of the blood, asthenic in its character and origin, and requiring specific treatment. Opposed to all depletory measures, certain supporters of this belief recommend the early exhibition of bark and wine, even in what appear to be "tonic and sthenic" cases of the disease. Both parties appeal to experience, and on either side

* See Fifth Report Registrar-General, p. 456.

are ranged some of the most distinguished ornaments of the profession. Nor do these opinions appear to have been lightly formed. Men, otherwise bold with the lancet, strenuously condemn it here, or advise a very guarded and restricted use of it. Perhaps the majority now-a-days take up this view; and, while they do not wholly proscribe blood-letting, they recommend it only in the young, the healthy, and the vigorous, and eschew it entirely in the aged, and in cachectic habits or states of the system.

The truth is, that no one mode of treatment is generally applicable. Each case must be managed according to its peculiar characters, so that different cases may require a totally different method of treatment, whatever be the age of the patient; and a modification of the stimulating and antiphlogistic plan is not unfrequently necessary. Advanced age, *per se*, ought not to forbid blood-letting. I can easily conceive that a moderate and judicious use of the lancet may, in some rare severe cases occurring in persons of advanced life, of full habit and of vigorous constitution, prove efficacious in averting the communication of the disease to the internal organs, and such cases have been recorded by Lawrence and others; but I have myself never deemed it necessary or advisable to employ it in any instance of erysipelas in a subject turned sixty years of age. Idiopathic erysipelas cannot be cut short; its intensity may be mitigated and mischief prevented by discriminating and sound measures of treatment, but the disease usually pursues a determinate course. It should also be born in mind that the tendency of erysipelas at advanced periods of life is asthenic; that however acute and inflammatory the local symptoms and accompanying fever may be in the early stage of the disease, typhoid symptoms are apt to appear unexpectedly, and gangrene of the affected parts is not unfrequent.

In the introductory chapter, and in various parts of this work, I have so fully expressed my opinion on the question of general blood-letting in the diseases of the aged, that I must not repeat the views I entertain on the subject. Suffice it to say, that in this malady, even under the most favourable circumstances of constitution, habits, and locality, it can only be employed with safety in the very beginning of the disease, and in purely sthenic attacks, whilst its repetition is full of peril, and can seldom if ever

be justified. Very great relief, however, sometimes follows local bleeding.

The practice, first recommended by Sir Richard Dobson of Greenwich Hospital, of freely puncturing the inflamed surface with the point of a lancet, and encouraging the bleeding with a soft sponge and tepid water, is preferable to leeching, though perhaps more painful. Incisions are only to be employed when the inflamed part is tense and vividly red, or when the cellular tissue is engaged. When suppuration is established, there can be no question as to the necessity of free incisions. Without them all other measures are unavailing in subduing the local inflammation and relieving the system. Recovery from this disease is frequently protracted by the disposition to the formation of circumscribed purulent depôts about the ears, eyelids, and scalp, which incisions alone can remedy.

The bowels should be effectually and early opened by such medicines as procure full feculent motion, care being taken to prevent exhausting serous discharges. The emeto-cathartic plan of treatment is not adapted to the erysipelas of advanced life, however efficacious it is in young robust subjects. Emetics are nevertheless much employed on the continent in aged individuals, and are recommended where the digestive organs are free from inflammation. A torpid state of the bowels very often precedes or accompanies the disease, and indicates the necessity for procuring their daily evacuation. The action of the skin should be encouraged by saline diaphoretics, with small doses of the muriate or acetate of morphia where there is local distress with nervous irritation. It has already been observed that diaphoresis occasionally precedes the resolution of the disease; and several instances have fallen under my observation where, by encouraging this natural effort, the best results have been obtained even in extreme old age.

The local treatment of erysipelas is perhaps of more importance than appears to be generally admitted. I cannot say that I have on any occasion seen any great benefit from the nitrate of silver, blisters, the compound tincture of iodine, mercurial ointment (so much employed by Velpeau at La Charité), the solution of the sulphate of iron (also much used by that eminent surgeon), flower of magnesia, or any other of the several powders recommended; on

the contrary, they have appeared to me on many occasions rather to add to the irritation. Were I to choose among these remedies, I certainly would select the nitrate of silver in the solid form or in strong solution; but I am thoroughly satisfied that, as a general rule, cold evaporating lotions, or plain water itself, is the best application, and I have never seen any injurious effects from it. The sensation of the patient ought, however, to be invariably consulted. Occasionally tepid applications are more soothing, and should then be selected, nor should cold be continued any longer than is agreeable.

Hitherto our observations have been chiefly directed to the treatment of the early stage of the disease, or to sthenic attacks. Let us now turn to cases characterised by adynamic symptoms. Common sense at once tells us that this form of erysipelas, evinced by deficient vital power, cannot and ought not to be treated by active antiphlogistic measures. However intense the local inflammation may appear, we must look to the constitution of the patient and the nature of the accompanying fever, and be guided accordingly. If there be much tension of the inflamed part, there is nothing inconsistent in relieving the engorgement of the vessels by leeching or by puncturing the surface, while, at the same time, we are supporting the system by strong soup, milk, and nutriment in any form the patient can be induced to partake. Milk is sometimes indulged in greedily, and is undoubtedly beneficial not only as highly nutritious, but as determining to the skin and kidneys. It is in such cases, in advanced stages of the disease, or the adynamic forms of erysipelas, of frequent occurrence in old infirm persons, that bark, and wine, and ammonia, and camphor are appropriate remedies. Under such circumstances, tonics and stimulants cannot be too soon exhibited. Two grains of the sulphate of quina should be given every two or four hours in pill or in solution, and an ounce or more of port wine in the intervals, according to the nature of the nervous symptoms, the degree of general debility, and the habits of the patient. At the same time the saline diaphoretic already advised should be steadily exhibited, with or without the sedative, but with the addition of the sesquicarbonate of ammonia. The quantity of wine or brandy necessary in asthenic erysipelas is sometimes very considerable. Every attention ought to be paid to the ventilation of the apartment,

The odour from erysipelatous patients is generally very offensive, and pure air is highly conducive to recovery.

The associated states of the disease will require special measures. When there is reason to believe that the inflammation has been propagated to the brain or its membranes by the occurrence of headache, delirium, and stupor, mercury seems the most promising remedy to arrest the mischief and prevent serious consequences. The communication of the disease to the air-passages from the throat will most likely be prevented by freely brushing the fauces over with a strong solution of the nitrate of silver. Scarification of the parts is, in this dangerous complication, frequently imperative. When suffocation is threatened by œdema of the glottis or sima glottidis, tracheotomy may be necessary.

Recovery from the disease, sometimes rapid in vigorous constitutions, is in general slow in feeble habits, and requires the aid of tonics, pure air, and nutritious diet. Exposure to draughts or cutting winds must be carefully avoided for some time, as the parts implicated are liable to slight recurrences of the disease, or to the formation of boils or abscesses.

In arthritic attacks of the disease, sometimes assuming an erratic and persistent form, the combination of the vinum colchici, or, what is generally preferable, the tinct. colch. comp., with the saline diaphoretic above recommended, is advisable in the first instance. Generally associated with dyspeptic symptoms, constipation, &c., the stomach and bowels will require attention, and tonics, including wine, often become important remedies, without which the disease is apt to last many months coming and going, though never perhaps entirely disappearing, and in the meanwhile breaking up the constitution, and exposing the patient to other serious maladies. The erysipelas accompanying albuminuria is almost always of a low irritative kind, sometimes of limited extent. When at all urgent, it is usually the forerunner of speedy dissolution.

PART IX.

CONSTITUTIONAL OR BLOOD-DISEASES.

CHAPTER I.

CHRONIC RHEUMATISM—LUMBAGO—SCIATICA.

THE liability to acute rheumatism decreases in a remarkable degree with advancing years after fifty. In old age it is so rare that its existence may be ignored.* Not so, however, the chronic form of the disease, which is one of the commonest maladies of the more advanced and declining periods of life; so common that, in humid climates at least, few old people are entirely exempt from it. The cause of the difference of the type of the disorder at different ages admits, says Dr Fuller, in his Treatise on Rheumatism, Rheumatic Gout and Sciatica, of a satisfactory explanation. "As rheumatism is due to the presence of a materies morbi," (probably, as first suggested by Dr Prout, lactic acid) "generated during the destruction and reformation of the tissues, processes which take place with unusual activity during early life, and which take place more slowly as age advances, it follows that

* A few years ago a case of acute inflammatory muscular rheumatism, accompanied with profuse acid perspirations, occurred to me in a general officer then seventy-five years of age. Dr Bright attended him with me after the first three weeks, when the constitutional symptoms were beginning to subside. He never had rheumatism before, nor gout; but inasmuch as he had *signs* of obstructive aortic valvular disease, of, to my knowledge, several years' duration, it is not improbable he may at some former period have suffered from primary rheumatic endocarditis.

mal-assimilation is more likely to be attended with an abundant formation of the rheumatic poison, and therefore with greater severity in the rheumatic symptoms in early than in advanced life." Moreover, the susceptibility to febrile and inflammatory attacks diminishing with the progress of years, a disease which in youth generally appears with local symptoms of an acute nature and high constitutional disturbance, often, in the old, is chronic from its commencement, and preserves this character throughout its progress.

As the parts composing the joints are most commonly affected in acute rheumatism, so the muscles, their fasciæ, tendons, and connexions, are ordinary seats of the chronic form of the disease. The intercostal muscles, and muscles of the arm and thigh, are often attacked, as so are the aponeurotic expansions, particularly of the head, in which case the symptoms frequently assume an intermittent type. When the articulations are affected in elderly subjects, the disease is generally of a mixed nature, partaking at once of the characters of gout and rheumatism. Like chronic articular rheumatism occurring in the aged, chronic, muscular, or facial rheumatism is not unusually of a gouty nature. It often precedes, though more generally it follows, acute or subacute attacks of this kind, and is frequently accompanied with precisely similar symptoms indicative of derangement of the digestive and depurating functions. Organic disease of the kidneys, and especially granular degeneration, is a fruitful source of every variety of chronic rheumatism, and in the chronic consumption of the aged, muscular rheumatism, is very often so prominent a symptom as to entirely mask the pectoral affection.

Lumbago is one of the commonest forms of chronic rheumatism in advanced life. The fasciæ of the lumbar muscles, the articular ligaments of the spine, the sheaths and neurilema of the lumbar nerves, and, according to Andral, the investing membranes of the spinal marrow, are the anatomical seat of this painful and troublesome affection, an affection which in both sexes now and then assumes a most acute character, in respect of pain, but which is now seldom accompanied with febrile reaction, though often with gastric, hepatic, and renal derangement.

Sciatica is another form of chronic rheumatism of great frequency among the aged, and in many instances essentially consists

in inflammation of the cellulo-fibrous envelope or neurilema of the sciatic nerve. This affection is, however, even more commonly than lumbago, connected with gout in elderly subjects, often preceding or following an attack of this disease, and occurring also in people liable to rheumatic gout. Its frequent connection with these diseases, gout and rheumatism, is unquestionable, but, in numerous cases presenting in the aged it is indirectly occasioned by unhealthy secretions in the intestines, irritating the lumbo-sacral plexus, and by uterine and rectal affections acting in a similar manner; it is also frequently produced by pressure on this plexus, through feculent accumulations in the cæcum or sigmoid flexure of the colon, and by chronic abscesses and benign or malignant growths, springing from the internal oftener than the external aspect of the pelvis.

It is important to observe, that in numerous cases of chronic sciatica occurring at advanced epochs of life, the accompanying pain does not always follow the trunk of the nerve, but is often situated in the cutaneous and terminal branches. While it is but little felt in the usual site, viz., the sacrum, hip, and back of the thigh, it may be very annoying in the leg, foot and ankle. An instance of this kind, occurring in a gentleman now eighty years of age, has occasionally for many years been under my care. At first the hip was chiefly affected. A sensation of extreme coldness in the limb marks this case.

Treatment.—Much of the obstinacy of chronic rheumatism, and, as previously observed, its prevalence in the aged, are due to mal-assimilation, primary and secondary, and the retention of morbid products in the blood through senile impairment of the depurating functions, particularly of the skin and kidneys. Hence, as in allied diseases, permanent benefit can only be insured by invigorating the system as far as practicable by promoting normal assimilation and nutrition, and encouraging the eliminating organs to an efficient discharge of their respective offices. These objects are to be sought by the moderate use of plain, wholesome, easily digested food, rigid adherence to regimen in its widest meaning, and the correction of existing local derangements of the liver, kidneys, stomach or bowels, by appropriate remedies and treatment, according to the recognised principles of therapeutics. Wasting and general debility, proceeding from natural decay of the vital powers

and nutritive functions, accelerated by continued discomfort and disturbed sleep, must be met by a generous diet, a fair allowance of old wine, and the exhibition of tonics, giving bark and ammonia, or the liquor potassa, in ordinary cases, or the sulphate of quina and sulphuric acid, where the nervous energies are depressed, and the urine is neutral or disposed to be alkaline. In cachectic states of the system, accompanied with feebleness of the heart's action and anæmia, ferruginous substances should be administered, and among these the mistura ferri composita, or the ammonio-citrate of iron, is generally to be preferred, though where the fibrous tissues are affected, the iodide of iron is still more appropriate. Under these and similar circumstances, cod-liver oil, either alone or with the syrup of the iodide of iron, will be found highly serviceable. The healthy action of the skin should be excited by frequent warm vapour, or hot-air baths, shampooing, and friction, with a soft flesh brush. Too much stress cannot be laid on the importance of this object. The skin is the principal channel for the elimination of lactic acid from the system, and recent observation tends to show, that if this is not the actual materies morbi of rheumatism, it plays no unimportant part in perpetuating the disease. The thermal springs of Bath and Buxton in this country, of Carlsbad in Bohemia, and of Wiesbaden, Toplitz, and Baden-Baden in Germany, may be resorted to with great benefit. Sulphurous baths, and particularly the sulphurous waters of Harrowgate, used both externally and internally, are also serviceable, and have long been esteemed in all rheumatic complaints. Warm salt-water baths, of a temperature of 100°, not only stimulate the cutaneous circulation successfully, but are more invigorating than fresh-water baths. With the use of artificial or natural warm baths, the surface should be well protected by flannel. If possible the aged invalid should reside in a mild climate. Rome and Nice have long been regarded as perhaps the most eligible situations in Europe for old, gouty, and rheumatic patients; but with not a few they do not agree. Some have derived more benefit from a winter residence at Ventnor or Queenstown. A mild, dry, rather bracing climate with equable temperature, suits the majority of these sufferers.

Where the skin and gastro-intestinal surface act fairly, if not normally, the kidneys, if not diseased, usually discharge their

functions more or less efficiently. Their action, as well as that of the skin, may, however, be beneficially excited by diluents, and the acetate and nitrate of potash are diuretics of established reputation in every form of rheumatism, both passive and active. In the generality of cases of chronic rheumatism presenting in advanced life, the more stimulating diaphoretics and diuretics prove serviceable. Among these the preparations of guaiacum deserve the confidence they have long enjoyed. The virtue of the powder known as the "Chelsea Pensioner" is chiefly due to the guaiacum and sulphur it contains. Turpentine, in doses of from fifteen to thirty drops three times a day, is also entitled to the praise which numerous writers have bestowed on it, and it generally agrees with the aged. The iodide of potassium is peculiarly serviceable when the fibrous tissues are thickened or are the chief seat of uneasiness, but it disagrees with many old people if long continued, and its effects require to be watched. The pain in these and other cases may often be relieved by the warm water douche. An opiate at bed-time is frequently required for this purpose, and none answers better, generally speaking, than Dover's powder. Whenever there is reason to believe that the disease is partly of a gouty nature, colchicum should be combined with the medicines administered. The ammoniated tincture may be advantageously given, with the compound decoction of sarsaparilla, and iodide of potassium, in many such cases. As to local measures, they may be conveniently considered in speaking of the treatment of lumbago and sciatica.

In both these forms of rheumatism, the principles above referred to must be carried out, every attention being paid to the general condition of the patient, and to any associated functional disorders. Great benefit is sometimes derived in lumbago from a succession of mustard sinapisms or turpentine epithems, and the persevering employment of stimulating embrocations. These are numerous enough; but there is perhaps none more useful in the generality of cases than one composed of three parts of camphor liniment and one of turpentine. To three ounces of this embrocation two drachms of cajeput oil may be added with advantage; or, if a still more stimulating and irritating liniment be desired, the same quantity of acetum cantharadis may be substituted. The more painful forms of the disease are sometimes relieved by the use of liniments

containing opium or chloroform. One ounce of the linimentum suponis cum opio, and two or three drachms of chloroform, is a most useful remedy in certain cases, and frequently exerts a magical influence. Artificial heat generally procures ease. Some patients are more relieved by dry warmth than by tepid fomentations. The sensations of the patient must be consulted, and either mode adopted according to circumstances. Heated bran, salt, or sand in a woollen bag is, in the former case, soothing and comforting. Some are relieved by exposing the loins to the heat of a scorching fire, others by running a heated smoothing iron over the loins, previously covered by a fold or two of flannel. "Firing" by means of a flat-headed iron instrument, dipped in boiling water and immediately applied to several spots over the affected parts, is a favourite counter-irritant; and a retired medical friend tells me he has derived more relief from it than from any thing else he has ever tried. There is no application more esteemed by aged sufferers from lumbago and weakness of the loins than the old Burgundy pitch plaster.

Still more numerous are the local applications, as well as general remedies, which have been recommended for the mitigation or cure of sciatica. Like most other diseases, this painful and disabling affection can only be treated successfully by an attentive consideration of each individual case as it presents itself. The remedies selected should harmonise with the peculiarities distinguishing the attack, for on a just appreciation of its exact nature much of the success of the measures employed necessarily depends. If purely idiopathic, and unconnected with any recognisable local disorder of the kidneys, bowels, or spine; if apparently of a neuralgic character, and assuming a periodic form, quinine or the carbonate of iron are the constitutional remedies in which we must chiefly confide; if it occurs in a gouty habit, colchicum in one form or other should be administered in doses commensurate with the severity and duration of the symptoms; if periodic and gouty at the same time—no uncommon form of the disease—quinine may be given during the intermissions or remissions, and colchicum with the liquor opii sedativus or Dover's powder during the paroxysm; is it traceable to any local affection, irritative or mechanical, then we must endeavour to remove the cause on which it seems to depend. Thus, where there are feculent

accumulations in the larger bowels, purgatives are clearly indicated, and the happiest results are very frequently obtained from such as procure abundant pultaceous motions, as, for example, calomel with the compound extract of colocynth, or the compound colocynth, or aloetic pill with the addition of a quarter or half a drop of croton oil. So it is almost needless to observe, where the complaint appears to proceed from abcess, no good can be expected till the fluid is evacuated. A case of this kind, which Mr Bloxsome of Messrs Perry and Bloxsome, Eaton Square, requested me to see many years ago, made a lasting impression on me. The poor man, an operative, had been suffering intensely for two months. He was reduced to a skeleton, and had all the appearance of a person labouring under malignant disease. An obscurely fluctuating colourless swelling was found behind the trochanter major, which, on being opened, gave vent to two or three ounces of purulent matter with immediate relief, and from that day convalescence ensued.

Pain forms so prominent a feature of sciatica that it demands special regard. Anodynes, both externally and internally, are imperatively demanded in almost all cases for its alleviation, and large doses of those already recommended are too frequently but moderately successful. Among this class of medicines I know of none so effectual as the black drop, with the exception of aconite, which seems to have a special influence in severe forms of the disease. It frequently succeeds where other sedatives fail. The dose of the extract should be gradually increased from a quarter to three quarters of a grain three times a day. Half-grain doses, combined with the same amount of the acetous extract of colchicum, have in more than one instance in my hands proved perfectly successful in a few days in removing the torturing pain which so often attends the disease. The external use of aconatine in the form of an ointment, prepared with ten grains of the alkaloid to an ounce of lard, or of an ointment composed of a scruple of veratria to an ounce of lard, exerts, in some of the more severe cases, a marked influence in lessening the pain; a small portion, the size of a bean, being rubbed in behind the trochanter, along the trunk of the nerve, two or three times a day. The chloroform liniment, recommended in lumbago, will also be found very useful. On several occasions I have known much relief

obtained by applying a pledget of lint soaked in a liniment composed of equal parts of the tincture of opium, tincture of aconite, and chloroform, over the trunk of the nerve, and carefully covering the whole by oil-silk or gutta percha sheeting to prevent rapid evaporation. It not unfrequently happens that a remedy which is utterly nugatory in one case succeeds marvellously in another, though apparently precisely similar in nature, and the local application or internal remedy which fails to-day may turn out to be invaluable to-morrow.

In the more chronic and passive forms of the disease, blistering, setons, issues, electricity and galvanism, acupuncturation, electropuncture, firing, &c. &c., have been lauded, and in turn rejected. Contunnias long ago recommended blistering the parts over the head of the fibula, and a few inches above the outer ankle, where the nerve is most superficial, and keeping the raw surface open afterwards. Romberg says this method, combined with endermic applications, has been followed with good results in several of his cases of inveterate sciatica. An issue behind the head of the fibula, also first suggested by Contunnias, is sometimes beneficial in obstinate cases, and Armstrong tells us it is a favourite remedy in some parts of the north of England. Chronic cases of long duration are, however, usually more benefited by regimenal and hygiènic measures, than by local treatment; but in general a skilful combination of resources is required to cure or relieve them. Where tonics and alteratives have not already had a fair trial, recourse may be had to them. Among the former, quinine and arsenic are perhaps the most beneficial, and among the latter the iodide of potassium and Plummer's pill. It is in these obstinate chronic cases that the internal exhibition of turpentine has occasionally worked wonders. A large belladonna plaster on the hip generally affords some relief. Occasional doses of colchicum and Dover's powder may be given with advantage in aggravations of pain. To enlarge here would only be to repeat in other words what has already either been said or hinted at in the preceding part of this chapter.

CHAPTER II.

GOUT: ACUTE—CHRONIC—AND ATONIC.

Almost universally regarded by non-professional persons as peculiarly a disease of advanced and declining life, gout, on the contrary, in its acute form at least, chiefly in the first instance, seizes people of between thirty and fifty years of age. Those who suffer from it after that have generally experienced a first attack some years before, or they have on many occasions laboured under obscure forms of the disease, familiarly known to medical men as dependent on the gouty diathesis, and denominated suppressed, atonic, or irregular gout. Thus, in some instances, we find persons far advanced in life seized for the first time with an acute fit of the disease after they had long suffered from dyspeptic symptoms more peculiarly characterised by flatulence and acidity; others, after they had on numerous occasions, years before, and at various times subsequently, experienced neuralgic pains in the joints, fugacious, but severe while they lasted; pains in the kidneys, with lateritious deposits in the urine or lithic acid gravel; attacks of sciatica and periodical headaches, with or without dyspepsia, &c. &c. But in a large number of cases, in old people, what is called acute gout is but an aggravation of the chronic form of the malady, the supervention of acute inflammation in joints already enlarged and more or less tender, or the accession of inflammation in one of the larger joints, the wrist, knee, or shoulder, the hands or feet being permanently crippled, by thickening of the fibrous tissues with chalk-deposits in and around the articulations. Now and then, however, the disease breaks out suddenly in persons of sixty years of age and upwards, who have never been suspected as in any way predisposed to it, and who have ever been temperate and active, neither indulging in

the luxuries of the table, nor in slothful indolence. Of this form of attack, sudden and unsuspected, those who have long dwelled in institutions allotted to the aged, or whose practice has embraced large numbers of old subjects, must have seen many instances in persons in the evening of life. A connexion of my own, who lived to the extraordinary age of a hundred and three, and who, up till within a year or two of her death, enjoyed perfect health, had a first attack, under my eye, of regular gout, without any obvious premonitory symptoms, in her hundredth year, affecting the great toe, and following the usual course. Franklin, sober and temperate in all things, and of active habits, had his first attack of the disease when seventy-five years of age. A healthy in-pensioner of Chelsea Hospital was lately under my care with a first attack at the age of eighty-five, another at ninety-five; but it is needless to multiply these instances which, though rare, are occasionally encountered.

A first attack of acute gout, occurring in vigorous habits at the more advanced periods of life, does not materially differ in its characters from the disease as it is observed in persons of middle age. There is usually, however, less febrile reaction, and the pain appears to be more supportable, though sometimes very violent. The joint affected is more prone to swell, and the parts around it more liable to œdema, as well as to sanguineous exudation. A livid, mottled, and ecchymosed appearance of the integuments is often early discernable, and increases with the progress of the attack;—the urine, too, remains longer clear, the lithates being later of appearing. Resolution is more slow and incomplete, the parts remaining for weeks, sometimes for months, weak, œdematous, and discoloured. A chronic state of the disease is thus more apt to ensue in the aged than in the adult, in whom recovery is generally much more rapid and perfect, notwithstanding the greater violence of the attack. In middle life, also, a first onslaught usually seizes the great toe more generally at least than in the aged, in whom the instep, ankle, knee, or wrist, is not unfrequently the first part attacked, the toe entirely escaping, or only becoming subsequently affected where the complaint moves from joint to joint. In insidious attacks seizing the larger joints the disease is liable to be confounded with rheumatism, but acute articular rheumatism is almost, if not wholly, unknown in old

people. The subsequent progress of the case reveals its true nature; and on inquiry it will usually be found that, at some former period of life, it may be remote, the patient had one or more attacks, or, more recently, he may have suffered from irregular gout, and passed through a fit of angina pectoris, sciatica, spasm at the neck of the bladder, or, for sometime, experienced sharp twinges in the joint affected, with depression of spirits, heaviness, and more or less dyspepsia, with unusual torpor of the bowels.

Subsequent attacks become less and less severe, though the system breaks down under them. The intervals of the paroxysms shorten. Between them, the invalid is hardly ever perfectly free from muscular pains, pains in the joints or tendinous expansions. During the summer he obtains some respite, but these pains are exasperated, or an actual fit of the disease occurs in the autumn, winter, or spring, confining itself to one joint, or in more severe examples travelling from joint to joint, and laying him up for months together.

Acute gout, occurring in old people hitherto exempt from the disease, does not necessarily, however, pursue this course. Sometimes after one or two sharp attacks, occurring at uncertain intervals, the disease disappears, and the patient attains very old age without any return of it, though usually the reverse is observed. It then assumes a persistent chronic character by fixing itself on one or more joints. Nor do the worst attacks always appear in the cold months. Some of the most severe occur in July and August, the warmest period of the year in this country; and they seldom bring with them the degree of relief to the system that is so often observed in less advanced years. Males, and those who are hereditarily predisposed, or who have left off active habits, but still eat largely and drink wine freely, are most liable to the acute form of the disease. Spirit drinkers seem more prone to the chronic form. When the disease appears for the first time late in life, it more frequently occurs independently of hereditary descent than earlier.

The much-disputed question of the proximate cause of gout seems to derive no further elucidation from the study of the disease, as it occurs in the old. Whether the so-called *materies morbi* be a superabundant presence of urea, lithic acid, or its compounds in the blood, I shall not stop to inquire; but of the

connection of the lithic acid diathesis with gout, whether viewed as cause or effect, there seems no reason to doubt. It must be observed, however, that in old people, particularly, immense quantities of lithic acid are frequently voided, either pure or combined with ammonia or soda, where, if we except this as evidence, there has been no indication of that disease. Now, in these cases, it may be truly assumed, that there existed in the blood a preternatural quantity of urea or lithic acid itself, although the disease, of which it is supposed to be the exponent, was entirely absent. The discharge of the presumed *materies morbi*, by the urinary organs, or in some of its combinations by the skin, will not explain the exemption; for in many instances where, from some cause or other, habitual lithic acid urinary deposits cease for a time to appear, gout does not show itself, though, it must be confessed, many symptoms then frequently occur, said to characterise suppressed gout; but which are as often observed in ordinary attacks of dyspepsia, unaccompanied with urinary deposits.

Chronic gout either succeeds the accute form, or, from the onset, is of a strictly chronic nature. The majority of cases belong to the former category. After longer or shorter intervals, the last succeeding attacks of acute gout leave the system so much damaged, and are themselves so imperfectly resolved, that a chronic state of the disease is gradually developed, and acquires more or less severity and permanence, according to the condition of the vital and depurating organs and functions. When chronic, *ab initio*, the disease is usually limited at first, if not throughout, to the smaller joints, and the hands are chiefly engaged. The feet and ankles, the knee, hip, and shoulder-joints become subsequently affected. When it succeeds the acute form, it at first chiefly occupies the larger joints, with the exception of the joint of the great toe, and then shifs to the smaller joints, thus reversing the order of attack, but by no means invariably. Genuine chronic gout, by which may be understood that form of the disease which, from the beginning, has set in slowly and insidiously in persons who have at no time, or at a remote period only, suffered from acute or regular gout, is nearly equally met with in both sexes; and occurs in many, if not in the majority of cases, independently of recognizable hereditary predisposition.

The subsequent clinical history of these forms of chronic gout

(primary or secondary), does not materially differ. The most aggravated cases of an unequivocal nature appear, however, as far as I know, in persons who have at some former period laboured under acute gout; and, consequently, occur for the most part in male subjects predisposed to the disease by descent. In both forms, unless at advanced stages, or during exacerbations of the disease, the appetite is good, sometimes voracious, and digestion goes on vigorously. These patients are certainly not usually dyspeptic. They seldom suffer from heartburn, so common in acute gout. The urine, moreover, though now and then turbid, is almost always clear, of natural specific gravity, and contains no more than its normal proportion of lithic acid, often less. This is particularly the case where the joints are permanently swollen, distorted, and surrounded with chalk-stones. After repeated attacks of gout, and consequent derangement of the general health, the lithates sometimes entirely disappear from the urine, and give place to the phosphates. The presence of the former generally indicate more or less vigour of body; the latter, a depraved and enfeebled state of the system, so that in aged broken down gouty subjects an alkaline condition of the urine is as common as it is rare in gout occurring in robust individuals at the middle period of life, before the disease has permanently weakened the constitution, and perverted the normal processes of vital chemistry.

The diseased joints, particularly those of the fingers, are subject to frequent inflammatory attacks, with little constitutional disturbance, during which, however, additional deposits of chalky matter take place. Abscesses form, which burst and give vent to quantities of the secretion in a fluid or semi-fluid state. These chalk-ulcers or abscesses are usually long in healing, and are always followed by greater distortion of the joints and wasting of the phalanges, till at length the hand or hands are perfectly crippled and disabled. Gouty deposits also form in other fibrous tissues, in the sheaths of tendons, aponeurotic expansions, the fibrous envelopes of the brain and spinal marrow, in the coats of the blood-vessels, &c. &c., from which numerous accidents are apt to arise. In not a few instances, where the disease ceases to expend itself on the joints, or does not greatly affect them, chalky deposits take place in the skin and cellular tissue, causing indo-

lent phlegmonous tumours, which at length ulcerate, and remain open until the foreign substance is removed by the surgeon, or detached by the ulcerative process itself. A lady, over sixty years of age, had long suffered from chronic gout in the shoulder, when her attention was drawn to a firm red swelling on the thigh, accompanied with sharp pricking pains in moving the limb. Six weeks after she first observed it, it was freely opened by the knife. No pus escaped, no relief followed the operation, which exposed a cavity filled with a putty-like substance. On the fourth day a quantity of gritty matter was felt at the bottom of the wound, and at each subsequent dressing portions of this matter, in a fluid and concrete state, came away. More than a month elapsed before the ulcer healed. In another case, also occurring in a female sixty years of age, with primary chronic gout in her finger joints, and tumefaction from chalky deposits, a large indolent ulcer existed on the back; on examining which I found a plate of calcareous matter, larger than a finger-nail, firmly rooted in the surrounding tissues. On removing it, which was by no means easily done without much cutting and laceration, the ulcer soon healed. A third case occurred to me sometime ago, of a gentlemen close upon fifty years of age, who was much annoyed by the discharge of what I have no doubt were concretions of the lithate of soda, from small pruriginous tubercles on the eyebrow and temple. He had had two or three attacks of acute gout, and was recovering from the last when these concretions made their appearance. An in-pensioner of Chelsea Hospital, who is frequently under treatment for violent fits of the disease, generally has his eyebrows and sides of the nose powdered every morning on these occasions with the lithate of soda. The urine in this case is usually of a golden colour, and highly acid, but free from deposits of any kind. The records of medicine, however, furnish many still more interesting and instructive examples of a similar nature to these.

The affection of the joints, though a source of inconvenience and misery to the invalid, is by no means the most important part of the malady. In time, if not cut off by some one of the many diseases or accidents to which the aged are liable, the whole system is irretrievably broken up. A cachectic state is induced, characterised by increasing loss of strength, emaciation, tremor, and a pale or sallow tinge of the countenance. These old gouty subjects,

with shattered constitutions, are peculiarly prone to dangerous hæmaturia and epistaxis, requiring prompt treatment; to sanguineous apoplexy, paralysis, pericarditis, and severe bronchial and pneumonic attacks by which they are often cut down. The returns of the Registrar General furnish but imperfect evidence of the mortality from acute or chronic gout in the aged. The sequences and deaths from the latter are considerable. A great number of old worn-out gouty subjects take to bed and gradually sink in various ways; some from diarrhœa, some from dropsy of the chest or abdomen, others from chronic disease of the bladder, and not a few from paraplegia—all of which affections and more are occasionally combined. Chronic tubercular disease of the lungs is, contrary to the belief of many, common enough in old gouty people; and either proves fatal in itself, or assists in bringing about this end. As a consolation to the gouty, it should however be mentioned, that though exposed to many infirmities, diseases, and accidents, numbers live to extreme old age; and men of eighty and ninety may be daily seen, who have suffered more or less constantly and more or less severely from gout for upwards of forty years.

Atonic, Irregular, or Suppressed Gout.—It were idle to go over the many diseases, functional and organic, which have been ascribed to gout, and regarded as its irregular manifestations. Some of these have already been referred to in various parts of this work. Were it desirable, others more obscure and more doubtful might be mentioned. Indeed, it may be asserted, that there is scarcely a disease, named or unnamed, to which flesh is heir, that has not, by certain writers, been traced to gout where it has at any time shown itself, or, in their opinion, *ought* to have appeared in persons hereditarily predisposed to the disease, or who, they presume, have acquired a predisposition to it by a luxurious mode of living. Gout modifies and induces disease in other textures and parts than those in which it chiefly exhibits itself, through an inexplicable prediliction or affinity, as scrofula and lues exert their influence on the system at large, and stamp their characteristics on different diseases, but in a less marked degree than these disorders. This is more peculiarly observed in the various catarrhal affections to which the aged are liable. It is admirably exemplified by the distinctive phenomena of sclerotic and iritic inflammation,

occurring in gouty habits; and is confirmed by the fact that these diseases, when thus occurring, generally resist ordinary treatment, while they yield to that which experience has ascertained to be the most successful in gout, and especially by the remarkable remission or entire removal of the symptoms on the accession of a regular fit of the disease.

Atonic or suppressed gout is frequently met with in females about seventy, or even eighty years of age, in the upper ranks. In many instances, it assumes some of the more important features of hysteria, with which it must very often be confounded; and so strong is the resemblance then between the two diseases, that it may well be called hysteric gout. The proofs, however, that the symptoms have their origin in the morbid condition of the blood, accompanying or producing gout, are sometimes very obscure, if not wanting, and we can then only form but a suspicion of the real nature of the case, by the hereditary history of the individual, and the anomalous character of the different phenomena. If an opportunity exists of watching these cases from time to time, a long period seldom elapses before they sufficiently declare themselves, by the occurrence of pains in the smaller articulations, the knuckles and fingers, with more or less tumefaction and venous congestion, and the deposition of lithates in the urine. The turgid veins are sometimes exquisitely tender to the touch; and whether they be so or not, the patient seldom fails to point out their condition, much importance being usually attached to the dark lines they exhibit on the hands and wrists. These persons have never experienced a regular fit of the disease, and having led a temperate life, and generally enjoyed good health till between forty-five and fifty or sixty years of age, the various symptoms they now suffer, assuming no definite form, are attributed to nervousness, hypochondriasis, or to hysteria connected with the cessation of the menses. The idea that they depend upon gout is never entertained, or is repudiated, as casting a reflection upon past habits. So general is the belief, and deep-rooted the conviction, that gout is the effect of gross feeding and indulgence in the luxuries of the table, that offence may be given by bare allusion to the subject, until it is explained that, in hereditary gout, the disease often appears in the most temperate; that in the female, it frequently presents itself in an anomalous form; while

in the male, from the very circumstance of a different mode of living, or greater vigour of body and activity of the assimilating and nutritive functions, it more generally assumes a regular character, breaking out violently and unmistakeably. A brother and a sister may thus be affected differently, though nearly of the same age—the one being a martyr to acute attacks of gout, the other not less a sufferer from a variety of sympathetic disorders, often entailing great misery and anxiety, and at length abating, perhaps on the accession of the articular affection.

Now, what are the symptoms we generally meet in the cases alluded to? They assume every form, and are as various as the protean malady hysteria itself. The stomach, the heart, the kidneys, the large intestines, are the viscera chiefly affected. Menorrhagia and unusually protracted menstruation, are common; occasionally there are other uterine symptoms, but rarely in the more advanced periods of life. When the stomach and bowels are attacked, digestion is painful and difficult; but sometimes flatulence, with uneasy sensations, variously represented, referrible to the arch of the colon, the stomach itself, or to both, is the main cause of discomfort. The bowels are confined or irregular. When the heart is engaged, we have palpitation, without dyspnœa, coming on suddenly and violently, and often accompanied with great anxiety of the countenance, a feeling of impending dissolution, imitating, except in the absence of pain, a slight attack of angina pectoris. In such cases, the heart is usually irritable at all times, being easily excited to irregular or inordinate action; but the severe paroxysms alluded to occur for the most part in the night time on lying down, and not during exertion. It is difficult to persuade persons thus affected, that they are free from structural disease of the organ; and yet this is no unimportant part of the treatment. The functional disorder of the central organ of the circulation may be the chief or sole existing complaint, but in general it is accompanied with dyspeptic symptoms, and especially with flatulent distention of the arch of the colon. If the kidneys are affected, the urine is scanty, the bladder irritable, and the lithates abundant, or gravel is now and then discharged, the urine depositing, on standing, fine sand, consisting of pure lithic acid, and staining the vessel with the purpurate of ammonia. On other occasions, the urine seems natural in quantity and quality.

In most cases of the renal affection, obscure pain in the region of the kidneys or stiffness of the loins is present, and rheumatic feelings exist in the limbs or joints. In a great number of instances of atonic gout, the anomalous sensations experienced by the invalid are vividly described, apparently exaggerated, the temper is often irritable, and the cardiac affection especially occasions the greatest apprehension. Persons thus affected are to be commiserated, the more particularly as of themselves they are free from blame: they have not acquired the disease by improper habits; it has descended to them, a legacy from a former generation, and sobriety and abstinence have only checked it, not extinguished it, from the system into which it was woven with the original organism.

Treatment.—In vigorous constitutions, unimpaired by repeated attacks of the disease, lingering illness, senile decay, or former excesses, acute gout should be met by antiphlogistic treatment, short of depletion. The degree to which this may be carried with safety and benefit depends, however, on the severity of the fit, its mode of invasion, and the habits of the patient. A brisk purgative should be given at the onset, and repeated till the bowels are fully and freely opened. Nothing acts more beneficially in these cases than the ordinary colocynth and calomel pill; to which may be added, when the bowels are moved with difficulty, a grain or two of scammony. These pills may be followed up by any of the saline purgatives with decided relief, where the liver is in a congested state, as it frequently is; but otherwise, unless under peculiar circumstances of plethora, muscular development, and extraordinary torpor of the bowels, the practitioner should be satisfied in procuring feculent evacuations only. The bowels having been satisfactorily relieved, and morbid accumulations removed by a repetition of the purgative, ten, fifteen, or twenty minims of the wine of colchicum should be given two or three times a day, in camphor mixture, adding to each dose five grains of the bicarbonate of potash or soda, or double that of calcined magnesia; instead of the evening draught, half a grain or a grain of the acetous extract of colchicum, with five grains of Dover's powder, may be given at bed-time, with the effect of relieving pain, and procuring sleep. The draughts and night-pill, or the night-pill alone, should be continued until the symptoms are mitigated, when the dose of the colchicum should be gradually dimi-

nished, but not suspended, without good reason, for some time after the fit has disappeared.

Whatever may be said to the contrary, no remedy has yet been discovered that can be compared with colchicum, in its influence over this disease. Nor need there be any apprehension in prescribing it to persons in the very evening of life, where the dose of the preparation selected is proportioned to the state of the individual, and its effects are watched. I may return to this subject. Meanwhile I may observe, that in debilitated persons the compound tincture is a most eligible formula. I have frequently exhibited ten or twenty minims, three times a day, for weeks together, to men of eighty years of age and upwards, without any but the best effects. It will be well, however, to remember that colchicum is a cumulative medicine, and should not be prescribed to the aged, without due caution ; it ought to be discontinued immediately it begins to act on the bowels, lower the pulse, or produce sickness and faintness.

During the first few days, while the paroxysm is at its height, animal food must be avoided, and a farinaceous diet enjoined. Wine and all fermented liquors are to be prohibited. But supposing the attack to occur in a feeble old man, reduced by frequent recurrences of the disease, or labouring at the same time under some other exhausting malady—and acute gout is common enough in these circumstances—it would be manifestly injudicious, if not unsafe, to adhere too rigidly to the rule of abstinence. Sydenham, himself a victim, and all practical writers, warn us of the danger of withholding animal food and wine in such cases. So long as there is much suffering, during the vehemence of the fit, the stomach usually loathes solids, and most patients may be trusted ; not so in regard to wine, for which there is frequently, from a feeling of sinking and faintness, an urgent craving. Beef-tea, mutton or chicken broth should then be taken, and, even from the very onset of the disease, two or three glasses of dry sherry allowed during the course of the day. Towards the decline of the fit a little light, easily digested, plain-cooked animal food may be given with the chief meal, proportioning the quantity to the power of the stomach. Throughout the attack care must be taken to regulate the bowels by a mild aperient, such as the compound rhubarb pill, or moderate doses of rhubarb and magnesia.

As regards local applications to the joint or joints affected, none are so soothing as tepid fomentations, either of plain water or the decoction of poppies. Warm-water dressing is often beneficial, and should be resorted to after the part has been well fomented. Cotton wool covered over with gutta-percha sheeting, or oil-silk, is a favourite wrapping with many sufferers, and proves useful, like similar applications, by encouraging perspiration from the surface. I have tried alkaline lotions without any obvious good, though they have been greatly lauded by some writers. It is unnecessary to speak of leeches or cold applications. Both are now-a-days discarded, except perhaps in violent attacks occurring in plethoric subjects in the prime of life; and even then most practitioners eschew them, under the apprehension, well or ill founded, of causing metastasis to some internal organ. Remembering the relief obtained on some early occasions from leeches, I have now and then been induced by solicitation to employ them, and sometimes without disappointment. I have never ventured to recommend cold, but like the illustrious Harvey, who is said to have always had recourse to it in his own case, an old gardener has often assured me, that nothing so effectually checked his frequent attacks of the disease as dipping his feet in cold water. On being threatened with a fit, I have repeatedly seen him throw aside his stockings and shoes, and work barefooted.

The œdema which often follows acute gout, and sometimes lasts for a considerable period in the aged, may be removed by position, friction with warm oil, or a gently stimulating liniment, and the use of an elastic bandage. Moderate exercise also conduces to the more speedy absorption of the effusion, and restoration of the lost vigour of the part. General debility succeeding the attack demands a warm vegetable tonic, such as the infusion of cascarilla or chirretta, a mixed nutritious restorative diet, and a moderate allowance of good old wine. Those who are habituated to spirits, instead of wine or malt liquor, should have a regulated quantity, well diluted, of the spirit to which they have been accustomed, two or three hours after their principal meal.

The treatment during convalescence, indeed, merges into that which suggests itself for the prevention of the disease. This is a wide subject, embracing regimen and hygiène in their minutest details; but it may be comprised in a few words—exercise, pure

air, cleanliness, moderation in eating and drinking, and attention to the bowels. It is in old age especially that the skill of the physician is tasked, in preventing a recurrence of gout, or in aiding convalescence after an attack. The various depurating functions are usually more or less at fault, some more so than others, the assimilating processes impaired, and the *vis medicatrix naturæ* weakened. Where there is so much to impede recovery, and so much to encourage a relapse, the eye must take a wide range, and the attendant combine his efforts accordingly. Mere attention to diet, however scientifically arranged, will not accomplish the end, nor will the avoidance of prejudicial habits, long acquired and deeply confirmed, if indeed abandoned at all with safety, prove effectual. No more aliment should be taken at any one time than the stomach can easily digest, and the amount of food should be restricted in the twenty-four hours to what is actually required for the repair of the tear and wear of the tissues. Excessive abstinence is unnecessary; it has never cured the disease nor prevented it, except under very peculiar circumstances. The author of the "Conspectus Medicinæ Theoreticæ" used to relate in his lectures how he effectually cured himself by this method and violent exercise; but then he was in the prime or meridian of life. We not unfrequently meet acute attacks in water-drinkers, and in low, depressed states of the system. I remember seeing a severe fit of the disease in an in-pensioner of Chelsea Hospital about sixty years of age who was dying from inanition through cancer of the œsophagus. Monro, in his work on "Diseases of the Stomach and Gullet," has alluded to a precisely similar case. A mixed diet, consisting of easily-digested animal substances, such as beef, mutton, poultry, and game, with potatoes, greens, spinach, stale bread, rice, young turnips, &c., may generally be regarded as more advantageous in the old than a regimen mainly consisting in vegetable or farinaceous food, admirably adapted for the young and vigorous gouty subject, but indifferently suited to the aged, with weakened digestive powers, prone to flatulence. Wine, so hurtful to the former, should not be withheld from the latter, especially where it has long been indulged in. Aged subjects in this country are generally partial to port or sherry, and these wines, especially sherry, are then best suited to them; but, as a general rule, the lighter Rhenish wines should be recommended to persons who

have lived sparingly, and all sweet or effervescing wines should be inhibited. I have known a few glasses of champagne bring on a violent fit of gout, when other wines had been pretty freely taken for months together without any obvious detriment. Claret sometimes agrees well with gouty patients, but, like champagne, it occasionally causes the disease in those who are not in the habit of drinking it. So long as it can be indulged in, there is no exercise so beneficial to the gouty as walking. Riding or driving is an indifferent substitute, though an essential one. The skin will require all the attention that can be devoted to it. Frequent tepid bathing, besides the usual morning and evening ablutions, must be resorted to, and should be followed perseveringly by dry rubbing with the flesh-brush. Shampooing has a most beneficial effect in equalising the circulation and invigorating the system, and is peculiarly adapted where the invalid is from necessity confined to his apartments.

The return of the disease is also most likely to be prevented by steadily persevering with these means, by great attention to diet, eschewing as much as possible all acid-producing articles, such as sugar, butter, sweet wines ; and indulging or rather leaning more towards non-nitrogenized than nitrogenized food, where vegetables agree and do not cause flatulence. Besides warm clothing, gouty subjects should avoid keen cutting winds, prevailing on the east coast of our island, and select the more westerly and southerly parts as a permanent residence. A long course of the alkaline waters of Carlsbad or Vichy is peculiarly serviceable in all cases accompanied with gravel of the lithic acid kind, or where the lithates abound in the urine. In these cases the preparations of potash should, as a general rule, be preferred to those of soda, on account of their forming a more soluble compound.

Of alleged specifics for the prevention of gout there is none now-a-days confided in. If any one remedy deserves the name, it is colchicum ; and in not a few instances, what may be called an alterative course has more than once seemed to me to have had the desired effect, where the disease had long been threatened. The once famous Portland powder has for long been abandoned, as has also the almost equally noted Chelsea-pensioner gout powder. One formula for the latter consisted of rhubarb, sulphur, nitre, and gum guaiacum, in equal parts. Fifteen or twenty grains

of the powder were taken morning and evening in treacle. Another was the following :—Powdered bark, ginger, guaiacum, of each one drachm, cream of tartar one ounce, flower of sulphur half an ounce, to be made into an electuary with simple syrup; one teaspoonful to be taken three times a-day. This is certainly not a bad combination, though a nauseous one.

When the disease presents itself in a chronic form, these are still the leading principles of treatment. The main object now in view is to improve the general health, by selecting and apportioning the food to the power of the stomach, the actual wants of the system, and individual peculiarities. By employing such aliment only as is easily and perfectly digested, the different depurating functions, already enfeebled, will be less tasked, and healthy assimilation and nutrition more effectually promoted. Each case is a study in itself, and the medicinal treatment requires modification according to existing circumstances. If the patient has been accustomed to live generously, it will be unwise, nay hazardous, to enforce abstinence, or violently to attempt to alter long-established habits. Where acidity occurs from the use of wine or other stimuli, they should, however, as a general rule, be either altogether abandoned for a time, or much reduced in quantity. In a great number of long-standing cases, the chemical qualities of the urine afford valuable hints in the absence of any obvious indications. Not unfrequently this secretion is then paler than natural, of low specific gravity, and especially deficient in the normal quantity of urea and uric acid. Sometimes it is alkaline, sometimes it contains small quantities of albumen. Under these circumstances, a restorative and invigorating plan of treatment is serviceable; and, indeed, in the great majority of examples of chronic gout, where the disease is persistent and the constitution shattered, tonics are the chief remedies. Among these the infusions of chirretta, calumba, and cascarilla are particularly useful. The mineral tonics, such as the citrate of iron and quinine, and the ammonio-citrate of iron, will be found of great service, where the disease is attended by a chlorotic or anæmic hue of the countenance, and more or less feebleness of the heart's action. Dr Gairdner extols the saccharine carbonate of the Edinburgh Pharmacopœia. The waters of Bath have long enjoyed a European reputation in these and like cases.

In exacerbated or intercurrent attacks seizing parts not persistently affected, colchicum in one form or other is the remedy on which we must chiefly rely for the relief of the symptoms. The acetous extract, combined with Dover's powder or henbane, seldom fails to procure some mitigation of the pain. Alterative doses of the compound tincture may afterwards be given for weeks with advantage, the dose varying from ten drops three times a day to double that amount, according to the nature of the case and the objects sought in the administration of the medicine. I believe it is generally better to let chalk-abscesses in and around the joints break of themselves than to open them with the knife. Little can be done for joints stiffened and deformed by chalky deposits, and thickening of the ligamentous tissues. In the beginning, before these changes have invaded many joints, or are but of limited extent, much good may be effected by small repeated doses of iodide of potassium, intermitted occasionally, but steadily persevered in for several months. Mr Spencer Wells, in his little work on gout, praises this remedy in these cases, and, after twenty years' experience, I can speak with confidence of its power in arresting disorganisation in many instances. It is certainly also much more successful in aiding the solution and rapid removal of gouty concretions than benzoic acid—a remedy regarded by many as of immense efficacy.

The treatment of atonic, suppressed gout is embraced in the observations above submitted in reference to convalescence from a regular fit of the disease, or to prophylactic measures. In broken-down habits, the Bath mineral waters are highly serviceable in invigorating the system, and sometimes determining an outward manifestation of the malady. In all cases, this is an object of the first importance, and is to be encouraged by stimulating, pediluvia, and occasionally, in cachectic states, by tonics, including a liberal allowance of wine and animal food. The stomach and bowels must receive due attention; and where the heart or kidneys are affected, the treatment must be modified according to the special character of the accompanying symptoms. So in regard to uterine disease and affections of the nervous system generally.

CHAPTER III.

RHEUMATIC GOUT.

GOUT and rheumatism are so closely allied, that a difficulty sometimes exists in distinguishing the one from the other. Nay Chomel, one of the most eminent pathologists of our day, regards them as but one and the same affection. Both occasionally run into each other by insensible gradations; and the union of the two, long familiarly called rheumatic gout, is, though by no means easily defined with nosological accuracy, pretty generally recognised by the profession as true in nature.

Rheumatic gout is peculiarly a disease of advanced life. Though met with in some of its most unequivocal forms in adults with impaired health, occasioned by derangement of the assimilating or uterine functions, and especially in persons hereditarily predisposed to gout and rheumatism, the great majority of cases occur after forty or forty-five years of age. Females are its chief victims, and the most helpless and irremediable examples in advanced life present themselves in this sex. Partaking of the essential characters of gout and rheumatism, the affection mainly declares itself by attacking the fibrous tissues, and is principally limited to the joints. Like rheumatism, it often fixes on the larger, but like gout it shows a predilection for the smaller articulations, and affects those of the hands especially. It resembles rheumatism in frequently seizing several of the larger joints simultaneously, but it bears a closer resemblance to gout than to rheumatism by the obstinacy of its local symptoms, and the permanent damage it entails on the joints affected. Chronic gout in the phalangeal articulations is often unaccompanied with pain, even where the joints are permanently enlarged, and the disease seems to be progressing. The combination with rheumatism is generally

attended with more or less suffering, though at first with but little swelling, and is more under the influence of changes in the weather than pure gout; so also in the larger articulations rheumatic gout is usually productive of continued distress, varying, it is true, in severity, but seldom even temporarily absent. The disease is for the most part of a chronic nature, and the tendency of the comparatively few acute attacks that occur in advanced life is to assume this form.

If the internal fibrous structures are at any time involved, the evidence is incomplete, although there seems reason to believe that they do not entirely escape. The heart and pericardium are but seldom if ever attacked, even in the most acute cases. Nevertheless, as the disease is much more frequently a secondary than a primary affection, succeeding repeated attacks of rheumatism or gout, both of which too frequently leave unequivocal traces of their influence on the fibrous envelopes of the internal organs, as well as in the fibrous coat of the arteries, it may reasonably be presumed that the amalgamation of the two diseases, constituting the hybrid affection, also gives rise to alterations in these tissues, and the subjects of rheumatic gout are, it is said, prone to pleurisy. Unquestionably they are liable to attacks of sclerotic and iritic ophthalmia, though not to the same extent as sufferers from uncombined gout or rheumatism. The latter especially is a fruitful source of these affections.

The constitutional origin of the disease is perhaps less marked in recent examples than in the separate affections. In the majority of cases, however, the general health is more or less impaired, and the hepatic, digestive, and urinary functions disturbed in various ways. The bowels are confined, the evacuations frequently of a dark colour, the urine pale and of low specific gravity; but it differs in these respects as well as in quantity. Occasionally the disease seems to be centred in the local affection, the general health remaining surprisingly good, the tongue natural, the appetite keen, the mind cheerful and active, notwithstanding permanent crippling of the extremities, and more or less persistent suffering. In subacute attacks, the system is almost always affected, the liver congested, and the albugineæ tinged.

As above observed, the smaller articulations are more peculiarly the local seat of the disease. The joints are swollen, from thick-

ening of the fibrous tissues, the capsules, synovial membrane, and tendons. The articular ends of the bones are at the same time enlarged and frequently displaced, the fingers being adducted or abducted, the corresponding joints of both hands presenting a surprising uniformity in the abnormal appearance assumed. In some inveterate instances, almost every joint is invaded, the spine included, reducing the patient to a deplorable, helpless state, with contracted rigid limbs, unfitting him for the ordinary offices of life.

A common seat of the disease in old people is the hip-joint, though the shoulder and knee-joints are also frequently affected. As in the hands, great and important changes take place in the larger joints. These changes have been accurately described either as the result of rheumatic or gouty arthritis, or of simple chronic arthritis, by Cruveilhier, Adams, Todd and others, the most singular features of which, in advanced stages, are the absorption of the articular cartilages, through which, by continued friction and pressure, the articular surfaces assume a hard, smooth, polished aspect, resembling porcelain or ivory, while the bones themselves composing the joint become enlarged, deformed, and irregular, and the synovial membrane, ligaments and capsule, thickened, fringed, and otherwise altered. In the hip-joint, the acetabulum is deepened, the head of the femur more or less flattened and expanded, the neck shortened and thickened. The head of the bone and trochanter major sometimes approach so closely that the appearances resemble an old-standing impacted fracture of the cervix, with bony union, for which, indeed, they have often been mistaken.

These changes in the hip-joint are slowly induced. Sometimes subacute symptoms are observed, there being pain and tenderness in the region of the joint, always increased by motion, and accompanied by slight reaction; but, for the most part, the disease comes on gradually, is originally of a strictly chronic nature, and pursues a chronic course, with temporary aggravations of pain and lameness, seldom with febrile symptoms. The pain is generally of a peculiar gnawing kind, and is referred to the groin, trochanter major, and nates. It seldom affects the knee, but it often extends down the back of the thigh to the leg, and is consequently liable to be attributed to sciatica. Rest relieves it. Like that affection, it is sometimes exasperated by the warmth of the bed, generally by changes in the weather, and is particularly annoying

during the prevalence of east winds. The limb is weak and atrophied, the buttock wasted and flattened. The gait is peculiar, the foot partially everted, the heel sometimes raised from the ground, and the body bent to the side of the affected limb, so that altogether, on seeing a sufferer from the disease walking—and every hospital allotted to the aged possesses several—there is seldom any difficulty in recognising it at a distance; the only thing that it is then likely to be confounded with being old fracture of the neck of the thigh-bone. Most patients trace the disease to rheumatism, to which, at some former period more or less remote, they had been subject. In many instances they have recently, before the hip became affected, suffered from distinct or obscure attacks of gout in the feet, hands, or in some of the large joints. Falls on the hip frequently induce it; and to accidents of this sort sufferers from this disease are very liable, each injury aggravating the affection, and, without the knowledge of its previous existence and the deformity it has caused, occasionally embarrassing the surgeon in his diagnosis of the true nature of the case. Males are more peculiarly prone to it, and when fully formed it has been observed that it is generally limited to one hip, the other articulations remaining free from disease. In this respect it differs from the form the disease takes when the hands are primarily attacked, females being then more particularly the subjects; and other joints of the same order seldom entirely escaping, while the larger joints also become affected in the progress of time.

Treatment.—Of a rebellious and intractable nature when fully established, this disease, wherever situated, hardly admits of more than temporary or partial relief. If limited to a single joint, and of recent duration, a judicious choice of constitutional and local measures may arrest the serious consequences referred to, and effect a permanent recovery; but where more than one joint is concerned, and the disease has acquired a firm footing, the utmost we can expect to accomplish is the alleviation of the more urgent symptoms and retardation of further disorganisation.

Acute and even subacute attacks are so rare in advanced life that the consideration of them might be passed without comment. Occasionally, however, this form of the disease does occur, in the larger joints especially, and oftener in the shoulder than any other.

In seizures of this kind, the usual antiphlogistic remedies should be employed, commensurate with the gravity of the symptoms and the strength and energies of the patient. Leeches and tepid fomentations, with the exhibition of the acetous extract of colchicum, and Dover's powder, the bowels having previously been freely opened by colocynth and calomel, prove of great benefit. It is needless, however, to enter further into the consideration of attacks of this nature, the treatment of which are perfectly understood. In the majority of cases, when consulted, the period has gone by for active measures, or the form of attack and condition of the patient point out the inutility and impropriety of following them except with the object of procuring temporary relief from increased suffering, or as a preparation for counter irritation. Remedies of this kind are sometimes very serviceable. A succession of blisters behind the trochanter has in several instances almost entirely removed the aching, gnawing pain usually experienced. An embrocation composed of equal parts of chloroform and compound soap liniment is now and then equally efficacious. Great relief is also frequently procured from the tepid water douche, followed by friction. But in no case should local measures be alone trusted to. The general treatment differs but little, if at all, from that required in chronic gout and chronic rheumatism. To preserve or improve the general health, by promoting a normal discharge of the assimilating and excretory functions, is a primary object. This is to be attempted by attention to diet and regimen, appropriate remedies being employed to correct existing derangements, the use of the tepid or hot-air bath, exercise suited to the strength and condition of the patient, warm clothing, early hours, &c., &c. If the solids in the urine are deficient, and the secretion itself scanty, alterative doses of the compound tincture of colchicum, with the acetate of potash, may be given in the decoction of snake-root, or in the decoction of taraxacum. When the evacuations are dark and digestion weak, the appetite defective and the bowels confined or irregular, an occasional mild mercurial purgative will be useful. The tone of the stomach and primæ viæ will, at the same time, be benefited by tonic aperients, such as the compound aloetic pill or the compound gentian mixture, with or without the extract of taraxacum. Medicines of a purgative nature should, how-

ever, be discontinued as soon as they cease to be required, and the action of the bowels preferably encouraged by appropriate diet and exercise. Colchicum, of inestimable value in acute attacks and in genuine gout, is less efficacious here. Its administration should be reserved for aggravations of the disease common in atmospherical vicissitudes, and where, from some unknown cause, the lithates have temporarily disappeared from the urine. In early stages, benefit may be obtained by the exhibition of the compound decoction of sarsaparilla, with the liquor potassæ and the iodide of potassium, the latter in doses varying from two to three grains three times a-day. The external application of iodine, the tincture or ointment, is also occasionally useful when the disease is but beginning to show itself in the knuckles and other small joints. Later, when the general health is broken, the iodide of potassium should be cautiously given with the decoction of bark, or some other tonic infusion. The mineral tonics are demanded in cachectic states, with an anæmic aspect, and the iodide of iron, the ammonio-citrate, or saccharine carbonate, is then serviceable. In some cases a course of arsenic watchfully but perseveringly employed has proved of great service. What has been said as to the advantages of mineral waters in chronic gout, applies equally in the treatment of this obstinate disease; and of these none seems to preserve a higher or more deserved reputation than those of Bath and Buxton, or of Carlsbad and Wiesbaden.

CHAPTER IV.

GANGRÆNA SENILIS.

THOUGH dry gangrene is unquestionably an occasional consequence of a diseased condition of the blood, it is oftener the result of local causes, to be presently adverted to, more immediately connected with the blood-vessels themselves. In placing it here, I by no means wish to be considered as binding myself to the notion of its origin in a poisoned state of the vital fluid, more than to any other theory of its proximate cause. I place it here as a matter of convenience only, having omitted it under the head of diseases of the circulatory system, where perhaps it would have been more appropriately treated.

Great numbers of bed-ridden old people are ultimately carried off by sloughing of the hips and soft textures covering the sacrum; the exhaustion thus occasioned is the immediate cause of death of the majority, long lying in a state of torpor from structural disease of the nervous centres,—diseases impairing organic nervous power, promoting congestion, and rendering exposed surfaces unable to resist the destructive influence of ordinary irritative inflammation, frequently induced in these and like cases by pressure, dribbling of urine and involuntary discharges from the bowels, and only to be averted by good nursing, support, and the use of the water-bed, or water and air cushions.

The aged are more peculiarly liable to a form of gangrene which very generally attacks the extremities, and usually selects the toes and feet in preference to the fingers and hands. Long familiarly known under the appellation of *gangræna senilis*, other names have also been assigned to it, the term *senile* being strongly objected to by many as conveying the impression that the disease is limited to the old, whereas no age appears to be entirely exempt from it. But if this term be objectionable, those proposed to be

substituted, and scarcely less generally in use, are nearly equally faulty. Assuming certain common features as characteristic, it has been called *dry* gangrene and *atonic* gangrene; but neither dryness nor atony invariably attends it; for, on the contrary, it is occasionally accompanied with tumidity and moisture, as well as with sthenic inflammatory symptoms, local and constitutional. Again, it has received various names, founded on its supposed pathology; but as yet the precise nature of the disease is involved in obscurity, and perhaps he is nearest the truth who admits that it is due to no one single cause, but proceeds from several, predisposing and exciting. Among the former may be reckoned whatever arrests or retards the circulation in the part, such as calcification and obstruction of the capillaries, their blocking up by emboli, &c., and, among the latter, arteritis; but as the vessels sometimes present a perfectly normal character, or, if altered, are only altered by the changes effected in the solids and fluids by the disease itself, other occult causes seem in many cases to be in operation, and here we assume senile degeneration of the solids and fluids—of the blood itself—the nerves and vital forces.

In our present state of knowledge, spontaneous or idiopathic gangrene is perhaps the least objectionable of all the names given to it, since assuredly, in the majority of cases, it is the most consistent with its obscure and doubtful origin; but inasmuch as it is very peculiarly a disease of advanced epochs of life, if the term senile is due to any one malady, it unquestionably appertains to this, and accordingly I employ it. So satisfied are professional men of the prevalence of the disease in the aged, that exceptional cases are eagerly sought for; and there can be little doubt many more of them are brought to light, and appear in the records of medicine on that account, than in proportion to the actual number occurring in the aged, which thus to a certain extent lose the interest attached to them. Hecker found in 67 cases where the age had been noted, that 24 occurred in persons between the ages of one and fifty years (only one of which occurred between the fortieth and fiftieth year), and 43 between the ages of fifty and one hundred years. No less than 31 of this number occurred between the ages of fifty and seventy, viz., 12 at the age fifty to sixty, and 19 at the age sixty to seventy; 3 occurred between the ages of seventy and eighty, and 8 between the ages of eighty and

ninety. In 12 cases falling under my own observation in Chelsea Hospital, between the years 1846 and 1859, 1 occurred at the age of fifty-nine, 1 at seventy-two, 1 at seventy-six, 2 at seventy-nine, 2 at eighty, 2 at eighty-eight, 2 at ninety-two, and 1 at ninety-six. It would thus appear that the predisposition to the disease increases with the advance of life, and the returns of the Registrar-General fully corroborate this view, since by a supplementary table in the Eighteenth Annual Report of that functionary, for the year 1855, it appears that out of 331 cases of death from "dry gangrene" in persons between forty-five and eighty-five years of age, 121 occurred in the first half of the period—viz., between forty-five and sixty-five years of age; and notwithstanding the greatly reduced number living, no less than 210 in the second half—viz., between sixty-five and eighty-five years of age. The highest mortality was between the sixty-fifth and seventy-fifth years, when it reached 151; the lowest between the forty-fifth and fifty-fifth, viz., 28.

Pott, who, by the publication of his valuable observations on the disease, attracted prominent notice to it, and whose name it still bears, appears to have regarded it as almost exclusively confined to men: "For one female in whom I have met with it," says this great surgeon, "I think I may say that I have seen it in at least twenty males."* But of the 331 fatal cases above referred to, a third occurred in females.

The disease frequently appears in persons of excellent constitution, in the enjoyment of sound health. It then occasionally preserves for some time a local character, the system sympathizing but little with the destructive process going on in the extremity. Gout has been set down as a predisposing cause, and most systematic writers have stated as a fact what Pott only conjectured from his own experience, that it attacks more especially the rich and voluptuous, those who indulge freely in the pleasures of the table; and oftener in great eaters than free drinkers. Common, however, as the disease is in the affluent, and in robust and vigorous habits, it more generally occurs in persons reduced in circumstances, and in shattered constitutions, debilitated by age, privations, intemperance, and chronic structural, or functional

* Chirurgical Works, vol. iii. p. 333, Ed. 1779.

maladies. The frequency of chronic diseases in advanced periods of life, complicating both recent and old-standing affections of every kind, often renders it next to impossible to estimate with any precision the influence they may possess in aiding the production of any one disease, distinct from those under which the individual is already labouring; but there seems reason to believe that, of the class of disease referred to, chronic bronchial irritation, with consequent cardiac disease, and imperfect decarbonisation of the blood, granular degeneration of the kidneys, also impairing the nutrient fluid, and all cerebral lesions affecting innervation, promote gangrene in the extremities, in parts most distant from the central organ of the circulation, where the vital actions are less energetic and more easily overcome. A careful perusal of many faithfully recorded cases of this disease, will satisfy any one of the frequent co-existence of Bright's kidney. In two if not three of twelve cases occurring in Chelsea Hospital, one or both of the kidneys were thus more or less affected, though the disease was not suspected during life; and in one of the three cases, appearing, it should be observed, in a young lad seventeen years of age, recorded by Dr Weir, in the third volume of the Glasgow Medical Journal for 1855, the only one indeed in which a minute *post-mortem* examination was made, both kidneys were in an advanced stage of granular degeneration.

Fatty degeneration of the heart and valvular lesions of that organ, by diminishing the natural supply of blood to the remote parts, or preventing its ready return, unquestionably exert a powerful influence in promoting the disease; for there can be no doubt that senile gangrene is frequently in a great measure the result of a deficient supply of blood in the part; but, as direct exciting causes of the disease, these changes in the central organ of the circulation appear to have been overrated. The same may unquestionably be averred of ossification of the arteries, which, from the days of Cowper the anatomist, has by many been considered, and by none more ably contended for than Carswell, as not only predisposing to, but actually regarded as a chief, if not its immediate cause. Were it so, spontaneous gangrene would be still more common in the old than it really is; for in persons above sixty-five years of age, ossification, thickening, and partial obstruction of the principal arteries of the extremities is the rule,

a perfectly normal condition the exception. In 28 cases of the disease, occurring in persons of both sexes, of from sixty to eighty-two years of age, Durand-Fardel found the arteries ossified sixteen times, and not ossified twelve times. In 4 out of 8 or 10 cases falling under my observation, the average age of the whole being seventy-six, these being the only ones examined with this view, and in all of which the gangrene was situated in the lower extremities, the arteries in the vicinity of the disease were more or less ossified or obstructed by old-standing thickening of their tunics, the corresponding vessels in the opposite limb being similarly affected, though in one instance only were both feet attacked. Out of 34 cases occurring in persons above sixty years of age, the writer above quoted found the arteries of the extremity slightly diminished in calibre in 5 only of the number. Now, as a determining cause of the disease, it is clear that ossification or constriction of the arteries can only prove effectual when these alterations are carried to the extent of entirely, or almost entirely, obliterating the vessels and abolishing their function ; but this is seldom if ever found to be the case, even where the arteries are universally diseased. Calcification and chronic thickening, with consequent narrowing of the arteries, and impeded circulation may, under a combination of circumstances, promote or expedite the disease ; but in no instance of themselves, it may be safely asserted, have they ever produced it. They are but coincidences, and, says Pott, "for the opinion that ossification of the vessels gives rise to the disease, I never could find any foundation but mere conjecture."

The doctrine that the proximate cause of dry gangrene is adhesive inflammation of the principal arteries of the limb or of the capillaries, with obstruction from coagula or fibrinous deposits, has the assent of many noted pathologists on the Continent, such as Dupuytren, Broussais, Cruveilhier, Bouillaud, but comparatively few maintain it in this country. That inflammation of the arterial trunks or capillaries of a limb occasionally and not unfrequently ends in gangrene, cannot be denied : everyday experience proves it, and some of the most remarkable instances on record, of the form of the disease under consideration, appear to have been clearly traced to this cause by competent observers, among whom, as among the latest, may more especially be mentioned Professor Tiedemann ; but, on the other hand,

everyday experience also proves, beyond all doubt, that it occurs in a still greater proportion of cases, where the most careful examination fails to discover any sign of inflammation in any portion of the vascular system, arterial or venous. The entire cessation of the circulation in a part is the death of a part, howsoever brought about. Where the vessels in their terminal branches are already partially occluded by calcification, chronic thickening, or fibrinous deposits in the state they are frequently seen in the old, the accidental supervention of acute inflammation in the trunks or ramifications of the arteries thus affected must very materially conduce to the arrest of the circulation in the limb. Imperfectly nourished by reason of the deficient supply of blood, the further diminution of the supply kills the part already degenerated, and in a manner dead though still living. Thus, then, arteritis, comparatively a rare disease in all stages of life, is more liable to produce gangrene in the old already predisposed by the associations previously adverted to, by calcification, narrowing and impaired contractile power of the arterial capillaries, aggravated, it may be, by co-existing softening of the heart, or valvular impediments, a degenerated condition of the vital fluid, impairing its stimulant and nutrient qualities ; and, lastly, by decay of the nervous energy, senile and natural, or accidental and premature, the result of organic disease of the nervous centres, insufficient nourishment, or of the habitual abuse of spirituous liquors. The coagula and fibrinous deposits, or firm white cords, so often met with in the main arteries on post-mortem examination, are, generally speaking, results of the gangrene, though occasionally their adhesion to the vessels indicates an inflammatory origin. The late Professor Turner of Edinburgh shewed that sudden and permanent obstruction of the arteries, occasionally ending in gangrene, was occasioned by laceration of their inner coats, which he regarded as originating sometimes in previous disease, sometimes in inflammation. The white cords referred to, Staff-Surgeon Gamgee* has ascertained, by microscopical examination, are sometimes made up of the lining membrane and inner layers of the middle coat consequent upon splitting up of the latter, confirming the Professor's view of their nature. There are now several cases on record which prove the

* Researches on Pathological Anatomy.

disease to have originated in the lodgment of emboli, detached from the heart, or some portion of the vascular system, in the leading arteries of the part attacked, among which one of the most interesting and conclusive, as the gangrene attacked several parts simultaneously, is that by Dr Goodfellow in the last volume of the Med. Chir. Trans.

It has been said that the gangrene is always preceded by inflammation,—that inflammation in the textures involved is the primary link in the process of disorganisation and death of the part. Observation, however, does not confirm this view, for in not a few cases all the external signs of inflammation are wanting until the disease has made some progress, if they appear at all, and an attempt is made in the living tissues to arrest the advance of the gangrene. This question brings us at once to the consideration of the symptoms and signs of the disease.

Symptoms.—A remarkable difference exists in different cases, not only as regards its mode of invasion, the appearances and the character of the constitutional symptoms, but also as regards its progress and duration. In one set of cases, the disease is preceded for days, weeks, or months, by pain in the part about to be attacked, sometimes sharp, burning, lancinating, and severe, at other times dull, aching, and obscure, with a benumbing sensation of extreme cold; at one time limited to the toe or toes, at other times affecting the sole of the foot, and extending to the ankle and leg, without being accompanied with any obvious constitutional disturbance or change in the physical condition of the part, if, perchance, its temperature is not increased or diminished; sometimes fixing itself in the ball of the great toe or neighbourhood, and altogether simulating rheumatism of the fibrous tissues of the foot, the patient is presumed to be gouty or rheumatic, a supposition not unfrequently favoured by the occurrence on former occasions of attacks of this kind, and by the pain or pains being usually much increased in the night time; but this mode of seizure is often observed in individuals who have never had gout or rheumatism. In other cases, on the contrary, the disease appears without having been preceded by pain of any kind, or, if it has existed, it has scarcely attracted notice, being more a sensation of weight, numbness and coldness, than actual pain. In the former cases, where the pain has been very severe, it usually becomes somewhat mitigated on the advent,

or soon after the advent of the disease, but it rarely or never entirely disappears, and it continues to be aggravated in the night time.

In the latter cases, however insidious the onset of the disease, the gangrene has seldom proceeded a few days without more or less suffering; and as in the former mode of attack so in this, the pain is increased in the night, depriving the patient of sleep, without the use of strong opiates. There are rare cases, however, in which the disease progresses without any pain whatever, as in one described by Hildanus, and incidentally quoted by Morgagni, of a man seventy years of age, where "the gangrene crept upwards from the toes, after an uneasy sensation of cold and stupor, so that the foot and leg became black like charcoal, and cold, immoderately dry, and attenuated; but without any pain at any time."

This diversity in the nature and degree of pain preceding or accompanying the disease cannot be accounted for in the present state of knowledge. It in no way indicates an essential diversity of form; and though premonitory pains have been attributed to arteritis and its consequences, in some of the most marked attacks, where these pains have existed for weeks together in a severe degree, the arteries presumed to be their site have been found perfectly healthy, while the nerves themselves have also, on the most careful microscopical inspection, proved to be free from any obvious alteration.

The subsequent progress of the disease is similar in both descriptions of cases. Almost the first objective symptom that attracts the notice of the practitioner in examining the part threatened with gangrene is a change of colour. In general a blush of redness, sometimes of a yellowish tinge, often of very confined extent, is observed, which by degrees becomes more and more perceptible, and gradually assumes a dark or livid hue, increasing in depth, until at length it is a deep purple, approaching to black. Though accompanied with a burning sensation, the part to the touch feels icy cold. Vesicles now occasionally appear, on removing which the skin underneath is found to be of a dark reddish-brown colour. These cases, with phylictenæ and more or less exudation, are of an intermediate nature between moist and dry gangrene, but phylictenæ sometimes arise where the parts underneath the surface and around are scarcely if at all moist or

swollen. Usually the gangrene is unequivocally of the dry kind, and inodorous. The part affected shrinks, dies, and becomes horny and black—mummified, as it has been called. But neither redness nor blackness is an essential feature of the disease, for occasionally the cold, dry, insensible, and shrivelled parts are of a dirty white colour, and retain this appearance throughout—hence the distinctions, *black* dry gangrene and *pale or white* dry gangrene, met with in systematic writers. The difference in colour arises from the absence or presence of blood in the gangrened part, and the subsequent chemical changes effected in the constituents of this fluid. When from any cause, as Quesnay long ago remarked, the circulation in the arteries is entirely arrested, so that they remain empty, something of the natural colour of the skin is retained. Examples of both these forms of gangrene are sometimes met with in one and the same individual, as in a case recorded by Mr Gamgee in his work above referred to, and in another adverted to by Mr Cooper in his Surgical Dictionary, in the article "Gangrene," in both of which the opposite extremities were simultaneously differently affected, the one with black and the other with white gangrene.

The disease usually commences on one of the small toes, and oftener on its inner suface than elsewhere. Generally it cannot be traced to any external cause, but, in two instances within my knowledge, the individuals blamed an attempt to remove, a soft corn; and this operation, as well as some slight injury sustained in paring a nail, has frequently been accused of producing it, and not without reason. In a third case, first appearing between two toes, it commenced in a small superficial ulcer following a blister brought on by a long walk. The ulcer had nearly healed a second time when the gangrene appeared. In a fourth case, for several weeks preceded by severe neuralgic pains in the foot, and tenderness in the heel, occurring in a partially paraplegic subject, aged seventy, of a rheumatic habit, the gangrene showed itself in the heel and dorsun of the foot ten or twelve days after the application of a blister to the instep. The gangrene in this instance first declared itself on the outer part of the heel by a white colourless patch of icy coldness. Occasionally the gangrene advances with great rapidity; more generally, however, it is of a decidedly chronic nature, sometimes occupying several months in

destroying one or more toes. When arteritis or other inflammatory ailment occasions it, the progress is more rapid than when it originates in organic changes gradually arising, or from unknown causes. For sometimes the disease may be limited to the toe first attacked, withering and drying it up before implicating others, and hopes may be entertained that the destructive process has stopped there ; but more frequently the adjacent toe becomes affected long before the first has perished, and sooner or later, should the patient survive, several are invaded. By slow degrees the gangrene travels up the foot, preceded by faint redness, sometimes mottled or streaky, sometimes of a yellowish hue, and accompanied or otherwise with slight tumefaction or œdema. In this manner it reaches the ankle, the leg, and even the thigh, in a few rare instances, still preserving its dry character, but now and then changing it or assuming an intermediate form, the parts falling into mortification retaining a portion of their moisture, and becoming soft, putrid, and offensive. The main arteries cease to pulsate as the disease advances, becoming plugged by coagula, and feeling like hard round cords. In favourable cases the cessation of the gangrene is marked by a diminution of the redness and swelling, and then by the occurrence of a distinct red line of demarcation between the dead and the living parts, in which the process of ulceration shortly begins, that in time brings about the separation of the one from the other. If still disposed to spread, the disease generally proves fatal before it has extended to the leg ; and in the majority of cases occurring in the more advanced periods of life, it seldom goes much beyond the toes. Very generally, in old broken-down subjects, previously exhausted by chronic maladies, death ensues before the disease has even wholly destroyed the toe first attacked. For one case in which it reaches the ankle, perhaps eight or ten perish. In almost all the examples I have seen terminating fatally, the patient has been carried off while the disease was still limited to the toes or fore part of the foot ; but some very old people have survived for weeks and months after it has reached the leg. A case is mentioned by Morgagni of a nobleman, eighty-four years of age, where the disease, which involved the toes, foot, and ankle, lasted at least four months ; and he refers to another of an old woman nearly ninety-two, where life was preserved for about six months. In a

case by Francois, the patient survived a year after the gangrene actually occurred ; and Le Groux has recorded another, occurring in a man aged sixty-six, where the disease made such slow progress that the patient did not die till the expiration of nearly a twelvemonth from the first attack on one of the toes (Cruveilhier, Anat. Pathol. liv. xxvii.)

One of the most remarkable circumstances observed in senile gangrene in not a few instances, is the little constitutional disturbance attending it. As already stated, the disease not unfrequently attacks old people in the full enjoyment of health, and for a long time maintains a strictly local character. These persons still relish their food, eat heartily, and even sometimes go about their ordinary business with perchance one or more toes in a gangrenous state. A labourer of advanced age has been known to work in the fields for some time after the gangrene commenced. Usually, however, the acute pain generally accompanying the disease, and the want of sleep, soon tell on the system ; and, as the gangrene advances, a low irritative fever sets in, marked by nocturnal accessions, and the patient gradually sinks into a typhoid state, from which he rarely recovers.

Prognosis.—So much inclined to advance from bad to worse is this disease, though slowly it may be, yet certainly, that the prognosis is highly unfavourable. Mr Samuel Cooper (Surgical Dictionary, p. 978) estimated that, in this country, not more than one patient in twenty is saved ; but this unfavourable estimate is much too high, and the recoveries, even under very adverse circumstances, are sufficiently numerous to modify the opinion pretty generally entertained of its extraordinary fatality. Pott, Dupuytren, Dauvergne, and others speak distinctly of men of seventy and eighty years of age who survived it, and the recoveries are still more numerous in persons who have not reached sixty. Francois quoted in the article "Gangrene," in the 13th vol. of the Dict. de Méd., says that in 36 cases 13 recovered, 21 died, and 2 were doubtful. The ages are not given, and the proportion of recoveries to deaths is certainly greater than is generally observed in practice. In all ages, from results obtained indiscriminately from the observations of pathologists throughout Europe, Hecker found the proportion of recoveries to the deaths as 43 to 26 ;—a result also so favourable and so much opposed to the teaching of the schools and the

results of hospital practice, that there appears reason to doubt its accuracy. The proneness to record successful treatment vitiates most inquiries of this kind, and individual experience is generally much too limited to afford correct data. Judging, however, in this way, from personal observation, I should say that beyond fifty or fifty-five years of age, the deaths from spontaneous gangrene of the extremities are 8 or 10 to 1 of the recoveries. A second attack or a relapse is very generally fatal. I have never seen a recovery where both feet were affected. I once had a man under my care who, after getting over an attack in one of his toes, was some months afterwards seized in both feet, and died in about a month from the first appearance of the disease.

Treatment.—For all practical purposes of treatment, this disease may be classified—first, into cases accompanied with much local inflammation and more or less febrile reaction of a sthenic rather than of an asthenic character; secondly, into those where the local inflammatory action is of a subdued or congestive nature, and the febrile disturbance proportionately moderate if present. These might again be subdivided. A third class may be instanced in which there appears to be a total absence of inflammation in the part attacked, which withers, dries up, and dies without the usual signs of inflammation preceding or accompanying the disease. The first class of cases are usually rapid in their progress, the gangrene sometimes spreading in a few days up the limb and destroying it. To the second and third class belong the majority of cases in advanced and declining life. Generally of a chronic nature, they are often for a longer or shorter period local in their character, the system scarcely sympathizing with the disorganisation going on in the extremity. However violent the constitutional symptoms may be at the commencement of the disease in acute attacks apparently originating in inflammation of the arteries themselves, or of the whole of the tissues without distinction, they soon assume a typhoid or irritative type, increasing in severity with the advance of the gangrene; and the knowledge of this tendency is a sufficient warning against antiphlogistic treatment pursued beyond just limits, strong as the indication may at first appear to be.

The day has gone by when all cases of senile gangrene were treated alike, under the notion that the disease solely originated

in debility and required stimulating remedies, local and constitutional. If there is any disease more than another demanding the proper adaptation of means to the peculiar circumstances of individual cases, it is the one under consideration. To treat the different classes above alluded to in one and the same way would be manifestly unscientific and hazardous. The precise condition of the patient, both before and during the attack, the state of the vascular system especially, and the character of the symptomatic fever, as well as of the local phenomena, should be duly attended to ; and by these the practitioner should be governed, irrespective of theoretical considerations, which, however just, are not always the best guides of practice. Where the symptoms are decidedly inflammatory, the gangrenous parts red, more or less swollen, and painful on pressure, a few leeches generally afford relief, though they may not arrest the progress of the disease. General bloodletting is rarely if ever advisable, and certainly ought not to be resorted to, unless where the constitutional affection runs high, and the fever is decidedly of a sthenic nature. The extraordinary success which Dupuytren alleges he met with in senile gangrene from this measure, and active antiphlogistic treatment generally, viz., "the preservation or relief of two-thirds or three-fourths of the patients," is irreconcileable with general observation, and can only be explained by the paucity of the cases treated. The practice has utterly failed in other hands, and is hardly ever resorted to in this country,—the tendency to a typhoid condition, and the whole character of the disease, forbidding it. Speaking generally of the "external or chirurgic treatment," Pott has said, "Whatever heats, irritates, stimulates, or gives uneasiness, appears always to increase the disorder, and to add to the rapidity of its progress ; and on the contrary, whatever tends merely to calm, to appease, and to relax, at least retards the mischief, if it does no more." The truthfulness of this observation is now almost universally recognised. All local applications should therefore be of the mildest and most soothing description, and be hot or cold, in accordance with the feelings of the patient. Tepid fomentations, linseed poultices, or the warm-water dressing, generally answer. Along with these measures, the diet should be bland, non-stimulating. Mild antiphlogistic means, occasional doses of calomel and James's powder, in the more acute attacks ; an open state of

the bowels, perfect repose, a spare or vegetable diet, abstinence from wine and all fermented liquors, and the avoidance of irritating applications, is the line of practice generally followed by the best authorities in this country, wherever there are signs of local inflammation of any intensity. Dr Thomson* strongly advocated a vegetable diet and a non-stimulating regimen in inflammatory gangrene, even when accompanied from the first by fever of a typhoid type, and he was of opinion that vinous liquors or animal food was inadmissible before the gangrene passed into sphacelus, and the symptomatic fever began to abate,—views which, if they do not command universal assent, are at all events well calculated, when coupled with the recommendation of blood-letting by many continental physicians and surgeons, to allay the apprehension frequently entertained of treating these cases on ordinary or general principles, and of withholding stimuli till a proper period has arrived for their administration. In cases of a mixed nature, however, it may become a question whether a corresponding modification of treatment should not be pursued. Thus, while leeches may be advisable to appease pain or reduce high inflammatory action, wine and other stimulants may be necessary to support the failing strength, and afford time for the commencement of the process by which nature brings about the separation of the dead from the living structures.

In the management of the second class of cases,—those unaccompanied by constitutional excitement, though presenting local inflammatory symptoms, active or passive,—bleeding in any shape is usually unnecessary; but even here, where the disease is limited to a toe and still advancing, one or two leeches occasionally applied sometimes bring an abatement of pain, and appear to retard the progress of the gangrene. For the most part, antiphlogistic measures should be restricted to this object, if resorted to at all; at the same time, though the diet may be more generous than in the strictly inflammatory cases, it ought still to be moderate in quantity, and chiefly consist of farinaceous substances, bread and milk, eggs, arrowroot, and rice-milk, in the earlier stages of the disease. If the patient has been accustomed to indulge freely in fermented liquors, they ought not entirely to be withheld from him, their effects on the pulse, skin, and tongue, and on the local

* Lectures on Inflammation, p. 561.

phenomena themselves being carefully watched, and their administration accordingly regulated. The topical applications, as in the preceding cases, ought to be of the most soothing kind. Linseed poultices, medicated with opium or conium, will be useful in moderating pain ; yeast or charcoal poultices in destroying fætor.

Where there seems to be a total or nearly total absence of inflammatory action in the part, as in the third class adverted to, and the constitutional symptoms, if any, are of an irritative kind, or consist only in exhaustion and debility, the limb affected should be wrapped in cotton wool, and treated precisely as after ligature of a main artery, the object being to preserve the natural warmth, and promote the circulation in the capillaries. It is in these and like cases that an invigorating and stimulating plan of treatment has been recommended, and appears indicated by the whole phenomena of the disease, by the feebleness of the circulation in the part, the weakness of the pulse, the absence of febrile reaction, or the advent of typhoid symptoms, tremors, prostration, &c. But while recourse may be had in these cases to wine and brandy with benefit, great care is also here necessary not to employ them so as to excite the system or over-stimulate the part.

Diet, regimen, and local measures do not, however, constitute the whole practice. Bark, opium, and ammonia are remedies which, singly or conjointly, are extensively employed. The two first have long enjoyed a high reputation in the treatment of all forms of gangrene. Bark was indeed at one time almost regarded as a specific for the prevention and cure of every species of this disease, until Pott first threw doubts on its efficacy in the gangrene of the feet and toes of old people, and in doing so drew the attention of the profession to the superior virtues of opium. Since his time it has nevertheless continued to be employed, though now-a-days it is solely viewed as a tonic, and given as such—the sulphate of quinine being the preparation generally selected. Opium is a most valuable and indispensable medicine in most cases. Its power over the disease falls short of the expectations formed of it by that distinguished surgeon—expectations seemingly formed from a somewhat limited experience of its utility ; but there are few cases in which its judicious employment is not attended with benefit, and where there is much nocturnal pain, it is the only internal remedy that affords relief, procures sleep, and, by these

properties, sustains the flagging powers of the patient. For the cases of its exhibition should be limited to this period; but in most part, extreme suffering, it is sometimes necessary to give it to the extent of grain-doses three or four times a day. A surprising tolerance of the remedy is generally observed in these circumstances. As in the slowly advancing form of the disease, and in the more advanced stages, in all cases, accompanied with prostration or typhoid symptoms, the chief hope of supporting the strength and preserving the patient rests on the quantity and quality of nutriment which can be digested and appropriated, and on the amount of wine which can be taken without heating the skin, or notably accelerating the pulse.

It now only remains to refer to the question of more active surgical interference. Cases have been recorded in which amputation has succeeded in saving life while the disease was still advancing, but the operation has very much more frequently hastened this end than retarded it, and by almost universal consent the proceeding in this stage is condemned and abandoned. If ventured upon at all, it should be performed in a situation where the arteries of the limb can be found pulsating, and therefore likely to be able to carry on their function. Chassaignac, who is somewhat in favour of amputation, says this is even of more importance than the limitation of the gangrene. Can the operation be safely had recourse to after the dead parts have fairly begun to separate from the living with the view of expediting this process? Experience is here also against the use of the knife, as leading to gangrene in the stump. The safest practice is to leave nature to accomplish the work; not but that entirely dead and offensive parts may be removed, but so long as the operation is attended by pain, and the living structures are interfered with, "there is danger of fresh mischief, and the recurrence of gangrene." In the celebrated case of Barker *v.* Lowe, occurring in a gentleman sixty-four years of age, a report of which trial may be seen in the Ed. Med. Monthly Journal, vol. v. p. 245, for 1845, the removal of the gangrenous toe, on the fourth or fifth day, was followed by gangrene of the foot, requiring a subsequent operation, which however succeeded; but the loss of the foot was attributed to injudicious interference in the first instance, the amputation of the toe, in the circumstances, being characterised as the very worst

course that could be pursued. A case of "gangræna senilis successfully treated by amputation of the thigh," by Mr Garlike, was brought before the Royal Medical and Chirurgical Society of London in March 1853. In this case, "a line of demarcation had formed across the dorsum of the foot, and florid granulations had appeared in August," the gangrene having commenced in a small painful sore on the great toe in May, in a broken-down labourer sixty-nine years of age. A collection of matter then formed in the leg and afterwards in the knee-joint, which here burst and gave vent to more than a pint of pus. The thigh was amputated "as near to the trunk as possible" on the 30th September. Had these abscesses not formed, it seems not improbable but that the patient would have done well, with the partial loss of the foot only. At all events, the subsequent progress of the case, after the entire cessation of the gangrene, and the work of reparation had commenced, removes it from this category, and only shows that amputation may be successfully performed at a distance, where the foot may have recently been affected with senile gangrene and no more. Like the preceding case, it is but another instance of successful amputation after the gangrene had entirely ceased, and consequently, in other words, that the operation is not necessarily, in these circumstances, followed by gangrene in the stump, provided the rule be followed of cutting through sound textures where the arteries are free, or tolerably free, from disease or coagula.

CHAPTER V.

PURPURA SENILIS.

Though chiefly limited to youth and middle life, the aged are occasionally subject to the various forms of purpura; and one of the severest cases of the singular variety called hæmorrhagic purpura that has fallen to my lot to witness occurred in an old soldier bordering on seventy. Instances of this sort are, however, comparatively rare, and it may be suspected that not a few of the recorded cases belonged to the allied disorder scurvy.

The only form of purpura to which I think it necessary to allude is the *purpura senilis*, so called by Bateman, and described by most writers on the diseases of the skin. The existence of this variety of the disease has been doubted by some and denied by others, but any one who has been long attached to workhouses or asylums for the aged must have met it sufficiently often to create surprise that its existence could ever be questioned, since it is very far from unfrequent. It is chiefly characterised by the occurrence of irregularly shaped purple blotches appearing on the upper and lower extremities. Dr Elliotson,* who objects to the appellation purpura senilis as conveying an erroneous idea of the affection, observes that it is merely such a tenderness of the vessels that the slightest contusion produces ecchymosis, and may be produced in old persons with the greatest facility. I am satisfied, however, that the characteristic purple patches, by whatever name the disease may be called, are often met with independently of external injury. Hardly a year passes that several men are not admitted into the infirmary at Chelsea Hospital from among the aged inmates of the establishment with this complaint, for which no cause can be

* Practice of Med. by Rogers, p. 434.

assigned. Bateman met with it only in elderly women, in whom the blotches appeared principally along the outside of the forearm. These, he observes, continue from a week to ten or twelve days, when the extravasated blood is absorbed. A constant series of these ecchymoses had appeared in one case during ten years, and in others for a shorter period. In all, the skin was left in a brown colour. The health did not seem to suffer, nor did purgatives, blood-letting, tonics, or any other expedient, appear to exert any influence on the disease. In almost every case that has come before me, the blotch or blotches have been confined to the lower extremities, and principally to the inferior half or lower third of the leg, the shin, and parts above and around the ankle. Both legs are usually affected simultaneously, showing the dependence of the effusion upon a peculiar state of the blood and blood-vessels, and not upon accidental blows, as has been supposed and alleged. The patches vary in extent, form, number, and colour. Seldom more than two or three co-exist: a succession is rare. At the commencement they are of a deep purple or livid colour, unattended with tumefaction, but generally accompanied with heat in the part, and shooting pains in the limbs. About the knees and thighs small purpuric spots are visible, though not always; the legs are more frequently and abundantly studded with them. Absorption takes place slowly, and the affected parts assume the various shades of blue, green, and yellow, as in a common bruise, leaving the skin, as remarked by Bateman, stained brown, especially where the extravasation has been situated on the skin.

In some cases the affection would appear to be entirely local, the result of impaired tone of the capillaries from fatty degeneration or calcification, occasioning passive congestion and extravasation. Weakness of the extreme vessels in advanced life is a not unfrequent cause of sanguineous effusion in other parts; for example, in the sub-conjunctival cellular tissue. In old subjects, a fit of sneezing or coughing now and then ruptures the capillaries of this membrane, producing extravasation of blood and ecchymosis, and occurring without a blow, is sometimes a cause of needless alarm. Epistaxis is an occasional consequence of the same deficient tone of the extreme vessels of the nasal mucous membrane. Mælena and hæmaturia appear also to proceed, in certain cases, from disease or debility of the capillaries supplying the respective

mucous surfaces. Usually, however, the disease under consideration presents itself in debilitated old persons of a cachectic habit of body, and there is reason to believe that, in some instances at least, when attended by heat in the affected parts, and by pains and weakness in the limbs, that it is a modification or minor degree of a more serious and deep-rooted disease—scurvy, which is far from uncommon in the decline of life.

Treatment.—The recumbent posture, rest of the affected limbs, a mild purgative, the use of the spirit lotion, or, where cold is disagreeable, tepid fomentations, usually succeed, in a week or ten days, in removing the effusion; but in cases accompanied with heat in the part and pains in the limbs, a much longer period elapses before a cure is effected. Cases of this description require, in addition to local means, constitutional treatment, measures calculated to sustain the general health, and improve the deteriorated condition of the blood, and the usual antiscorbutic remedies are then advisable. Convalescence will be promoted by tonics of the vegetable or mineral kind, according to the state of the digestive organs and the general system.

CHAPTER VI.

SCORBUTUS.

When scurvy appears in a community, the aged are frequently among the first to exhibit the symptoms of this dreadful disease. The visitation of scurvy among the poor and ill-fed in 1846–7, owing to the failure of the potato crop, and the consequent high price of other vegetables, was particularly severe on persons of advanced life, and it was principally the aged inmates of workhouses and prisons who were its victims. In the epidemic described by Dr A. Fauvel,* as it appeared in the Salpêtrière in 1847, the malady declared itself chiefly in females far advanced in age, the youngest being sixty-nine years old, while three were upwards of eighty. The average age of seven cases observed at Chelsea Hospital during the three years 1847, 1848, and 1850, was above seventy-four—the youngest being seventy, and the two oldest eighty and eighty-one. It may thus be assumed that old age, *cæteris paribus*, predisposes to the disease, just as persons of weakly constitutions and broken-down habits are in general the first to suffer from it at sea, while the robust and hardy enjoy a comparative immunity—a law, however, to which there appears to be more exceptions when the disease affects the aged, as many if not an equal proportion of the robust are seized by it.

Innutritious or improper food, especially the want of fresh succulent vegetables, is the most powerful cause of scurvy. In every case which has come to my knowledge among the aged inmates of Chelsea Hospital, the disease has been clearly traced to the disuse of vegetables, and particularly potatoes, some old people acquiring a repugnance to this valuable tuber, the antiscorbutic properties of which, though long known, have recently received

* Arch. Gén. de Méd., tome xiv. p. 241.

the strongest confirmation. So it appears to have been at the Salpêtrière, for, though the prevalence of scorbutus in that hospital in 1847 is not expressly attributed to the want of vegetables, the food of the patients had consisted chiefly of meat, with bread, meat soups, and wine. Potatoes or vegetables are not named as having entered into the dietary.

The acids and juices contained in vegetables and fruits are essential to the proper food of man, and without these scurvy has appeared in persons who have been fed on plenty of fresh butcher meat, bread and butter, tea and coffee, wine and porter,* and who have thus fared sumptuously every day. Individuals thus fed may for a time enjoy an immunity from the disease, in favourable circumstances; but—and it cannot be too strongly impressed on the mind of the practitioner—the depressing influence of long confinement in the impure air of an hospital, or the exhaustion occasioned by chronic disease, will, even with all the apparent advantages of a substantial diet of animal food with stimulants, but without a due proportion of vegetables, deprave the blood and induce scorbutus. One of the worst cases of the disease treated in Chelsea Hospital appeared in a man seventy-eight years of age, who was at the time in the infirmary with chronic bronchitis, and who had been under treatment, and chiefly living, for upwards of twelve months, on mutton chops, rich animal broth with pot-herbs, tea with bread and butter, a variety of puddings, such as rice, bread and custard—a diet, in short, only deficient in a wholesome supply of vegetable matter, the addition of which speedily arrested the disease. There is scarcely an hospital, asylum, or workhouse in which an experienced observer will not find several examples of the disease in a mitigated or incipient form, occasionally so mild that general debility and pallor, with or without a spongy condition of the gums, alone characterise it, so that it frequently advances for some time unsuspected. The accidental omission of a sufficient supply of vegetables from the dietary, or their rejection by the patient, is then almost invariably the cause of these symptoms.

Symptoms.—The mode of invasion of scorbutus in aged subjects does not differ from what is usually observed at other periods of

* Dr Curran, Dub. Journal of the Med. Soc., 1847.

life. The scorbutic diathesis is slowly acquired, and the approach of the disease is in general very gradual. Appearing, in many instances, in broken-down habits and bed-ridden persons, it often makes considerable progress before it is discovered. When it occurs in persons previously of a vigorous constitution, the progress of the symptoms is at first slow, but a few weeks are sufficient to prostrate the strongest; and without proper remedies it now rapidly advances, and all the phenomena accompanying it are almost daily aggravated. General debility, obscure pains in the limbs, resembling those of chronic rheumatism, a peculiar pale yellowish tinge of the skin, more particularly of the face, with depression of spirits and anxiety of the countenance, are among its earliest indications. These symptoms are speedily succeeded and accompanied by its true characteristics, viz., painful patches, resembling ecchymoses, generally situated on the extremities, and more commonly on the legs than arms, lividity and sponginess of the gums, fœtor of the breath, stiffness with pain, contraction, and tumefaction of the hams, œdema of the feet and ankles, petechiæ, &c.

The order in which the pathognomonic symptoms make their appearance, and the rapidity with which they advance, vary in individual cases. During the earlier stages of the disease, the pulse, though feeble, is of natural frequency; sometimes it is slower. The tongue is clean, the appetite good, the bowels are generally confined. As the disease advances, the skin becomes dry and rough. A certain amount of fever occasionally, but not invariably ensues, marked by thirst, acceleration of the pulse, increase of the muscular pains—frequently acquiring a neuralgic character,—diminished secretion of urine, impairment of the appetite, restlessness, and a notable augmentation of the lassitude and general debility so conspicuous from the accession of the disease.

In this, which may be called the second stage, the pain, tension, and swelling of the hams, with contraction of the knee-joints, are much increased. Knotty, painful indurations form in the muscular tissues, particularly along the inner aspect of the thighs, accompanied with the characteristic bruised appearance of the integuments, and some œdema. If the calves of the legs have not been affected from an early period, they are now often swollen, tense, brawny, indurated, extremely painful on being handled, or

in any attempt to move them, and of increased heat. The hard unyielding integuments, bound to the neighbouring textures, are either not at all discoloured or present bruise-like marks. The confined state of the bowels observed in the beginning of the disease is occasionally succeeded by diarrhœa. Faintness on assuming the erect posture, and even fatal syncope, are common. Epistaxis, hæmaturia, and melæna, are also more frequent in old and debilitated subjects than under other circumstances of age and constitution.

With the progress of the disease fresh ecchymoses appear. The swelling, lividity, and sponginess of the gums increase; they bleed from the slightest touch, the teeth loosen, the patient is able to partake only fluid food, and the breath becomes intolerably offensive. This characteristic condition of the gums, almost invariably observed in young subjects, is not, however, so constant an attendant in the old. Rostan* long ago remarked, that at the Salpêtrière, the callous, toothless gums of the aged continued healthy, and Fauvel also observed, in the epidemic that attacked the aged inhabitants of the same institution in 1847, that fungous vegetations were developed exclusively around the neck of each tooth, and were therefore only numerous in proportion to the number of teeth which remained.

In a toothless in-pensioner, seventy-six years of age, treated in Chelsea Hospital in February 1850, and who had, with swelling of the hams and contraction of the knee-joints, severe muscular pains in the lower extremities and extensive ecchymoses, the gums retained a perfectly healthy appearance notwithstanding the severity of the symptoms, and were throughout if anything paler than usual. Mr Stiff also noticed that the gum-symptoms did not make their appearance in old edentalous people attacked at Nottingham in 1846.†

Prognosis.—If early recognised and properly treated, the mortality from scurvy even in far advanced life, seems to be much less than the accompanying depression and loathsome character of the disease might indicate. Only two of 30 cases which occurred among the aged inmates at the Salpêtrière, in the epidemic already

* Cours de Méd. Clin., tome 1, p. 250.

† Med. Times, June 21, 1847.

referred to, died.* Of seven consecutive cases occurring in three years in Chelsea Hospital, and presenting in persons whose average age amounted to seventy-four years, all recovered. Two or three sporadic cases occurring at long intervals, in a period of several years, terminated fatally, but the precise diagnosis does not appear to have been made, the disease having been treated as purpura. Not one case has been lost there when the specific remedies have been early and perseveringly employed, though the effects of the disease were long felt after all the characteristic symptoms vanished.

Diagnosis.—The diagnosis of scorbutus is then of the first importance. With no other disease than purpura can it be confounded. In old persons, the distinction is usually easily made. Purpura it must be recollected, is almost entirely a disease of youth and middle age. It is generally met with in summer and autumn,—scurvy in the end of winter, or early part of spring. The remote causes of purpura are unknown. Scurvy is almost invariably connected with deficient nourishment, improper diet, or the want of fresh succulent vegetables. In purpura, the petechiæ affect all parts of the body, and the disease breaks out suddenly. Scurvy is gradual in its inroads on the system, and the ecchymoses or purpurous spots are almost exclusively, at first especially, confined to the lower extremities. These patches are also painful and tender on pressure. The eruption of purpura is unattended with pain. The nodular enlargements, swelling of the hams, stiffness and contraction of the joints, and sponginess of the gums, peculiar to scurvy, clear the diagnosis. Whenever bruise-like blotches with tenderness, accompanied or otherwise with increased heat of the parts, make their appearance in persons long confined to the wards of an hospital on farinaceous diet, the remaining symptoms of scurvy are almost sure to be developed, without immediate recourse is had to the proper remedies. When the disease is epidemic, the chance of mistaking it for purpura is very slight. The sporadic cases occurring in asylums and hospitals, under the above circumstances, are alone likely to be confounded with that disease.

Treatment.—The treatment of scurvy in old persons is sufficiently simple, and differs in nowise from that pursued when the disease

* Fauvel, *loc. cit.*, p. 265.

attacks younger subjects. The specific remedies—for they are fully entitled to this distinction—are lemon juice and succulent vegetables, such as greens, broccoli, cabbage, lettuce, and though last not least, potatoes. A plentiful supply of these seldom fails in arresting, and ultimately curing the disease, when combined with the advantages derivable from pure air and a moderate allowance of old wine or fermented liquors. Along with plain dressed mutton or roast beef, or, where these cannot be masticated, strong gravy soup, the patient should be encouraged to partake liberally of one or other of these vegetables, and from four to six drachms of lemon juice, diluted with water, or when that cannot be procured, five-grain doses of crystallised citric acid, in solution, may be given three or four times a day. Oranges, limes, and other acescent juicy fruits, are also of the greatest benefit. Where diarrhœa exists, it will be necessary to give small doses of the compound ipecacuanha powder, or to administer an astringent tonic infusion, such as the infusion of cascarilla, cusparia, the infusion or decoction of bark, together with the compound powder of kino, and to abridge the supply of vegetables, until the irritable state of the bowels is checked or moderated.

The nitrate of potash has long enjoyed the reputation of being a valuable antiscorbutic. If as Dr Garrod* supposes, a deficiency of potash in the blood is the essential cause of the disease, the explanation of the benefit derived from that remedy and other compounds or combinations of the alkali, as well as from green vegetables, which contain potash in abundance, is plain; but whatever may be the mode of action, there can be no doubt of the beneficial results of the exhibition of the preparation of potash in the disease. A very agreeable and appropriate way of giving the nitrate of potash is in solution along with crystallised citric acid, and the following mixture has always been found of great service in the cases occurring among the pensioners in Chelsea Hospital:—℞ Potassæ nitratis, ℈j.; Aquæ puræ, ℥vi.; Acidi citrici, ℥ss.; Syrupi aurantii, ℥vi. Of this mixture one ounce may be taken three or four times a day. In the instance of a person who refused all vegetable food, the value of the prescription was well tested and manifested, by the disease being arrested in a few days from the time the patient first commenced it.

* Lond. Med. Gaz., 1848.

I purposely abstain from a full consideration of the various symptoms and states of the disease that may demand the attention of the practitioner. Where the bowels are confined, the gentlest laxatives should be exhibited, and means resorted to, to prevent over-action. Small doses of castor oil, or a very appropriate electuary, the confection of senna with the supertartrate of potash, are safe and efficacious. The ordinary astringent washes, for example, a solution of tannic acid or alum in the infusion of roses, will restrain the fungous vegetations in the mouth, or the gums may, from time to time, be brushed over with a solution of the nitrate of silver, ten grains to the ounce. Internal hæmorrhages, when they occur, must be encountered with small doses of turpentine, if the stomach will bear the remedy; the acetate of lead, or the sulphate of copper, with opium, or, better still, gallic acid, may be prescribed in five-grain doses, in pill or solution, and repeated three or four times daily. Great relief is procured from the accompanying pains by the careful administration of opium, and where the nights are disturbed, an anodyne should not be omitted. Opium is, however, not to be indiscriminately employed, as the disease is sometimes attended with stupor. Cerebral hæmorrhage is not an unfrequent termination. In a case of this disease ending in coma, which occurred several years ago in Chelsea Hospital, an encysted coagulum larger than a pea was found in the choroid plexus of the right ventricle. Similar instances have, I believe, been recorded. In all cases, the recumbent posture must be enjoined, so long as there exists a tendency to syncope, and the bed-pan should invariably be used with aged subjects, especially when under the influence of laxatives. While these medicines are acting, it will generally be advisable to administer, from time to time, weak brandy and water, or wine negus. In default of these precautions, I have seen more than one patient nearly lost.

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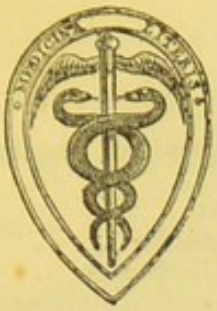

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