

Contributions to practical medicine.

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Presented to the
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the author James Sawyer
1912

CONTRIBUTIONS TO PRACTICAL MEDICINE.

CONTRIBUTIONS
TO
PRACTICAL MEDICINE.

BY
SIR JAMES SAWYER,

Of London, Doctor of Medicine of University; Fellow of Royal College of Physicians, Lumleian Lecturer, 1908; Fellow of Society of Antiquaries: of Edinburgh, Fellow of Royal Society: of Birmingham, Consulting Physician to The Queen's Hospital; once Professor of Pathology, then of Therapeutics, lastly of Medicine, in Medical School; Vice-President Therapeutics Section, International Congress of Medicine, London, 1913; Knight Bachelor.

FIFTH EDITION
WITH MANY REVISIONS AND ADDITIONS.

"Sensus inest cunctis: tollitur arte malum."

Birmingham:
CORNISH BROS.,
1912.



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To the beloved Memory of
Alexander Fleming,
M.D. Edin., F.R.C.P.,

some time Consulting Physician to The Queen's Hospital, who was a distinguished physician, a sound clinical teacher, and an earnest and successful therapist, these pages are affectionately dedicated by a grateful pupil, in whom he confirmed, educated and elevated an early therapeutic bent, and in whom his memory never ceases to inspire further progress in a physician's art.

PREFACE TO THE FIFTH EDITION.

Two of the reasons which determine the writing, correction, and issue of a fifth edition of this book about some portions of medical practice are:—the exhaustion of the large fourth edition, and the growth of much additional material. This growth comes from the lapse of eight years more of a physician's practice, of practice, *de die in diem*, illustrative of the matters dealt with in the book, with all the reading and thought pertaining thereunto, and from the inclusion of some further writings, longest amongst which are my Lumleian Lectures at the Royal College of Physicians, in 1908, upon the large subject of maladies of the heart. The exhaustion of the last edition is due to the generous appreciation of my professional brethren; the growth of new material in our progressive art has come easily in practice under the creative and corrective influences of the treating of patients. The quest of progress and of perfection, the quest of the best, has been quickened by the zest of experience. All the essays

included in this present book received the approbation of publication in one or other of our medical journals, either in the form of clinical lectures or as papers of mine, upon their first appearance in print; since such appearance they have been annotated from day to day as their subjects have been illustrated or extended in my practice. In these days of hypertrophic writing, in all that has here been added or suppressed, I have tried to obey Pythagoras's injunction, which I learned in its French guise:—"taisez-vous, ou dites quelque chose de meilleur que le silence."

31, TEMPLE ROW,

BIRMINGHAM, 1912.

PREFACE TO THE FIRST EDITION.

From such of my medical writings as have been published previously, as clinical lectures, essays, and annotations, in various professional periodicals during the last eighteen years, I have been induced to select some which I hope may not be thought unworthy of reproduction. These I have rewritten, pruned, and amplified, corrected by my later experience, and collected in this volume.

31, TEMPLE ROW,

BIRMINGHAM, 1886.

PREFACE TO THE SECOND EDITION.

In five years, since the middle of 1886, a large edition of "Contributions to Practical Medicine" has become exhausted. In the present second edition I have revised and corrected every page of the first, by whatever experience I have been able to gather during twenty-five years of busy practice in treating the sick. I have added two new essays. The first is upon the treatment of gastralgia, and it was published originally in *The Lancet*, in 1887; the second deals with my researches concerning the use of ether as a menstruum in medication by the skin, and includes the substance of my communications upon this subject to *The Lancet*, last year. Throughout this little book I have aimed at utility in medical practice, and I have tried to observe the brevity of detail and expression which seems fitting in a time when there is no end of making books. If there be in these pages many wide gaps and much literary incompleteness, I can only plead the pressure of daily clinical work, and rely upon the generous judgment of my professional brethren.

31, TEMPLE ROW,

BIRMINGHAM, 1891.

PREFACE TO THE THIRD EDITION.

The exhaustion of a second and larger edition gives opportunity for another issue of this book. In the present volume there are joined some additional chapters, new and old. But not only are there these additions, and, besides them, some of the finer textural changes which time and thought draw out. As in the finishing of a painted portrait, so also in the revision of a book, there is an idealisation by omission. So a few of the old chapters appear no more. As always in these writings, I have kept my aim pointed at utility in medical practice, and I have tried again to focus some issues of later experience, especially in the practical details of a physician's art, and more particularly in those which are remedial and curative. In the employment of a larger leisure for the pen, perhaps some faults might have been avoided. My brethren, however, will know how to judge generously a produce of the shortened and scattered silences of daily clinical work.

31, TEMPLE ROW,

BIRMINGHAM, 1902.

PREFACE TO THE FOURTH EDITION.

A speedy exhaustion of a large third edition gives occasion for a fourth issue of this little book. The generous appreciation which my professional brethren have given to this collection of written essays in some subjects of a general physician's practice has exceeded, by far, my expectations. In the present edition, every word has been revised, and such corrections and additions have been made, especially as to diagnostic precision, therapeutic details, and magistral formulæ for prescriptions, as have been suggested to me by two more years of busy consulting work.

31, TEMPLE ROW,

BIRMINGHAM, 1904.

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I.

THE CAUSES OF INSOMNIA.*

Sleep as a function.—The appetite of sleep.—The Physiology of sleep.—Etiology of insomnia.—Symptomatic insomnia.—Intrinsic insomnia.—Varieties of intrinsic insomnia.—Psychic insomnia.—Emotional shock and prolonged mental strain as causes of insomnia.—The nervous temperament.—Lingual physallization.—Symptoms of intrinsic insomnia.—Insomnia as an obsession.—Toxic insomnia.—Copræmic insomnia.—Insomnia from tobacco.—Alcoholic insomnia.—Insomnia from tea or from coffee.—Gouty insomnia.—Senile insomnia.

THE important subject of insomnia has engaged my attention for a long time. In 1878 I delivered a clinical lecture on the causes and cure of insomnia to the students of the Birmingham Medical School, in the Queen's Hospital, and

* A Clinical Lecture: published in *The British Medical Journal*, December 1st, 1900; afterwards revised, re-written and enlarged, and included in the first edition of my book "Insomnia: its Causes and Cure," 1904; since revised with additions from my further notes of practice up to 1912.

the matter of this discourse was afterwards further published in *The Lancet*, on June 15th and 22nd of that year. This lecture I revised and rewrote entirely afterwards, embodying in it some additions from my later experience in practice, and, so enlarged, it was included in each of the two editions, of 1886 and 1891, of my "Contributions to Practical Medicine." In the autumn of the year 1900, I reviewed the subject again in two clinical lectures which I gave at my hospital, and these were issued in print in *The British Medical Journal*, on December 1st and 8th, 1900. These last lectures, in which I have tried to bring their subject up to a point at the least abreast of our latest knowledge in the principles and practice of medicine, I have revised and rewritten; and I have amplified them, especially in their therapeutic parts. So rewrought, they form the contents of the following essay. This work, done as to the causes and cure of insomnia, that is, done as to particular diagnostic and therapeutic efforts in which the skill of the physician and the resources of our art are often taxed severely, in the intricacies of a difficult, delicate, and abstruse subject, I have tried to accomplish in the spirit of the Baconian philosophy, in the spirit of that aphorism of Bacon which Syden-

ham prefixed to his renowned "*Tractatus de Podagra et Hydrope*," namely, "*Non fingendum aut excogitandum, sed inveniendum, quid Natura faciat, aut ferat.*" The result of my pleasant labours I venture now to offer to the judgment of my profession. My lectures on insomnia were delivered for the instruction of medical students in my clinical class; they are further published in these pages in the hope that they may help my medical readers in practice. In view of the conditions of the original delivery of these utterances, I have decided, in revising them, to preserve their colloquial style. Furthermore, in preparation for this present publication of these lectures, (1912,) I have revised them again, and made many additions to the therapeutics of my subject.

Sleep is a function of life, and life, in some sense, may be said to be a function of sleep, in man, in the animals which are a little lower than he is, in some sort in plants, and in everything which lives. The living organism which cannot sleep cannot live. For all beings endowed with the crowning mercy of consciousness sleep is a pleasure as well as an appetite, and it is a necessity as well as both. For these conscious beings, strung as they are in

their sentience to the most exquisite responses in the world's vast chorus of living harmonies, sleep is indeed and in truth "tired nature's sweet restorer." All the activities of the brain, and every other function of the human body, find in sleep an inseparable condition of their various energies, and of their exhibition, recreation, and preservation. For sleep to be of proper frequency and periodicity as to its recurrence, of proper duration and of proper "depth," is to make the best of a state of life in which all life's manifestations renew their powers. For sentient beings periods of rest, frequently recurring, are an inexorable necessity, and the "best of rest" is sleep.* For man, at the head of such beings, and perhaps the only of them which knows the cark of a mind's unreprieve, or the wear of "that unrest which men miscall delight," sleep it is indeed which smooths out life's fretting creases and "knits up the ravelled sleeve of care." That you may become practitioners of medicine you are students in this place of the manifold sciences of medicine in some of their chief practical bearings, mingled with the inexorable simplicities and with the endless intricacies of the art of healing. You are clinical students here of that cherished art

* Thy best of rest is sleep."—*Measure for Measure*.

of ours, an art which is of men philanthropic and of time perennial, as its lovely figure stands revealed in all its subtle and splendid details, firm and broad based upon the blended foundations of its great constituent sciences. You are students in this hospital I love of that great art of ours in clinical medicine, in its concrete application to individual cases of human suffering, no two of them indeed ever quite identical, no more than are identical a tree's waving leaves or the billows of the rolling sea. Let us press forward together, in all the absorbing zest of the pursuit which is ours, to the brightest understanding which yet there may be of the intimate nature of sleep. Let us collect, discriminate and sort the causes which make for insomnia. Let us sift and sum up all which our sciences and our art, our experience, and even our empiricism, of which last I am not ashamed, have of tried adoption for its cure. In this work your physiological training, your clinical insight, your utilitarian aim, and even your poetic fancy and your literary culture, may all find coördinated play, in the comprehension and in the verbal depiction of functions and maladies which are intricate with our lives, associate with our highest attributes, and woven in woof and warp into the very texture of all our pains and of all our pleasures.

Favoured by your kind attention, I purpose to offer you some considerations upon the vital function of sleep, and upon the conditions, causes, and cure of insomnia, based upon a somewhat long and successful experience of those subjects in practice as a physician. These subjects are certainly of first-rate importance in relation to our knowledge of the science and our practice of the art of medicine. Possibly you may scarcely be able to appreciate their relative importance while you are, as yet, only hospital students. Later in your careers, when you become engaged in actual practice among the sick, and especially when you take part in what is called private practice, often will you be confronted by the perplexities of insomnia, and often will your pleasant duty lie in successfully unravelling the causes of sleeplessness, on that soundest principle of causation and of therapeutics, *cessante causâ cessat et effectus*, and in curing insomnia by counteracting those causes, and by making their tiresome and dire-some effects to cease. I hope to be able to show you that in such happy results the science and the art of the physician may play a successful part. Like thirst and like hunger, sleep is an appetite. We may define an appetite, in the words of that astute Aberdonian, the philo-

sopher Bain, to be a craving produced by the recurring wants and necessities of our bodily or organic life.* An appetite, strictly so-called, has two characteristic marks, and these marks are strikingly characteristic of sleep; these marks are two conditions which are true to sleep—namely, its periodic recurrence and its organic necessity. We know that the natural course of a human life brings on sleep without the volition of the individual willing the event. The true character of sleep as a veritable appetite appears when it is resisted. Under such resistance the individual person experiences what is called, in metaphysical parlance, a “massive” form of uneasiness, discomfort, and pain. The will of the individual, in the presence of this uneasiness, is energetically urged to remove such discomfort and unrest, and is urged from pain towards pleasure, is urged to obtain the gratification of relief in what Bain called “the corresponding voluminous pleasure of falling asleep.”† In this imperatively urgent volitional impulse is the appetite of sleep. Sleep is a desire; with the further characteristics of its organic necessity, and its periodic recurrence, it ranks as one of our appetites.

* The Senses and the Intellect.

† Mental and Moral Science.

The intimate physiology of sleep is a difficult subject, and the difficulties of its explanations have been the topics of much controversy, and such controversy appears to have issued from various combinations of the teachings of observation, of experiment, and of analogical and other reasoning, upon the phenomena of sleep. I do not propose to follow at length the details of this part of our subject. As a clinical teacher I must not overload your memories, but rather must I try to make easy your mental digestion. For our practical purposes I think we may understand that two distinct, but associated and related, vital changes occur in sleep. The one is some intrinsic change in those ultimate tissue elements of the brain which are concerned in consciousness; the other and "coarser" change is a diminished supply of blood to the brain, and especially to the blood vessels of the cortex of that organ. The former change is at present undemonstrable, excepting by inferential reasoning. Perhaps there is some essential and intrinsic change in the brain, and perhaps there also is some such change in the spinal cord and ganglionic nervous system, both of rhythmic occurrence, and both conditions of healthy sleep. Perhaps there is a functional depression of these parts in sleep, and especially

of the cerebral cells, arising from "an accumulation in and around them," as Sir Thomas Lauder Brunton puts the matter as to the cerebral cells in sleep, of some of the products of normal tissue waste. Perhaps for normal sleep an intrinsic change of this kind must gain the wide distribution I have mentioned. It is likely that there is in sleep a rhythmic change such as I have indicated, and that this change is sustained by the physiological effects of some of the issuants of those tissue changes, muscular and nervous, which especially occur in the active waking state of the body.

The noun sleep denotes a state of life which eludes definition excepting by description and by inference. One of the greatest of modern philologists, Noah Webster, defined the noun as repose or slumber, and the state of being as "to rest with the voluntary exercise of the powers of the mind suspended."* It appears from our physiology that, for our sleep, we must drown our cerebral cells in a kind of auto-intoxication in the ashes of our waking fires. We may usefully recall this view of the subject when we use exercise and fatigue as remedies for insomnia. The proof of the other broad change in sleep—namely, diminished blood supply to

* Dictionary of the English Language.

the brain, and especially to its cortex, rests on inference from physiological analogies, on various observations, and on the solid basis of direct experimental evidence. We must note, however, that the human brain, in its perceptive, cogitative, and volitional functions, in these great divisions of consciousness, is not the only part which sleeps. The whole living body sleeps. The changes which the event of sleep declares certainly extend beyond mere interruption of consciousness; they extend to secretion, to the action of the heart and blood vessels in the general circulation of the blood, to respiration, to "reflexes," and so extend to all the tissue modifications, and to all the other vital activities, upon which such manifold transitions depend. In order to complete your pre-cognitions of the physiology of sleep, before we pass on to consider the several conditions of insomnia and their appropriate therapeutics, I may refer your attention to the admirable accounts of these subjects to be found in the text-books of Dr. Augustus Waller* and of Sir Michael Foster.† From each of these volumes

* An Introduction to Human Physiology. By Augustus D. Waller, M.D., F.R.S., 2nd Edition. London, 1893.

† A Text-Book of Physiology. By M. Foster, M.A., M.D., LL.D., F.R.S., 5th Edition, Part IV. London, 1891.

I offer a brief quotation, which sufficiently illustrates our subject for my present purpose. On that part of his subject which is so important to us from a therapeutical standpoint—namely, the state of the cerebral circulation during sleep, Dr. Waller says:—

“ Although there is no doubt that in coma—a pathological state similar in some respects to physiological sleep—the cerebral vessels are congested, the observations of Durham on the exposed cerebrum of sleeping dogs, and of Jackson on the retinal vessels of sleeping infants, are to the effect that vessels shrink in sleep, and we may therefore feel reasonably assured that the sleeping brain, in common with other resting organs, receives less blood than in its state of activity. Moreover, Mosso’s* investigations on exposed human brains afford evidence that the organ becomes more vascular during mental activity. . . .”

That sleep concerns the whole body, and not the brain alone, is well put by Sir Michael Foster. He says:—

* Professor Mosso, of Turin. In a letter which he kindly sent to me under the date June 10th, 1904, upon his receiving a copy of the first edition of this book, he made a pathetic reference to his favourite study: “*Les deux derniers livres que j’espère d’écrire touchent votre sujet. C’est donc avec intérêt et reconnaissance que je vais lire votre travail et je vous remercie de cœur.*”

“ Though the phenomena of sleep are largely confined to the central nervous system, and especially to the cerebral hemispheres, the whole body shares in the condition. The pulse and breathing are slower; the intestine, the bladder, and other internal muscular mechanisms are more or less at rest, and the secreting organs are less active, some apparently being wholly quiescent; the secretion of mucus attending a nasal catarrh is largely diminished during slumber, and the sleeper on waking rubs his eyes to bring back to his conjunctiva the needed moisture. The output of carbonic acid, and the intake of oxygen, especially the former, is lessened; the urine is less abundant, and the urea falls. Indeed, the whole metabolism and the dependent temperature of the body are lowered; but we cannot say at present how far these are the indirect results of the condition of the nervous system, or how far they indicate a partial slumbering of the several tissues.”

You may find an interesting and instructive employment if you follow Sir Michael Foster through his discussion of the exact state of the body, and especially of the brain, in sleep. He points out, what is now generally accepted, that an alteration of the cerebral circulation is not the whole of sleep. He judges that “ the essence

of the condition is rather to be sought in purely molecular changes," and then he goes on to suggest a resemblance between the systole and diastole of the heart and the sleeping and waking of the brain; and then he dwells on the various periodicities which may be observed in the activities of the human body, and even suggests that the fundamental rhythm of the heart may be a reflection of the mysterious cycles of the universe, while it may yet be only the result of the inherent vibrations of the molecules of its own proper structure.

If we exclude from our consideration the insomnia which is a concomitant of some forms of unsoundness of mind, and which kind of insomnia I do not propose to deal with in these lectures, you will find that absent or imperfect sleep, inability to sleep at all, or at a convenient time, or long enough, without the aid of drugs, is a frequent consequence or complication of numerous and varied conditions of disease. Etiology, as you know, is that division of the science of medicine which has to do with the causes of disease. The etiology of insomnia embraces the enumeration of all the causes of the malady. These causes are numerous, and a classification of the varieties of insomnia, upon the basis of their causal distinctions, is some-

what difficult. Let me recommend to you, for use in practice, the following classification of the varieties of sleeplessness under our consideration. It is the best etiological arrangement I can form, of the causal intricacies of our subject. It is a classification which you will find of service clinically, when you pursue the discovery of the particular causation of any given case of sleeplessness. Cases of insomnia seem to divide themselves naturally into two groups, namely, of cases of what may be called *symptomatic insomnia*, and of cases of what may be called *intrinsic insomnia*. Symptomatic insomnia attends a vast variety of morbid states, and is secondary to them, or is part of them. Intrinsic insomnia, as we shall see later on, is capable of distinct definition, and it breaks up naturally and simply into three smaller divisions, upon a causal principle of division.

As to symptomatic insomnia, pain, if severe enough, and from whatever cause arising; pyrexial elevation of temperature; frequent coughing, such as often occurs in pulmonary consumption; dyspnœa, such, for instance, as results from obstructive dilatation of the cardiac cavities, and appears to require an extraordinary vigilance of the nervous centres for the maintenance of the vital processes of respiration and

circulation—are examples of clinical conditions of disease which may prevent, shorten, or break up sleep. In the same category may be placed the insomnia which may be incidental to the extremer variations of arterial tension. High arterial tension keeps up insomnia as a cerebral irritant. Low tension keeps up insomnia by cerebral congestion. All these conditions are frequently met with in medical practice, as single causes of insomnia, or as conjoint causes of it in various combinations. In such and in similar instances the cause of the sleeplessness is obvious, and the consequential character of the insomnia—that is, its dependence upon a distinct and sufficient cause—is clear. For the therapeutic control of this kind of insomnia we may employ with success one of two curative methods, or we may employ a judicious combination of these methods, such combination being founded upon a skilled appreciation of the especial needs of each individual case. We may control sleeplessness of the kind in question either by the exhibition of remedies which directly cause sleep, that is to say, by the administration of some of the drugs which we know as hypnotics or soporifics, or we may control it by the employment of measures which combat the cause of the in-

somnia, by removing pain, by reducing the heat of fever, by quelling cough, by relieving cardiac disturbance and dyspnœal discomfort, by readjusting the balance of the circulatory forces, and so on; or by using in conjunction hypnotics and remedies addressed to the removal of the cause of the sleeplessness. In such cases of symptomatic insomnia, as in medical practice generally, you will find that it is convenient to your duties, and that it tends to the thoroughness of your ministrations, if you regard the therapeutic indications of each case from the well-known standpoints, respectively, of the *indicatio causalis*, of the *indicatio morbi*, and of the *indicatio symptomatica*. By a judicious combination of the remedies so suggested you will be able to deal successfully with cases of symptomatic insomnia. By regarding the cause of the illness with which you have to deal as a medical attendant, by regarding the various pathological processes which underlie the progress of that illness, and by regarding the symptoms of that illness, by regarding these points in turn, or together, or in various combinations, with a judicious therapeutic intention, you may arrange your remedial efforts upon a systematic and comprehensive basis.

A serviceable clinical classification of the varieties of symptomatic insomnia is given in

the New Sydenham Society's Lexicon of Medicine.* Therein the editors point out that insomnia shows disturbance of some important organs or functions, although this may not be indicated by local pain, and they cite the congestive, febrile, and asthenic varieties of the malady: in the congestive insomnia of cerebral hyperæmia, there may be throbbing of the head, conjunctival redness, objective heat of head, acuteness of the senses and wildness of the ideas; the febrile is the sleeplessness accompanying the invasion of a specific fever; the insomnia of exhaustion is that which is caused by overwork with anxiety, by excessive emotions, defective nutrition, or exhausting discharges. Their other variety, the lithæmic, coincides with one of the forms of toxic insomnia.

Now let us consider the details of intrinsic insomnia. There is a simple inability to sleep, which you will often be required to cure—a kind of insomnia which may be called for the sake of simplicity, but perhaps scarcely with strict truth, *insomnia per se*. This is a kind of wakefulness for which we cannot discover an objective or obvious physical cause; it is a kind of wakefulness which seems to depend upon an

* Vol. III., 1888, Edited by Henry Power, M.B., and Leonard W. Sedgwick, M.D.

inability of the brain and nervous system generally to adapt themselves to the conditions which are necessary for sleep. We meet with this disorder more in private than in hospital practice. It occurs mostly in persons who are members of what are known as the upper and upper middle classes. It occurs mostly in persons of high mental endowments and of neurotic temperament. The malady is of extreme importance, and, happily, if its causes be understood and judiciously corrected and controlled, there are few affections which are more within the sphere of curative therapeutics. I think I can succeed in showing you how to unravel the complex causes and discover the successful treatment of this kind of insomnia.

The causes and the course of particular instances of intrinsic insomnia present some striking differences. You must know these differences, and be ready to recognise them, for the knowledge of them clears up alike the therapeutics, the successful treatment, and the prognosis of individual cases of the malady. I have found it to be convenient in practice to arrange the different clinical varieties of such insomnia into groups, in which the cause of the affection is the principle of division. These groups I call respectively the *psychic*, the *toxic*,

and the *senile*. Let us see how these divisions work out in detail.

The brain in natural sleep is, as we have seen, relatively anæmic. The cerebral arteries, as we have seen, are more filled with blood than during sleep, when the brain is in full waking and working activity. When thought is active, the parts of the brain concerned are living relatively rapidly; they are actively receiving nourishment from the blood, and they are, too, actively ridding themselves of the waste products of their vitality. In sound natural sleep the brain is inactive, excepting those parts of it which are concerned in the processes of organic life. In sleep the blood flows to and through the brain in streams which are smaller and gentler than in the waking state. The cells concerned in thought, volition, and feeling are not expending energy; they are renewing it and storing it—they are resting. Any cause, however little we may be able to trace the details of its operation, which directly prevents a repose duly deep of a sufficient number of those brain cells which are the organs of conscious thought and of perception, will render sleep impossible; relative cerebral hyperæmia is an inseparable consequence of such activity, and such relative cerebral hyperæmia becomes a concurrent, but

subordinate, cause of insomnia. Here there is progression through a vicious circle of two terms, in which the impulse of the morbid movement springs from the cerebral cells. So we see that there are causes of insomnia which we may fairly regard as acting primarily in sustaining cerebral activity, and with it, and in consequence of it, relative cerebral hyperæmia, which hyperæmia becomes a contributory cause of the cells keeping awake.

In some other cases of intrinsic insomnia I think we may regard the malady as arising primarily in a perversion of the cerebral blood supply. Any cause which prevents the brain from becoming relatively anæmic in a sufficient degree for sleep will produce sleeplessness. Any ingested agent which sustains cerebral hyperæmia, or any pathological change which impairs sufficiently the contractility of the smaller cerebral arteries, may prevent wholly, or in part, the occurrence of such a degree and extent of cerebral anæmia as is required for the production of sleep, and without which sleep cannot be.

So there are causes of insomnia which act primarily in exciting and in sustaining a relative cerebral hyperæmia, and with it and in consequence of it a cerebral activity which is wakeful. Here there is again a progression

through a vicious circle of two terms, but one in which the impulse of the morbid movement springs from the cerebral blood vessels. In conscious cerebral activity, which, as we have seen, is a complex condition of at least dual causation, in which thought certainly implies increased blood flow, and increased blood flow sustains thought, perhaps it may be considered that we cannot, with strict accuracy, allow initiative precedence to either of the causes which are essential to the common result. In medical reasoning there is little which is so difficult as tracing effects up to their causes, and there is little so easy as the invention of causes for effects. Let this caution make you wary. Take due pains in practice to analyse the causation of each particular case of intrinsic insomnia. When you make such analysis you will find that in some cases of sleeplessness, as in the psychic group, undue and protracted cerebral activity is the primary vice, and that in others, as in the toxic and senile varieties, relative cerebral hyperæmia is the initial error, and wakeful cerebral action its direct consequence.

Our present consideration of our subject has advanced to a point at which we may usefully illustrate our generalizations with some

sketches of particular instances of intrinsic insomnia, as they are met with in medical practice. In a case of psychic insomnia some sudden emotional shock of a depressing kind, as grief at the death of a beloved relative, will sometimes be found to have produced at once persistent sleeplessness, which sleeplessness will only yield to carefully directed therapeutic procedures. Again, prolonged mental strain, in all its varied phases, is a common cause of the psychic variety of insomnia. Our patient may be a student preparing for an examination. For weeks, in spite of fatigue, he may have shortened his hours of sleep that he might lengthen his time for reading; and he may have been in the habit of keeping himself awake, when he could have readily fallen asleep, by drinking strong tea or coffee, or by smoking tobacco. But he could always go to sleep at once when he went to bed, and sleep soundly, until, after some weeks of his abnormal work, with the nearer approach of the examination bringing increased anxiety as to the result of the ordeal, he found he began to sleep badly or almost not to sleep at all. He grew miserable; he could not remember what he read; he felt unfit for any exertion; and he could not face his examination. Or, our patient may be a young profes-

sional man. He has commenced practice, or rather to wait for practice, as a barrister, a solicitor, a physician, or a surgeon. He begins to find that causes or cases have not been waiting for his advent; clients or patients are "few and far between." For a time he manfully struggles on, his hope and his health sustaining him; but these at last yield under the continued pressure of new disappointments and accumulating anxieties. He may want money; his friends will give it to him readily if he will ask for it, but his pride prevents him. It is not a gift or a loan he needs; he does not want to beg or to borrow money; he yearns to earn it. And while he has been hoping and waiting, and growing sick with the failure of his expectations, he has been working early and late in his exacting studies—perhaps straining his powers in preparation for some higher examination, and, it maybe withal, adding the denial of due sleep and exercise, and so he has been wasting and wearing his psychical and physical energies, in the trust that he might thus so skill himself the more as to secure the longed-for practice. At last he has fairly broken down. He has grown thinner; he looks haggard; he is filled with groundless fears; he is weighed down with the ineffable misery of insomnia; he has headache

constantly, and noises in his ears; he thinks his memory is failing; he is dull and listless; he has been lying awake for hours after going to bed, or, waking in the "small hours," he has been unable to sleep again, and when he has slept he has had horrid dreams; and he comes to us for help because he can scarcely sleep at all, and he is possessed by the fear that he is going mad. His misery is urgent; it excludes all other joys and most other pains; it is the unspeakable misery of intrinsic insomnia, the insomnia which hangs on no solacing peg of causal pain. Here we observe particular instances in which acute or continued mental strain is the primary cause of sleeplessness. Where the shock has been sudden and severe it has been sufficient to rouse a given group of cells into persistent activity, and to produce psychic insomnia suddenly. So produced, the sleeplessness may become a persistent trouble, which yields only to judicious therapeutic procedures. In other cases, and more commonly, the insomnia has only arisen after prolonged mental strain, as that which a student may undergo in over-reading for an examination, as that of continued financial anxiety, or that of arduous and sustained literary composition. Where the shock has been sudden and severe

enough, there has resulted a persistent wakeful activity. Where the strain has been less intense, but kept up long, a monotonous group of ideas has been maintained in exhausting recurrence. In either case it would appear that sleeplessness did not occur until there arose from exhaustion partial or complete vaso-motor paralysis of the intra-cranial blood vessels; it arose when the arterioles of the brain had no longer that contractility without which sleep is impossible. In these forms of insomnia unnatural excitation of the cerebral cells is probably the initial fault. This point of view, we shall find just now, gives the best working hypothesis for our treatment.

Here I must further direct your attention to the question of the causal association of what is known as the nervous temperament with intrinsic insomnia, and especially with this psychic variety of the malady. In my experience, the subjects of the psychic variety of insomnia are mostly men, and almost invariably men of the temperament which is known in medicine as the nervous temperament. I advise you to study temperaments. Their recognition is of much value in diagnosis, in prognosis, and in therapeutics. A temperament may be defined as "that individual peculiarity of physical organization by which the

manner of acting, feeling, and thinking of every person is permanently affected," and the nervous temperament is marked by great sensitiveness and activity of the nervous system.* We have lately been too ready to ignore temperaments; our fathers studied them better and regarded them more than we do. But I shall not go to any authority for a portrait of the nervous temperament; I shall describe it to you as I judge I have found it in a physician's practice. I use the phrase nervous temperament to indicate a distinct type of outward form, of manner, of habits, of tendencies, and of personal aptitudes, physiological and pathological. Temperaments present their various types most frequently in men. Comparatively few women exhibit a well-marked temperament; but when a woman is of the nervous temperament, in her the temperament is mostly very distinct indeed. In frequent instances, two or more of the different kinds of temperament may appear to be blended in one patient; we have a compound of reciprocally modified temperaments.† A man

* A Medical Lexicon. Published by the New Sydenham Society. *Op. cit.*

† Clinically, the most marked temperaments are those known respectively by the names of bilious, lymphatic, nervous, and sanguineous.

of distinctly nervous temperament has a quick manner, if he have not a slowness which is obviously a calculated one; he is nearly always in a hurry; he is apt to talk volubly and to eat quickly; if he do not know us well, he fidgets in his hands, or legs, or face when he is speaking; he talks abruptly, earnestly, and fluently, often splitting up his phrases, or recalling and correcting them, and especially modifying qualifying words, such as adverbs and adjectives, in his anxious desire to express what he conceives to be the finest shades of truth. A man of this temperament is apt to "overdo" everything into which his feelings enter, and his feelings enter prominently into most of his doings. He is apt for hobbies; and he is often a diligent collector of curiosities. If a good man, he is likely to make a worry of his goodness; if bad, he is apt for treasons and stratagems, perhaps for spoils. When he becomes a patient, he is harassed about some trivial symptom; he has felt his heart beating, and he thereupon fancies he has some deadly cardiac disease; he thinks his memory is failing, and he forthwith imagines he is going mad. Some persons of this temperament may be known by their eyes, with sclerotics unduly exposed, their eyes showing a breadth of sclerotic between the cornea and the

upper lid. This is a sure sign, but one often absent. Lingual physallization is a name I have suggested for a constant mark of this neuro-pathic temperament. It is a condition which I think I was the first to describe, in my Lumleian Lectures.* When a patient of this sort shows his tongue in the usual way, two broken rows of small bubbles of air are to be seen in the moisture upon the dorsal surface of the organ. A row of these skirts each lateral edge of the tongue, and lies at a distance of about a seventh of the width of the dorsum linguæ from this edge, a row of bubbles on each side. The pathognomy of this appearance is unerring. How does it arise? A little emotional increase in the viscidty of the mouth's moisture, as in fear, and a little emotional increase in the mouth's movements, as of swallowing, which is a physical accompaniment of what is called tenderness, and this lingual physallization results. These causes of this natural phenomenon are true and enough. Yet other clinical signs of this temperament are to be found. For an instance, Laycock taught that temperamental signs

* Points of Practice in Maladies of the Heart. Lumleian Lectures at the Royal College of Physicians for the year 1908. Published in a separate volume in the same year.

could be made out from handwriting. As to this, the modern school of French graphology yields many points of medical suggestiveness and of usefulness in medical practice. Your elucidation of temperamental details in medical practice will develop your clinical observation and acumen. *Ars medici est in observationibus* is a maxim of our schools which was a favourite one of that excellent clinician and successful physician, the late Sir Andrew Clark, and this proverb of ours is very true in the detection of the signs of the nervous temperament.

Francis Thompson's autobiographical description of the horrors of insomnia as the neurotic feels them is perhaps the best expression of them in our language:—

“Forlorn, and faint, and stark,
I had endured through watches of the dark
The abashless inquisition of each star;
Yea, was the outcast mark
Of all those heavenly passers scrutiny;
Stood bound and helplessly
For Time to shoot his barbèd minutes at me;
Suffered the trampling hoof of every hour
In night's slow-wheelèd car;
Until the tardy dawn dragged me at length
From under those dread wheels; and, bled of strength,
I waited the inevitable last.”*

* Selected Poems of Francis Thompson. London, Methuen, 1910.

A man who has suffered much from intrinsic insomnia becomes the subject of a well-marked group of symptoms, subjective and objective. Most of them are given by certain writers amongst the signs of cerebral hyperæmia. It is probable that they mark a particular variety of exhaustion of the brain, attended by more or less of an abnormal increase of blood in the brain, and accompanied by some general prostration of the bodily powers. These concomitants of insomnia, as I have found them, I now describe to you. The patient has a dull and listless look; his eyes are wanting in vivacity; the upper lids may droop a little, and they may be slightly swollen. The complexion is sallow. There is headache; of this there are two kinds, which either co-exist or occur separately. The commoner variety of headache is a dull pain felt over the whole of the vertex, together with a vague and widespread feeling of oppression in the head; the other is a sharp, shooting pain, which comes on suddenly, and usually in single flashes, and which gives the idea of a knife being driven through the head from one temple to the other. Occasionally the patient feels giddiness momentarily; this may cause a false step, but it never lasts long enough to give rise to staggering. The skin of the scalp,

especially near the sagittal suture, may be tender. There are noises in the ears, in one or in both, usually of a low-pitched whistling character. This tinnitus aurium may come on suddenly, and without apparent cause, as when the patient is talking quietly, or it may only arise when the patient's attention is more closely occupied, as in writing a letter or in casting up figures. A striking sign in the group of symptoms we are considering is a slight impairment of hearing. The patient may be unaware of it, but those with whom he lives have noticed that he often asks them to repeat what they say to him because he could not quite catch their words. He may also complain of seeing spots before his eyes—little cobwebby black lines, *muscæ volitantes*, which come and go and float about, or, perhaps, bright, bluish, phosphorescent-like specks, phosphenes, which seem fixed for a moment, one before each eye, and which only appear when he first directs his eyes towards an object. There are usually some abnormal sensations in the skin; not formication, such as is apt to arise in organic nervous disease, but a sharp, transitory, and isolated prickling, as of the movement of a single pin, which lasts only for an instant, and affects either the limbs or the trunk, mostly the former.

There may be a peculiar twitching of muscles. This is a state of involuntary muscular movement of which I have made original and independent observation, and of which I know of no previous description, either oral or written. It is not a vibratory tremor, like that of progressive muscular atrophy, nor is it a contraction of a whole muscle, or of a group of muscles, such as arises in true convulsion. But, while the patient is sitting still, a considerable part of a muscle becomes the subject of rapid clonic movements, and these are wholly independent of his volition. These movements mostly occur in one of the lower extremities, and they are rarely sufficient to move the position of the limb; they usually affect the lower part of one vastus internus, and last for about a minute. The patient can feel the movements by attending to the affected part, and he can also feel that the muscle moves by applying his hand to it. In such a case there is often also an unnatural and painful sensitiveness to external impressions. The patient craves for quiet. A bright light troubles him. Noises, the sight of moving objects, touches, as of the hand of a friend upon his shoulder, annoy him. There is not an increased sensitiveness to external impressions, but impressions which are enjoyed or unnoticed in health become irritants.

We may note here that insomnia is caused in many instances by a fear of insomnia having become an obsession, an abiding "dread." A person who thinks he is not going to sleep, and who has an exaggerated fear, which may pass to an unreasoning terror, of the consequences of sleeplessness, is likely to be kept awake by this state of his mind. A determination to keep awake is a sure provocative of sleep; but a fear of keeping awake is a sure disposant to insomnia. We shall see later on how this fear may be combated successfully.

In the toxic variety of intrinsic insomnia the cause of the sleeplessness acts primarily upon the blood vessels of the brain, giving rise to some degree of arterial hyperæmia. Cerebral vascularity, especially the arterial supply of the cortex of the brain, is maintained at such a height and so long by some poisonous agent that conscious cerebral activity—that is, wakefulness—is an inevitable consequence. Such a poison may be introduced into the body from without, or it may be a product of diseased processes arising within the body itself. Of course, I use the word "poison" in a restricted sense; I do not mean something which kills, but only something which produces abnormal manifestations in the living body. The poisons with which

we have here to do are not in their lethal doses, or milder noxious agents which produce certain distinct and abnormal manifestations. Tobacco, alcohol, tea and coffee are the external poisons which most frequently cause sleeplessness; internal or autogenetic poisons causing intrinsic insomnia may be found in certain waste products of tissue metamorphosis which accumulate in the bodies of gouty persons, or in the bodies of persons whose kidneys are inadequate. Of this kind is the form of sleeplessness which has been described as lithæmic insomnia, but of which an excess of uric acid in the blood is probably not the only toxic cause. Such insomnia may be characterised as, "sleeplessness from a gouty condition, or defective excretion of effete matters, produced by excess in eating and drinking; when sleep is obtained it is fitful and stuporous."* But we must remember that toxic insomnia from insufficient excretion of waste products does not arise necessarily from dietetic excesses, but may be due to some failure of the excretory powers.

Possibly, as our knowledge of auto-intoxication shall increase, some other forms of auto-intoxication may be found to cause intrinsic insomnia, and the exact details of the causal

* Medical Lexicon. *Op. cit.*

chain may be made out. Clinical experience has suggested to me that insomnia may sometimes be a neurosis having its origin in toxic absorptions by the gastro-intestinal mucous tract. Certainly intrinsic insomnia is found in practice to come and go with constipation and the relief of constipation. The explanation of such association of symptoms may be a toxic one. The word "copræmia" is coming into medical use, to signify a kind of poisoning of the blood by noxious principles derived from retained fæces. Sallowiness of the skin, what may be called fæcal anæmia, anorexia, "biliousness," and asthenia mark this condition, and, in some cases, intrinsic insomnia may be added to its characteristics. In copræmic insomnia we have to deal with a form of sleeplessness which presents well-marked causal antecedents, and which yields brilliant results in practice when its causal foundations are removed, by the application of a judicious selection from the large repertory of therapeutic resources at our disposal for the cure of coprostasis, as that condition arises in the various moods of habitual constipation.*

* I have dealt with the great therapeutic subject of the treatment of habitual constipation in my "Contributions to Practical Medicine," 5th Edition, 1912.

With regard to the smoking of tobacco, many a man cannot sleep either sufficiently or soundly simply because he smokes excessively. Smokers often find by their own experience that they sleep badly if they smoke more than their usual quantity of tobacco, or if they smoke tobacco of a stronger kind than that to which they are accustomed. So a smoker who suffers from insomnia may find the cure of his sleeplessness in the restriction of his smoking. He need not give up, nor shorten, nor change his work, nor need he change his "surroundings"; if he restrict his smoking, he soon sleeps well. So also as to snuff-taking in relation to insomnia. Men of nervous temperament, or men into whose temperament there enters a distinct and considerable blending of the nervous element, often smoke tobacco or take snuff largely. The consumption of tobacco by smoking or snuff-taking stimulates the cerebral circulation. This stimulation, if pushed to undue limits, induces cerebral vaso-motor debility, with a consequent tendency to persistent conscious thought, and so to wakefulness.

Similarly, too, the drinking of alcoholic beverages causes insomnia. The man who drinks to commencing drunkenness mostly sleeps soundly, if not well. But many a so-called

moderate drinker knows that he sleeps badly if he take a little more than his usual quantity of wine, for instance, after dinner, or even his usual quantity of some unusual wine. Alcohol, when it passes from the stomach to the blood, flushes and dilates the smaller blood vessels, especially those of the brain; if such a condition be maintained, sleep is disturbed or wanting. We have all seen clinical examples of the insomnia of delirium tremens: the patient cannot sleep because the lesser arteries of his brain are weakened, perhaps paralysed, by alcohol, and sleepless cerebral activity is the inevitable consequence. Far short of what is usually called alcoholism, we often meet with cases of insomnia in which alcohol alone is the cause of shortened, interrupted, and disturbed sleep. The patient may pride himself upon his moderate use of fermented stimulants, and he may be wholly ignorant of the cause of the sleeplessness for which he consults us. We fail to find any sufficient psychic cause for his insomnia; but if we take away or diminish his wine or his grog, or induce him to consume it before the evening, we find he soon begins to sleep well.

Again, the effects of the consumption of tea and coffee in causing sleeplessness are well known. This effect is so obvious that patients

usually remedy it for themselves. As you well know, tea in the form of an infusion and coffee in the form of an infusion or of a decoction are used generally in civilised countries as the daily beverages of the people. Tea leaves contain an alkaloid which has been called theine, and coffee seeds contain an alkaloid which has been called caffeine, and theine and caffeine have been shown to be identical; both these leaves and these seeds contain besides certain oily principles. With regard to tea, what may be called its physiological action appears to depend on the joint action of its theine and of the volatile oil which tea leaves contain. What is called green tea is produced by drying the fresh leaves on a heated iron plate until they become shrivelled; while black tea is manufactured by placing the leaves in heaps and allowing them so to lie while they undergo a kind of fermentation, after which they are dried. Green tea and black tea are powerful cerebral stimulants, exciting the mental faculties and the cerebral circulation, and tending to prevent sleep. Coffee, too, is a cerebral stimulant and antisoporific. It is sometimes used in medicine for these properties, to counteract the effects of opium and of its derivative narcotics, and of other narcotic poisons. Some people are extremely susceptible

to the sleep-preventing effects of tea or of coffee ; others, by use, do not feel such effects, even when considerable quantities of those beverages are consumed. In all cases of bad sleeping you should make sure that tea or coffee is not taken to excess, neither near bedtime.

In gouty persons, quite apart from secondary wakefulness caused by their gouty pains, there may be some intrinsic insomnia, of a kind which is probably toxic in its causation. So, also, intrinsic insomnia may afflict a patient whose kidneys are failing, who has renal inadequacy. In such cases it would seem to appear that the accumulation in the blood, in consequence of deficient excretion, of the products of tissue-metamorphosis causes a general restlessness which disposes to insomnia. Insomnia so caused is not severe, and it is rarely complete. There is slumber rather than sleep. There is restlessness, perhaps some excessive irritability to certain external impressions, short and broken sleep, and what may be called superficial sleep, rather than prolonged wakefulness. In this connection I may remind you that you should observe the tension of your patient's pulse. A patient may complain that he sleeps very badly, that he lies in bed awake for some hours and has great difficulty in "getting off"

to sleep, that he sleeps lightly, awakens often, and dreams much. You may find he has a pulse of increased and high tension, with accentuation of the aortic second sound, and with the cardiac first sound lengthened and muffled, perhaps reduplicated, at the apex of the heart. In a case of chronic kidney disease there may be also the physical signs which mark the characteristic cardiac hypertrophy which accompanies chronic contracting nephritis, and is an effect of it or a concurrent effect of a remoter pathological cause. Insomnia in such cases is likely to be due to the maintenance of a state of high tension in the cerebral arteries, the tension in them not falling sufficiently for prolonged, deep, and dreamless sleep. In practice you will find the causation of many of these cases of insomnia, and you will find some therapeutic indications, too, in the signs of the gouty diathesis or in the discovery of albuminuria. Here I must give you a caution, which you may usefully remember in practice, namely, never accept a patient's statement that he is gouty without the establishment by your own observation of facts sufficient for such a diagnosis. Insomnia which is purely nervous may be wrongly attributed to gout, and depletory measures of treatment may be adopted when corroborants are really indicated. The diagnosis

of gout is a diagnosis for which patients often have a tender affection, and I am afraid it is a diagnosis which is often erroneously made, and wrongly handed on through a succession of credulous advisers. Do not fall into the frequent error of making a diagnosis of gout because a specimen of your patient's urine which is brought to you shows a deposit which to the naked eye is like unto grains of cayenne pepper, and which deposit is made up of aggregated crystals of uric acid. Such a sediment may be only an innocent result of an acid fermentation, such as frequently arises in urine after its voidance, without any pathological significance whatsoever.

As I have already told you, there is a senile form of intrinsic insomnia. Remember that senility is a term of which the primary absoluteness is largely modified in particular cases by relative qualifications. Some persons are senile early, others only later. With much truth it may be said that a person is not as old as his years, at least in a pathological sense, but as old as his arteries. You may perhaps have observed amongst your friends that an exaggerated appreciation of the merits and value of early rising often increases as age advances. The broken and short sleep of many old persons is mainly, if

not entirely, the result of senile degeneration of the smaller cerebral arteries. It is indeed a good and joyful thing in the progress of the medical art, that the prevention of this lethal change is coming more and more within the range of successful physiological prophylaxis, as I shall point out to you in a later part of this present communication. In such degeneration those blood vessels are less elastic and less contractile than in health, and a degenerative weakening of their walls often leads to their permanent dilatation; the smaller cerebral arteries, so changed by a pathological process, are physically unable, by reason of a diminution of their resilience and of their contractility, to adapt themselves normally to such a condition of relative arterial anæmia as is of the essence of healthy sleep. The tendency of this condition of the blood vessels of the brain to prevent, to lessen, or to interrupt sleep is probably to a great extent counteracted, in many cases, by the cardiac feebleness which so frequently, and which, within certain limits, it may be said fortunately, co-exists with senile vascular changes. When arteries are brittle, cardiac failure, within certain limits, may be regarded as a conservative lesion, in the sense that such failure tends to save from arterial rupture and the consequences of cerebral hemorrhage.

II.

THE TREATMENT OF INSOMNIA.*

No "rule of thumb" cure.—Hypnotic drugs.—Risks from hypnotics.—Causal treatment.—Bromide of potassium.—Cure of anæmia.—Alcohol.—Carminatives.—Adjuvant remedies.—Popular remedies.—Rhythmic sleep.—Physical exercise.—Sunshine.—Monotonous impressions.—Bedclothes.—Position of bed.—Posture of patient.—Ventilation.—Food.—Cold.—Continued medical guidance.—Self-discipline.—Toxic insomnia.—Senile insomnia.—Counter-irritation.—Motoring.—Infantile insomnia.—Therapeutics of suggestion and of hope.

THE curative treatment of insomnia consists in the successful employment of a judicious selection from a large variety of our medical re-

* A Clinical Lecture: published in *The British Medical Journal*, December 8th, 1900; afterwards revised and enlarged and included in the first edition of my book, "Insomnia: its Causes and Cure," 1904; since revised, with many additions from my notes of further practice up to 1912, especially as to practical details in medicinal, hygienic, educational and physiological therapeutics,

sources, in medicinal, hygienic, educational, and physiological therapeutics. Such selection can only be made appropriately to the complex needs of each insomniac after a diagnosis minutely analytical as to causes, idiosyncrasies, habits of life and of body, and temperaments. There is no "rule of thumb" cure for insomnia. Each case must be separately studied; the details of its cure can only be decided under competent medical advice. I shall help you al' I can now in this part of our subject; but many remedial details are only suggested in practice by the exigencies of particular cases, and are only developed as the fruit of long experience in the treatment of persons suffering from sleeplessness. I shall tell you something of the use of hypnotic drugs, and of the dangers of some of them; and of drugs which may be needed which are not hypnotics; I shall try to impress upon you the importance of stopping overwork or worry, when either or both are found to be causes of insomnia; and I shall point out to you many hygienic, educational and physiological considerations which bear upon the cure of insomnia, and some useful therapeutic adjuvants which I have found helpful to that end in my practice, and which may suggest to you many other successful remedial procedures.

Do not begin to treat a patient for insomnia until your diagnosis is made, firstly as to there being present insomnia at all, and, secondly, if insomnia be present, as to the nature of the malady, and as to its cause or causes. In a recent discussion amongst physicians as to the therapeutics of insomnia my friend Dr. Hale White* rightly insisted that before attempting to treat insomnia the prescriber should assure himself of its reality, that patients often fancied or even dreamt that they did not sleep, and that a good test thereupon was remembering to have heard a clock strike.

In the treatment of insomnia you may find it necessary to exhibit some of the drugs which are known to you as hypnotics or soporifics: these are remedies that induce sleep. When you have to deal with a case of insomnia do not assume that you must of necessity give a hypnotic drug. I advise you rather to assume that you can cure a given case of insomnia by understanding its particular causation and by remedying the same, rather than by attacking the effect by dosing the patient with some hypnotic. Prescribe hypnotics only in exceptional cases; only administer such drugs when you cannot help it. Your experience in prac-

* Senior Physician to Guy's Hospital.

tice will enable you to decide, with increasing precision, when such an exceptional case is before you. Rely, whenever you can, upon an intelligent causal treatment of insomnia, combining such treatment with a judicious employment of some of the non-medicinal helpers of sleep which I am about to describe to you, if such addition to a strictly causal treatment be needed in any particular case. As a rule, the successful treatment of a case of sleeplessness follows from the discovery of its cause. In the severer forms of psychic insomnia, however, it often happens in practice that we must at once secure sleep by the action of some efficient hypnotic. I prefer either opium or chloral hydrate. By the use alone of one of these drugs we can often quickly cure acute insomnia depending upon some sudden mental shock or strain. You will find that a few nights of sound and sufficient sleep, artificially induced by the exhibition of a reliable hypnotic, will do more than anything else to restore to the brain the power of sleeping without further aid from drugs. Besides chloral hydrate and opium, and besides morphine and the other soporific derivatives of opium, the chief hypnotic drugs are sulphonal, trional, veronal, tetronal, chloralamide, paraldehyde, and the bromides, to which may be

added alcohol and affusion of the head with cold water.

For full details concerning the comparative merits and demerits of many of the newer hypnotics which we owe to the progress of synthetical chemistry, I may refer you to the admirable writings of Professor Binz.* Upon this important part of our study of the medicinal therapeutics of insomnia, I read to you a passage from a valuable paper by Dr. Richard Weiss,† upon certain pharmacological details which are here pertinent to our subject. He wrote:—" . . . The discovery was made that the cells of the cerebral cortex are more prone to alteration in their composition than are the other cellular elements of the body, and also that they contain a much larger percentage of fat. It therefore appeared reasonable to suppose that those drugs would tend to become stored up in them which have a high solubility in oil or in the brain lipoid. This led to the conclusion on the part of the manufacturing chemist, that one of the qualifications of a chemical substance in-

* Lectures on Pharmacology. New Sydenham Society's Translation.

† The Synthetic Remedy to-day. By Richard Weiss, M.A., Ph.D. : paper published in *The British and Colonial Druggist*, March 22nd, 1907.

tended as a hypnotic should be a high degree of solubility in oil and a slight one in water. Thus the path was opened up for the rational preparation of substances so capable of influencing the nervous system as to induce sleep. Hypnotics may be divided into two classes: those which are capable of producing artificial sleep, and those which merely further the occurrence of natural sleep. While until comparatively recent times the only representative of either class was the chloral hydrate introduced into therapy in 1869 by Liebreich, modern therapy has at its disposal a large number of hypnotic preparations from which choice may be made according to individual requirements. Hypnotics belonging to the chloral group, such as dormiol, isopral, and viferral, have all been found to possess marked toxic effects, and are, therefore, unsuitable for the subjects of heart and kidney disease. In 1890 a second group, the sulphonal series, was introduced by Baumann and Kast. . . . The action of members of this series such as trional and tetronal is not so certain as that of the foregoing, and tolerance for them tends in some cases to be established. On the other hand, they are less toxic. The latest group is that of the urea derivatives, and is composed of such members as hedonal, neuronal, proponal

and veronal. The last-named drug has now acquired a world-wide reputation as the most harmless and trustworthy of all means for producing artificial sleep, not only when failure of the normal function occurs as the result of organic disease, but also when it is due to conditions of excitement. As regards the second class of hypnotics whose object is merely to serve as the preliminary for natural, healthy, refreshing, and dreamless sleep, mention may be made of the latest addition to this class, bromural. This substance exercises no by-effect, and, unlike those of the preceding class, no sign of toleration has up to the present been reported. The therapeutic position of this preparation is therefore situated between veronal on the one hand and the preparations of bromine and valerian on the other."

My friend, Sir T. Lauder Brunton, insists upon a well-recognised and valuable therapeutic consideration, namely, that a combination of hypnotics is sometimes more successful than any of them singly. He recommends a combination of "small quantities, such as 5 or 10 minims, of solution of opium or morphine, with 5 grains of chloral and 10 to 30 of potassium bromide."*

* A Text-Book of Pharmacology, &c.

These and other hypnotics may be variously combined to meet the indications of each particular case, according to the judgment of a skilful adviser.

Here I must warn you very plainly and very seriously of the risks which attach to the administration of powerful hypnotic drugs. Many human lives are yearly lost as the consequence of the taking by sufferers from insomnia of overdoses of hypnotics. All drugs which produce sleep as a physiological effect, and the relief of insomnia as a therapeutic action, with the exception, perhaps, of the bromides, produce stupor rather than sleep in overdoses, which deepens into the sleep which knows no waking when they are ingested or injected in larger doses still. So never allow a patient to dose himself with hypnotics. Keep the matter quite within your own secure hands, upon well-recognised limits of safety. From time to time a person who has been addicted to hypnotics is found dead in his bed upon some morning. The manner of his death is thus:—He is in possession of a considerable quantity of some lethal hypnotic. He has, say, a bottle of a solution of it. He is in the habit of giving himself a full dose of it each night upon getting into bed. One night he awakens earlier than usual, somewhat muddled,

thinks he needs a further dose, takes one too plentifully, and soon passes into the "sleep" of death. I warn you that a hypnotic of this sort should never be in the possession of the patient. If a dose of such be indicated it should be administered by an attendant, who should take away any further store of the remedy; if the patient should not sleep the attendant should be summoned, and the question of a further dose and the quantity of the dose should be decided by the attendant accordingly to instructions from the medical man in charge of the case. When the "habit" of taking a hypnotic, and especially a synthetic hypnotic, has been established for some time, an ordinary dose may cause death, and has done so: there has been defective excretion of former doses, and then a cumulative and fatally poisonous effect has been completed by the last ordinary dose. No one who takes a nightly dose of any hypnotic which might cause death in an overdose or by a repetition of doses, or even in an ordinary dose, should be without a night attendant. There are many fatal cases of this kind which do not become known to the general public.

In the less acute and more chronic forms of psychic insomnia, where the sleeplessness or wakefulness usually depends upon prolonged

worry or overwork, I employ hydrate of chloral or other powerful dormitives as sparingly as may be. They should only be used as temporary remedies, when it is necessary to secure at once a fair amount of sleep. A patient should never be allowed to swallow chloral or any other of the dangerous but valuable hypnotics whenever he feels so disposed, neither should he apportion their doses for himself; he can only safely take them under direct medical control and observation.

Another important point must not escape from view. It is this: an overworked man or woman must never be permitted to go on with his or her overwork and habitually secure sleep by chloral or by any other hypnotic. In such a case we must relentlessly aim at preventing the sleeplessness by removing its cause, instead of pursuing the illogical and precarious course, into which often a wilful and impatient patient would persuade us, of permitting that cause to continue, and of trusting to counteract or suppress the resulting insomnia, a troublesome effect of that cause, by medicine. Remember that work which prevents due sleep is dangerous work. When a man cannot sleep because he works his brain too much, we must make as a condition of our help that he stop or greatly

lessen his labour. Especially should be abstain from mental work for some hours before going to bed. In many persons the cerebral hyperæmia of severe mental toil does not fall down to the circulatory limits required for healthy sleep for several hours after the cessation of such work. But I advise you to be wisely suspicious in practice as to accepting work as a cause of insomnia. Nature provides that disposition to rest shall follow work. It is mostly worry, not overwork, or it is work under wrong conditions, which makes sleep difficult.

Whatever the cause of the insomnia, a holiday, with complete change of scene and with distinct change of activities, will often do much to cure. Great as is the curative influence of new surroundings and of new outlets for energy, in many cases of psychic insomnia we cannot, however, do without drugs. Potassium bromide is by far the best hypnotic in well-nourished patients, and in the slighter cases generally. It is marvellously powerful in producing nervous calm; it is a direct brain sedative, and quite a safe one. But it must be given properly, and in full doses; after getting into bed, 30 to 60 grains, dissolved in water, should be the dose. Sometimes you may usefully combine with it some drug which will

favour the contraction of the weakened cerebral blood vessels. For this indication we may give tincture of ergot or tincture of digitalis, one or both.

In many cases of chronic wakefulness arising from prolonged mental strain, the patient is distinctly anæmic. The insomnia cannot be cured unless the anæmia be cured. The pallor of the patient's face, the lightened tints of his visible mucous surfaces, and his soft and small pulse, declare the condition of his blood. Such a person mostly feels drowsy when he is up and wakeful when he lies down. He needs hæmatinics, of which the best are iron and arsenic, singly or combined. His diet must be generous, containing plenty of fish, meat and eggs. For such a patient an alcoholic dormitive is often the best hypnotic; its form and dosage need peculiarly precise prescription and careful supervision.

The prescription of alcohol as a remedy in disease is often difficult and sometimes dangerous. To many people a "nightcap" of toddy is a superfluous, perhaps hurtful, luxury. It gives, however, perhaps better than anything else, rest and sleep to the worried brain of feeble persons whose blood is poor. I find that alcohol is the best hypnotic in many cases of

chronic psychic insomnia, when the patient is worried and weakly, sorrowful and anæmic. In such a case some food and a carminative may be combined happily with an alcoholic stimulant, as in a good old caudle which Dr. Kitchiner called his *balsamum vitæ*, made up of a drachm each of tincture of cinnamon and of powdered white sugar, mixed with the yolk of an officinal egg and two ounces of madeira, for a dose upon getting into bed.* Beer was the hypnotic relied upon by the great Lord Chancellor Bacon, who appears to have been a psychic insomniac. His contemporary Aubrey relates of him, "his Lordship would often drinke a good draught of strong beer (March beer) to-bed-wards, to lay his working fancy asleep: which otherwise would keepe him from sleeping great part of the night."† We may note that recently "The Hospital's Commission on Beers" reported, after careful enquiry, that:—"Pale ale and stout are the most harmless and best hypnotics we possess, and are often far more efficacious in the treatment of insomnia than drugs. Precisely how these substances act we do not know, but

* The Cook's Oracle. By William Kitchiner, M.D. New Edition, London, 1827.

† Lives of Eminent Men. By John Aubrey. First published from the originals, London, 1813.

part of their action is certainly due to the hypnotic principle contained in hops, and the more heavily these beverages are hopped the more marked is their hypnotic action. An average dose for the purpose is half a pint, and this should be taken last thing at night, as long after an early dinner or supper as possible."* We need not exaggerate our responsibility in the prescription of alcohol; but we should never forget it. I have been accustomed to insist that when we use alcohol, in the form of any of the fluids which contain it, in the treatment of insomnia, we should explain to our patient the reasons for the employment of the remedy, and that we should discontinue this remedy as we discontinue the use of other drugs, when the conditions which called for its exhibition shall have disappeared.

I have found in practice that a carminative, best taken just after the patient be entered into bed for a night's sleep, is an efficient remedy in some cases of intrinsic insomnia. Such a remedy is indicated when a sense of gastrointestinal discomfort, often described by a patient as a feeling of "sinking" in the stomach, with or without flatulence, appears in any particular case to prevent sleep. A car-

* *The Hospital*, April 24th, 1909.

minative is a cheering and comforting remedy, which relieves gastro-intestinal discomfort, stomach-ache, or belly-ache, disperses and prevents flatulence, and promotes speedily a feeling of local well-being, and all this so markedly that its name may be justified either by the song of joy which it almost inspires or by a *carmen* meaning a charm as well as a tune. Oil of cajuput is a reliable remedy of this kind. In its action it is a carminative, an antispasmodic, and a diffusible stimulant. It may be given in a dose of five drops, or a little less or a little more, dropped upon a piece of lump sugar, or crumb of bread. Hot water, as a beverage, is also a carminative, diffusible stimulant, and antispasmodic, promotive of gastro-intestinal peristalsis. I have read that a well-known English statesman, now living, cured himself of sleeplessness by drinking a tumblerful of hot water, "as hot as could be drunk," before going to bed. In some of the milder gastric disturbances which dispose to insomnia a good draught of old-fashioned effervescing ginger-beer, just before getting into bed, will disperse flatulence and determine sleep; if this remedy be not at hand a teaspoonful of Worcestershire sauce in a small tumblerful of ærated water would furnish an adequate succedaneum.

In slighter cases of intrinsic insomnia some of our dormitives which are milder than the ordinary hypnotics are useful. We may now consider these, which may be regarded as adjuvant remedies, of tried adoption. Many of these remedies are what may be called popular remedies, and a remedy, like a person, is not always the worse for being popular; they are "understood of the people," and you should understand them too, for it is scarcely convenient that you should run risks of being beaten in your therapeutics of insomnia by a non-professional prescription of a remedy of this class. A drachm of the officinal tincture of hop is a good dormitive. The slumberous repute of hop attaches to its aroma. King George the Third, by the advice of his physician, slept with his head upon a hop pillow, *pulvinar lupuli*, a pillow stuffed with newly-dried hop catkins. It is recorded that such a pillow was used successfully by our King Edward VII in his severe enteric fever in 1871. Dr. Berkeley, Lord Bishop of Cloyne, records: "I have known tar-water procure sleep and compose the spirits in cruel vigils, occasioned either by sickness or by too intense application of the mind."* Tar water, made

* Siris: . . . concerning the virtues of Tar water. By the Right Rev. Dr. George Berkeley, &c., 2nd Edition. Dublin, 1744.

according to the formula of this prescribing prelate, is still to be bought from pharmacists. Amongst popular remedies for sleeplessness there are: clove-tea; cowslip wine; nutmeg-tea (nutmeg may be narcotic in large dose); fennel stalks, eaten as celery; lettuce as food, or in some of its medicinal preparations; onions, as food. What may be called the lore of these popular remedies is very interesting; you may pursue it as an instructive diversion, and as one from which you may gather points of use in medical practice.

There are many other matters to which you must give attention in the treatment of chronic psychic insomnia, if you would follow my advice that you should only give hypnotics in exceptional cases, and only when you really cannot obtain a successful result without them. I can now do little more than mention the more important of such details to you.

Some of them you will find useful in some cases, in other cases others. How best to combine them in any given case experience will teach you. Firstly, whether he sleep well or ill, the patient ought from day to day to go to bed and to get up at fixed and regular times. "Lying in bed in the morning" is not a remedy for insomnia. Healthy sleep is a rhythmic act,

and rhythmic sleep must be cultivated. The conditions for the periodic recurrence of sleep must be supplied. Patients should be taught to go to bed at a fixed time, to get up for the day nine hours afterwards, and to trust to "nature" as to whether they sleep little, much, lightly, heavily, or brokenly, or not at all, in the interval. An afternoon nap for half an hour or so after a meal, with the feet kept warm before a fire, is helpful, and I have found in practice that it conduces to, rather than hinders, better sleeping in bed at night.

Again, daily bodily exercise in the open air, but always short of great fatigue, must be enjoined. What is called carriage exercise is better than no outdoor change at all, but walking is a far better exercise, and cycling better still, and riding on horseback the best of all. A worn and worrying man, habitually wrapt up in an absorbing torture of self-consciousness, exaggerating his subjectivities, and sleeping badly, must perforce come out of himself, and blot out his self-consciousness with the saving graces of objectivities when he mounts a cycle or a horse's back. Gardening, in the open air, not in conservatories nor in hothouses, affords good exercise, and it is very efficient in keeping up objective attention. Dwellers in towns may

find good objective employment, of a kind counteractive of insomnia, in various physical exercises and drills, in fencing with foils, and in other similar recreations, all of which you, as medical advisers, must learn to understand in their several details, so that you may prescribe them intelligently to suit the particular needs and aptitudes of individual patients; many may at least copy Archbishop Whately, who remedied the strain of his logic by splitting his logs, and give their minds a refreshing and recreative objective bent, and their muscles healthy work, by cutting up firewood.

We have already seen, in a former lecture, that the brain in sleep is relatively anæmic, there being in that state of the body a diminished supply of blood to the brain, and especially to the blood-vessels of the cortex of that organ; and that this modification of the circulation of blood in the brain is conversely changed upon awakening from sleep. For these changes in the local blood supply to occur in physiological perfection many complex circulatory processes must have their natural play, as you will know from your study of physiology. But these changes cannot happen with normal readiness and with normal completeness unless

the walls of the cerebral arteries and arterioles retain their normal elasticity, contractility, and dilatability. Arterio-sclerosis is a frequent pathological condition which impairs or destroys the muscular contractility and the elasticity of arteries and arterioles; it is a grave change especially occurring in middle and in advanced life. So far as it affects the blood-vessels of the brain it is intimately concerned in the causation of insomnia. The whole subject of the causation, effects, prevention and treatment of arterio-sclerosis is one of the greatest in medicine and far beyond the scope of this present discourse. But we must have arterio-sclerosis in our mind in the treatment of insomnia, which may depend wholly or partly upon it. For the prophylaxis of this condition, for its prevention, retardation, and amelioration many precautions and many therapeutic measures may be necessary. Our art is developing a sound physiological prophylaxis in this important regard. Upon this great and wide subject my friend Dr. Herbert French has recently worked and written, with much clearness and promise of our advancement and success. In a valuable paper he states:—"I feel certain that whatever chemical pathology may underlie arterio-sclerosis, an additional and eminently preventible

factor is an absence of what for the sake of brevity I may call sufficient arterial-gymnastics, necessitating the redistribution of blood in the various parts of the body by the active exertions of the vaso-motor neuro-muscular system. Arterial gymnastics of this kind require no very strenuous exertion, provided the movements the patient goes through are of the right kind. It is probable that the old-fashioned way of fasting periodically did good, by making a maximum variation in the calibre of the visceral blood-vessels from time to time. The beneficial effects of purgatives may possibly be attributed to a similar cause. There is no doubt that when arterio-sclerosis has reached an advanced stage, by which time all increased blood-flow through a part depends upon increased output from the heart, strenuous exercises often do harm rather than good; but short of that, the stiffened arterioles may be made less stiff, and incipient arterio-sclerosis may be obviated altogether by the adoption of regular exercises, in which respect golf is an immense boon. Sometimes when the exercises are started they do harm instead of good, through being overdone; it is therefore beneficial to have graduated and supervised tasks in some cases in addition to the ordinary daily exercise; it is in this respect that

the passive and active movements of the Schott-Nauheim treatment, coupled with massage, do so much good. The keynote to the prophylaxis—and in its earlier stages, to the treatment, and possibly, in the earliest cases, to the cure—of arterio-sclerosis, is suitable arterial exercises; that is to say, the re-establishment and maintenance of the proper activity and adaptability of the control of the blood-supply by the vaso-motor system, without the necessity for calling upon the assistance of varying activity of the heart. Probably of all the simplest exercises which do good in the prevention of arterial rigidity one of the best is that which consists in standing up after the bath in the morning, and alternately extending one's head and body backwards, and then forwards and downwards until the fingers touch the toes, whilst the knees are kept straight. If the person can alternately stand erect and stoop the head far down a dozen times in succession without producing giddiness, especially if the movements are performed fairly quickly, then it means that, in spite of the altered position of the head, the vaso-motor system is so agile that it can still vary and control the blood distribution in the body so quickly that the cerebral circulation remains approximately the same, in spite of the alterations in

attitude.”* Whatever sustains the agility of the cerebral circulation, or improves it if it be impaired, is of causal benefit in the cure of insomnia. An excellent “exercise” of this kind which I have arranged and prescribe is this: place a hand upon each knee, stoop down and regard objects behind you squarely for three seconds, then assume the erect posture suddenly; do this unto seven times, before a meal, daily.

As to sunshine, we healers welcome the present revival of the therapeutic worship of the sun. Certainly sunshine is a natural energizer, tonic, and calmative. In practice you may be sure you will find free and long daily exposure to sunshine a valuable physiological adjuvant in the cure of insomnia.

Again, many people have acquired more or less insomnia in the acquisition of the bad habit of thinking out their affairs upon getting into bed. Some patients pursue this bad practice for years, and they often conceal it or disregard it when they seek medical help for sleeplessness.

* The vaso-motor factor in the causation and treatment of high blood-pressure. By Herbert French, M.A., M.D. (Oxon), F.R.C.P., Assistant Physician and Lecturer at Guy's Hospital. Reprinted from *The Clinical Journal*, July 5th, 1911.

In such a case you must find out this bad habit, and break your patient of it, for the cure of insomnia. Evoke the patient's self-control in this regard. In such cases especially, and in the cure of insomnia generally, people who find it difficult to get off to sleep have been advised to count monotonously, one, two, three, up to a thousand or more, until they fall asleep; to picture some familiar scene and keep the mind fixed upon it; to repeat the letters of the alphabet over and over again. The late Dr. Pereira gave some interesting illustrations of the well-known fact that a continued repetition of monotonous impressions on the senses of hearing, seeing, or touch, are provocative of sleep. One passage from his monumental work on remedies I may quote to you. Speaking of monotonous impressions in the therapeutics of insomnia, he wrote:—"This is the principle of 'the method of procuring sound and refreshing slumber at will' recommended by the late Mr. Gardner, who called himself the hypnologist. His method was for some time kept secret, and was first made public by Dr. Binns. It is as follows: Let the patient 'turn on his right side, place his head comfortably on the pillow, so that it exactly occupies the angle a line drawn from the head to the shoulder would form, and then,

slightly closing the lips, take rather a full inspiration, breathing as much as he possibly can through the nostrils. This, however, is not absolutely necessary, as some persons always breathe through their mouths during sleep, and rest as sound as those who do not. Having taken a full inspiration, the lungs are then to be left to their own action; that is, the respiration is neither to be accelerated nor retarded too much; but a very full inspiration must be taken. The attention must now be fixed upon the action in which the patient is engaged. He must depict to himself that he sees the breath passing from his nostrils in a continuous stream, and the very instant he brings his mind to conceive this apart from all other ideas,' he sleeps. 'The instant the mind is brought to the contemplation of a single sensation, that instant the sensorium abdicates the throne, and the hypnotic faculty steeps it in oblivion.' '* Here is the use of a new and transient subject of consciousness, as substitutive of that which by its fixity and repetition was preventing sleep. Similarly, Dr. Horace Dobell has devised a prescription which he has found very successful in procuring sleep for his patients, namely, "instead of shutting the eyes as people generally do when they want

* Elements of Materia Medica.

to go to sleep, let the patient be ordered to strive to keep them open to the last possible moment. It is surprising how often they will then close in sleep in spite of every effort to keep them open.”* Again, as I saw shrewdly put lately, “determine to remain awake all night; you will soon find yourself dozing.” These various methods seem to be devices for changing the current of conscious cerebration. Amongst my patients I have found the plan of taking deep inspirations commended by many of them. But for the most part these expedients succeed for a night or two only, and they can scarcely be relied upon either exclusively or long. These sundry practices may even keep up wakefulness; when the mind attends to them too closely, they may sustain the self-consciousness which keeps the brain from slipping into slumber. To try hard to go to sleep is often the surest way to keep awake. We do many things best when we forget ourselves, and going to sleep is no exception to the rule.

The pillow of an insomniac's bed should be neither too high nor too low. The pillow should be “arranged” so that the sleeper's head does not fall upon his chest in deep sleep, or he will

* A letter on sleep and want of sleep. *The British Medical Journal*, March 13th, 1909.

soon be awakened: he must keep his chin off his chest. If the head be thrown too far forwards, the venous return from the brain is obstructed, and the patient is awakened by vivid dreaming and by "thumping" at the back of his head.

Again, to promote the sleep of a person in bed, you should make sure that the bedclothes which cover him are sufficient and not excessive. If the covering bedclothes be especially arranged in quantity each night by thermometric guidance, according to the temperature of the air in the patient's bedroom, so as to secure that the thickness of the upper bedclothes will give to the occupant of the bed a general feeling of sleep-inducing and sleep-sustaining comfort, and not of sleep-preventing discomfort, either from local or from general chilliness or from local or from general over-heating, sleep will be powerfully promoted. And, further, if such arrangements be made with the knowledge and with the interested approval of the patient, or by himself, we gain the valuable adjuvant of his self-confidence as to his sleeping well, and establish in his mind for the particular night before him a happy expectation which is likely to be realised. For your guidance as to the details of practice arising from this indication of treat-

ment, I may tell you that, from observations I have made, I have found that in a large bedroom in the middle of a large house, with a window of the room always kept open, a Fahrenheit thermometer indicated a temperature of 70° , or upwards, in the hottest weather, and of 40° , or less, in the coldest weather, in the country, at an elevation of about 300 feet above the sea-level, in mid-England. At a temperature of 44° , the upper bedclothing should consist of a sheet, three blankets, a light counterpane, and a light small blanket, this last not "turned over" at the upper edge of the bedclothing and not "turned in at the bottom"; at a temperature of 70° , it should be a sheet only. Between these extremes of temperature the changes in the thickness of the covering bedclothes should be gradual. These extremes should be the ends of a series of gradations passing through about nine terms. With a little care you can make a serviceable thermometric register, marking the suitable bedclothing for a given temperature of the bedroom in any particular case, and so you may cure intrinsic insomnia, and prevent its recurrence.

The head of the bed should be away from a wall; and it should be towards the east: "move eastward happy earth." We are often

asked for direction by patients as to the latter point, and we may think that this eastward position would tend to prevent cerebral hyperæmia.

In all cases, the bedroom window should be open all night and all the year round, and arranged so that it may be so without draught. Insufficient ventilation causes awakening from sleep, just as do noises, light, and too great heat or too much cold.

The best bed on which to lie is a hair mattress, covered with a sheet and a blanket, and supported upon a chain stretcher. As to the position of the body in decubitus which helps sleeping patients may inquire of you for guidance. Remember that "nature" disposes us towards sleep after a full meal; if we lie down and yield to her solicitation one instinctively lies upon the right side. Dextral decubitus is the best position for the former half of a night's sleep, as favouring the progress of their contents through the stomach and the small intestine; sinistral decubitus for the latter half of the night, as helping fæcal progress through the large intestine, towards a matutinal call from the rectum for defæcation.

In some cases a little food taken just at the time for sleeping is an efficient soporific. You may often observe that the good effects of a

little nourishment—a cup of “cocoa,”* or a small piece of dry bread, or of ginger-bread or ginger-bread biscuits when such homely carminative is indicated, taken upon getting into bed or upon awakening after a slumber which is too short for a night’s rest, are most happy.

You may usefully remember that sleep may often be induced by the temporary application of cold to the head or to the general surface of the body. A person who has been lying awake will often fall asleep at once upon regaining his bed after getting out of bed and sousing his head, neck, and hands in cold water, or after following Charles Dickens’s plan of standing at his

* “Cocoa” is an arbitrary preparation, “said to be made from the fragments of the seed-coats mixed with portions of the kernels (of *Theobroma Cacao*).” (Pareira.) I have instructed Messrs. Southall, the well-known pharmacists, to prepare what our faculty would deem to be the best kind of “cocoa,” namely, what may be regarded as a kind of “whole meal” cocoa, it being a preparation which furnishes the whole of the constituents of the seeds of *theobroma cacao*, (the nuclei cacao,) exactly in the proportions furnished by nature; when this meal is indicated to your selection you may prescribe it as *farina theobromæ*. Pareira taught that “cocoa” is somewhat constipating; this *farina*, by retaining the natural fat of the seed, would obviate such effect. I have found a ready and reliable test for what we may call the whole-mealedness of an ensample of this *farina*; in that a pinch of it should be sufficiently oleaginous to allow of its being worked up by fingers in the palm of a hand into a pilular consistency.

bedside until he feels chilly, and thereupon shaking up and cooling his pillows and bed-clothes, and then getting into bed. To illustrate this point further, a passage of great authority in Aubrey's contemporaneous biography of William Harvey, (1578-1657,) the discoverer of the circulation of the blood in man, may be quoted:—"He was hott-headed, and his thoughts working would many times keep him from sleeping; he told me, that then his way was, to rise out of his bed, and walk about his chamber in his shirt, till he was pretty coole, *i.e.* till he began to have a horror,* and then return to his bed, and sleep very comfortably."† What a pity Harvey, who learned and who taught so much, did not learn the habit of ceasing to "work" his thoughts some time before he went to bed, so that he might have lived more happily and longer! A patient told me that the successful effect of getting out of bed for a while to break his insomnia was much helped by stamping his feet upon a hard floor until they "burn."

Patients suffering from insomnia recover normal sleep more quickly under frequent interviews with their medical adviser than when such

* Shiver.

† Aubrey's "Lives." *Op. cit.*

meetings are "few and far between," because a member of our faculty who is experienced in practice amongst such patients becomes fertile in the judicious application of therapeutic suggestion; for example, in suggesting that a remedy he is about to exhibit will either produce sleep forthwith or render the absence of sleep innocuous. Insomniacs often recover healthy sleep in gaining the persuasion that their insomnia is harmless. The psychic cause of insomnia is often an exaggerated fear of the effects of insomnia. In some cases of psychic insomnia, two or three years of gentle, firm, and sympathetic discipline, under the skilful and patient care and guidance of a medical man of experience as to such sufferers, is most useful in teaching and developing the control of those neurotisms of the nervous temperament which are causal as to insomnia; the severer cases might do best to live in a doctor's house with him in his family.

Everybody is a little superstitious about something. Sometimes a patient hugs a harmless and even helpful superstition about his sleeping. Let him hug it; do not try to reason him out of it. The therapeutics of superstition is worth our consideration. It sometimes has its uses in medical practice, especially in a case in

which mental depression is associated with insomnia. "Un homme n'est pas tout à fait misérable quand il est superstitieux" truly wrote a great Frenchman.* A wise physician lets his neurotics keep those of their superstitions which he can turn to therapeutic uses for them.

Another word as to self-discipline in insomnia: it is here in the words of a great surgeon who might have been a great physician: — "It is common to hear healthy people say, and sometimes as if it were praiseworthy, that they cannot sleep on this side or that, or without a pillow or some such help. In some of these there may be just reason for their defect, but in the greater number it is a mere habit grown out of a want of will to resist some discomfort. If such people would resolutely pass some hours, or a night or two, without sleep, their fatigue would ensure them sleep in any posture whatever."† Your experience in practice will soon teach you to recognise the cases in which this consideration should be urged.

In the toxic kinds of insomnia we must especially endeavour, as I have already sug-

* Honoré de Balsac in his "Peau de chagrin."

† The use of the will for health. By Sir James Paget, Bart.

gested to you, to act upon the maxim, "*Cessante causâ cessat et effectus.*" We must stop or lessen the consumption of tobacco, alcohol, tea, etc., as the case may be. The sufferer from toxic insomnia will ask you what must be done for sleep. This is not quite the question; the question is not what the patient must do, but rather what the patient must not do. The consumption of something must be left off. When you have found out the what and when of that something, the patient's self-control, loyal co-operation, and obedience to your directions are essential to your curing the case. A discussion of the treatment of gouty insomnia, and of the sleeplessness arising in some chronic kidney diseases, would involve a consideration of the whole question of the therapeutics of the maladies upon which these forms of wakefulness depend. If you find evidence of copræmia in a case of insomnia, you must, in any case, treat the underlying fæcal retention. Such fæcal retention may be the whole cause, or an active part of the cause, of the insomnia. This is one of the causal relations of insomnia which yields readily to evacuant treatment. Note, for example, that Dr. Naylor, writing of the faulty sleeping which depends upon "the retention of waste products," testifies to the advantages of

“a free clearing out of the emunctories, the bowels, and kidneys at the same time by a dose of about 2 grains or 3 grains of calomel, a drug which acts simultaneously on them both. I have often in my practice found a dose of calomel about three times a week enable the patient to sleep well and rid him of his imagined woes and dreams, while at the same time he has been dieted.”* As to the value of calomel, from another point of view, in the treatment of insomnia, Dr. Huchard, the eminent physician in Paris, lately declared that, the administration of one-tenth of a grain of calomel three times a day was often enough to gradually restore the habit of sleep in cases of high arterial tension, probably dependent on imperfect metabolism.†

Senile insomnia is very obstinate. Perhaps in the bromides, with full doses of hop or of henbane, we have the most efficient and least harmful medicinal means of relief; while the promotion of sleep may be accomplished by an intelligent combination of some of the non-medicinal measures to which I have referred.

In some cases of insomnia, counter-irritation, by a pustulant, kept up for a few days or longer,

* Of St. Kilda, Victoria, in *The British Medical Journal*, June 11th, 1909.

† Meeting of British Medical Association.

until the insomnia yield to the treatment, is successful, applied to the nape of the neck, to the nuchal region, over the occiput, or over the whole of the hairy scalp. It is a good local derivative, easing pain and intra-cranial hyperæmia, and it will be found in practice to present some further advantages of a disciplinary nature. I think I have discovered that dull and prolonged nuchal and occipital pain is pathognomonic, when found with psychic insomnia, of worry of financial origin. An efficient pustulant may be formed of one part of powdered ipecacuanha, one part of croton liniment, and two parts of benzoated lard, rubbed together to form an ointment, of which a portion of the size of a hazel kernel should be rubbed into the skin of the surface you select, for five minutes, night and morning, until pustulation be produced; when a local pyorrhœa shall become established less frequent applications will sustain this curative effect, as occasion may require.

Again, as to senile insomnia, senility is a relative term, and with much truth it may be said "a man is as old as his arteries." In such form of wakefulness, arterial exercises, under medical approval, may be more important than any other single measure, as Dr. Herbert French

has pointed out in the therapeutics of arteriosclerosis at large.* Besides the prophylactic employment of such activities, he finds that in less extreme cases of arterial induration graduated exercise may restore some of the lost elasticity, contractility, alertness and lissomeness of arterial walls, so that the blood-pressure may be abated by some restoration of the vaso-motor factor, in balancing the distribution of the blood in relation to local functional activities.

Motoring, best in an open car, is powerfully curative, especially in psychic, toxic, or senile insomnia in exhausted patients.

Sleeplessness in a child has some peculiar features, causal and curative. These were well made clear by Dr. Cassel,† and his paper would repay your study of it when you wish to pursue further the subject of infantile insomnia. During the first few weeks of life a baby only awakens when it is uncomfortable, as from feeling cold, or hot, getting wet, or from thirst or hunger, or from a scratching pin, a tight band, or a covered face; the discomfort removed, the infant sleeps again. For the first three months the infant mostly

* *Op. cit.*

† *Deut. Med. Woch.*, September 6th, 1906; excerpted in *The British Medical Journal*, November 10th, 1906.

sleeps, then times of waking lengthen, until by the end of the first year a few hours of daily awakenedness are attained. By the end of the second year a child should sleep during twelve hours at night and from one and a half to two hours by day. By the fourth or fifth year the day sleep may be much shortened or omitted; until puberty from nine to eleven hours of sleep are well at night. Of course, all the causes of symptomatic insomnia must be recollected in the treatment of the malady in infants; but especially with them. Recall traumatisms, belly-ache, skin affections, cough, diarrhœa, difficulty of breathing, rickets, tetany, epilepsy, fevers, headache, nasal obstruction from adenoid growths, masturbation, mental defects, mismanagement by a nervous parent or nurse, and examine the ears, the eyes, the urine and the anus. Symptomatic insomnia soon yields to causal treatment. In psychic cases, every detail of hygiene, of physiological propriety, and of example must be adjusted with individual regard to the features of each case. Hypnotics are seldom indicated. To get a child "off" to sleep, a warm bath, and quickly to bed, imperfect darkness, quiet, the presence of a familiar and trusted attendant, holding one of the child's hands with-

out restraining it, a "good night" kiss, and a monotonous and low-pitched "cradle song" have signal uses in practice.

Now I must close our consideration of this interesting subject of the therapeutics of intrinsic insomnia. I have sketched broad outlines for your guidance, which will suggest to you many other details in your practice. That the best physician is the physician who is the best inspirer of hope, Coleridge it was, I think, who so declared. He was largely right. Of course, truthful hope, and hope of the true kind, a cheerful and abiding expectation of success. Certainly is this largely true in nervous maladies. In the cure of intrinsic insomnia, especially, the best physician is one who is a master of his art and withal the most ingenious inspirer of his patient's desire of cure and belief that it is obtainable. Perhaps no other maladies demand a greater scope of therapeutic resources. The best physician in these cases is he who knows how to vary, with "infinite variety," the adaptation of efficient drugs to meet the infinite varieties of individual cases, and who is the most adroit inspirer and sustainer of hope—adroit, à droit. In insomnia, as indeed in the treatment of every malady, it is for one of us, medical men or women, to make the patient "better." This

must be your unwearied work, done in brightness and with interest, ever remembering that the joys of a pathological diagnosis are a very acquired taste, and one of the medical mind only, while the victories of therapeutics need but the common love of life and ease for our appreciation of them. To the sick each of you must be an aid-bearer; of us was it written, "*opiferque per orbem dicor.*"*

* Ovid, M. I., 521. Anciently chosen for the armorial motto of the Worshipful Society of Apothecaries.

III.

PRACTICAL SUMMARY OF THE PHYSIOLOGY, PATHOLOGY, ETIOLOGY, VARIETIES AND TREATMENT OF INSOMNIA.*

Physiology of sleep.—*Symptomatic insomnia.*—*Intrinsic insomnia: psychic, toxic, and senile.*—*Causal treatment.* — *Potassium bromide.* — *Opium.*—*Chloral.*—*Combination of hypnotics.*—*Chloralamide.* — *Sulphonal.* — *Paraldehyde.* — *Veronal.* — *Alcohol.* — *Saline eliminants.* — *Laxatives.*

INSOMNIA.—Two distinct vital changes occur in sleep. These changes are associated, and are related to each other. One, as has been proved by experiment, is a diminished supply of blood to the brain, and especially to the blood-

* An article from my pen in *An Index of Treatment* by various writers, edited by Robert Hutchison, M.D., F.R.C.P., Physician to the London Hospital, &c., and H. Stansfield Collier, F.R.C.S., Surgeon to St. Mary's Hospital, &c.; Bristol, John Wright and Sons, and in London and New York; 6th Edition, 1911, p. 1039, which article is reproduced here, as the best summary I can give of insomnia, by the generous permission of Dr. Hutchison and of Messrs. John Wright and Sons, to whom I offer my grateful thanks.

vessels of the cerebral cortex. The other change, the precise characters of which are as yet unknown, is some essential and intrinsic change in the brain—and probably also in the spinal cord and the ganglionic nervous system—of the nature of a functional depression of those parts, and especially of the cerebral cells, and arising from an accumulation in the affected organs of some of the products of normal tissue waste. It is very probable that for normal sleep an intrinsic change of this kind must gain the wide distribution here indicated, that this change is rhythmic in its occurrence, and is sustained by the physiological effects of some of the issuants of those muscular and nervous tissue changes which especially occur in the active, waking state of the body. The whole living body sleeps. The changes which the event of sleep declares, extend beyond mere interruption of consciousness; they extend to secretion, to the action of the heart and blood-vessels in the general circulation of the blood, to respiration, to nerve reflexes, and to all the tissue modifications and all the functional activities concerned therein.

In insomnia, sleep is absent or imperfect; there is inability to sleep at all, or long enough, or at a convenient time. Insomnia is a concomitant of some forms of unsoundness of mind.

Besides such mental sleeplessness, cases of insomnia, as met with in practice, divide themselves naturally into two groups, namely, (1) *Symptomatic insomnia*, and (2) *Intrinsic insomnia*.

1. SYMPTOMATIC INSOMNIA attends a vast variety of morbid states, and is secondary to them, or is part of them. Pain, if severe enough, and from whatever cause arising; pyrexial elevation of temperature; frequent coughing, such as often occurs in pulmonary consumption; dyspnœa, such, for instance, as results from obstructive dilatation of the cardiac cavities and appears to require an extraordinary vigilance of the nervous centres for the maintenance of the vital processes of respiration and circulation—are clinical conditions of disease which may prevent, shorten, or break up sleep. Such conditions are frequently met with in medical practice, as single or conjoint causes of insomnia, in various combinations. In such and in similar instances the cause of the sleeplessness is obvious, and the consequential character of the insomnia—that is, its dependence upon a distinct and sufficient cause—is clear. For the therapeutic control of this kind of insomnia we may employ with success one of two curative methods, or we may employ a judicious com-

bination of these methods, such combination being founded upon a skilled appreciation of the especial needs of each individual case. That is to say, we may control sleeplessness of the kind in question either by the exhibition of remedies which directly cause sleep—hypnotics or soporifics—or by the employment of measures which combat the cause of the insomnia, by removing pain, by reducing pyrexia, quelling cough, relieving cardiac disturbance and dyspnœal discomfort, and so on; or by using in conjunction hypnotics and remedies for the removal of the causes of the sleeplessness. In symptomatic insomnia, as in medical practice generally, it is best to regard the therapeutic indications of each case from the well-known standpoints, respectively, of the *indicatio causalis*, of the *indicatio morbi*, and of the *indicatio symptomatica*. The treatment of the sleeplessness of the secondary insomnia arising from pain, pyrexia, dyspnœa, and from other morbid conditions, is part of the treatment of a large number of diseases, and is given in other articles. If a hypnotic drug be needed in such a case, one of those described later may be selected. It must always be remembered that preparations of opium are contra-indicated, as a rule, in renal diseases and in bronchitis.

2. INTRINSIC INSOMNIA.—These cases fall naturally, as to their causes, into three divisions, the *psychic*, the *toxic*, and the *senile*. In psychic insomnia, some severe mental shock or long-continued mental strain (such as financial worry or hard reading for an examination) has excited or kept up such relative cerebral hyperæmia that insomnia results. In toxic insomnia, some ingested agent, as in alcoholism, or in excessive smoking of tobacco or snuff-taking, or as in the drinking of strong tea or coffee near bedtime, or some autogenetic poisons such as arise in the gouty diathesis, in renal insufficiency, or in habitual constipation, keep up sufficient cerebral hyperæmia for the production of insomnia. In senile insomnia, the broken and short sleep is the result of senile degeneration of the smaller cerebral arteries. In such degeneration, those blood-vessels are less elastic and contractile than in health, and they may become dilated, so that the blood-supply to the cerebral cortex is with difficulty reduced enough to permit of sleep.

Patients who are sleepless without physical discomfort, are usually those of nervous temperament, and their impressionability as to insomnia is determined by psychic or toxic causes, or by senile changes in the cerebral blood-supply, or by these conditions in various combinations.

TREATMENT.—As a rule, successful treatment follows the discovery of its cause. A hypnotic should be prescribed only in exceptional cases, and when its exhibition cannot be avoided. A removable cause of insomnia should never be allowed to continue. In the severer forms of psychic insomnia, the prompt use of a hypnotic will soon restore to the brain the power of sleeping, without further aid from drugs.

Potassium bromide is the best hypnotic in well-nourished patients and in the slighter cases generally. It produces nervous calm, is a direct brain sedative, and quite safe. It must be given in a full dose after getting into bed, 30-60 grains dissolved in half a tumblerful of water.

Opium, or one of its hypnotic derivatives, may be given, especially when pain prevents sleep; but is contra-indicated in bronchitis, and in renal disease; is given with extreme caution to children; it is unsuitable for habitual cases, and its exhibition should not be long continued, or its dosage much increased. In severe psychic cases it may act well, thus prescribed:—

R Pilulæ Saponis Compositæ gr ijss
Ft. pil. One or two to be taken at bedtime.

Chloral is the hypnotic most used, and it is certain in its action. Its disadvantages are,

that sometimes it is a gastric irritant, it is a cardiac depressant, undesirable in heart-disease or with a low blood-pressure, and the habit of taking chloral, which is a prevalent vice, may be induced. The officinal syrup of chloral hydrate is a good preparation. Each fluid drachm of the syrup contains 10 grains of chloral hydrate. From $\frac{1}{2}$ -2 drachms of this syrup may be given at bedtime in a wineglassful of dill, peppermint, or other aromatic water, and repeated in a half dose in two or three hours, if necessary.

A combination of hypnotics is sometimes more successful than any of them singly; in such combination each acts better in a smaller dose than otherwise. Chloral and bromide of sodium or of potassium may be given together; or both may be combined with opium, thus:—

R Tincturæ Opii	℥ v-x
Potassii Bromidi	gr x-xx
Syrupi Chloral	℥ ss
Aquæ Menthæ Piperitæ	q.s. ad ℥ iss
M. Ft. haust. To be taken at bedtime.	

Chloralamide is especially recommended in insomnia complicating disease of the heart. In such cases Dr. Hale White advises 25 grains dissolved by stirring in 1 ounce of brandy, adding water to taste, taken about one hour before bedtime. On account of its disagreeable taste it

is sometimes proposed that chloralamide should be administered in capsules; but if the drug be given as a powder, it may be very slow in its action, and cause a drowsy day after a sleepless night.

Sulphonal, and its chemical allies, *tetronal* and *trional*, are powerful hypnotics, which do not depress the heart nor irritate the stomach. None of them is safe if the kidneys be diseased, as each may cause hæmatoporphyrinuria. Each has the disadvantage of being comparatively insoluble in water, and their insolubility may retard their effect for some hours after they have been taken by the mouth. None of them should be administered for more than a few nights consecutively. While one of them is being taken, 20-30 grains sodium bicarbonate should be given during the day, to prevent the urinary hyperacidity which these hypnotics cause by their action upon the blood. Each of these drugs is best given in a cachet, washed down with a little hot water, one hour before bedtime. The dose of sulphonal is 10-30 grains; tetronal, 10-20 grains; trional, 15-30 grains.

Paraldehyde is a good hypnotic. It is a colourless liquid with ethereal odour and pungent taste, soluble 1-8½ of water. It is best given emulsified with yolk of egg. It acts

quickly, and does not depress the heart. The dose is from $\frac{1}{2}$ -2 fluid drachms. It has an unpleasant after-effect. For days after a single dose, a disagreeable smell is given to the patient's breath.

Veronal is a good hypnotic. It is a white crystalline powder, comparatively insoluble in water (1-160). It is cautiously given in cachets and in pills, for which latter, syrup of glucose is a good excipient. The dose is 3-15 grains.

In many cases of chronic wakefulness from prolonged mental strain, the patient is anæmic. The insomnia cannot be cured unless the anæmia be cured. Hæmatinics are indicated, of which the best are iron and arsenic, singly or combined. The diet must be generous, containing plenty of fish, meat, and eggs.

The prescription of alcohol as a remedy in disease is often difficult and sometimes dangerous. To many people a "nightcap" of toddy is a superfluous, perhaps hurtful, luxury. It gives, however, better than anything else, rest and sleep to the worried brain of feeble persons whose blood is poor. Alcohol is the best hypnotic in many cases of chronic psychic insomnia, when the patient is worried and weakly, sorrowful and anæmic. When alcohol is prescribed in the form of any of the fluids which

contain it, in the treatment of insomnia, the reasons for the employment of the remedy should be explained, and it should be discontinued when the conditions which called for its exhibition have disappeared.

In the toxic kinds of insomnia, if the cause be the consumption of tobacco, alcohol, tea, or coffee, such consumption must be stopped or lessened, as the case may be. In the toxic insomnia of gout, or of chronic kidney disease, with a pulse of high tension, the following combination is useful:—

R Magnesii Sulphatis Effervesc.	℥ ss
Sodii Potassii Tartratis	℥ j
Sodii Citro-Tartratis Effervesc.	℥ ss
M. Ft. pulv.	One or two teaspoonfuls to be
taken in half a tumblerful of water every	
morning, before breakfast.	

In the toxic insomnia which sometimes accompanies habitual constipation and undue fæcal retention, and of which such fæcal retention may be the whole cause, the cure of the habitual constipation must be aimed at. If laxative drugs be necessary, the following modification of Marshall Hall's pill is useful:—

R Aloes Barb.
Theriacæ
Extracti Glycyrrhizæ
Extracti Taraxaci
Saponis Mollis, singulorum partes æquales
Solve in aqua, et calore lente inspisse; deinde divide
in pilulas, pondere 2½ gr. One or two pills to be taken
at bedtime.

As a mild laxative, the following combination of remedies has proved excellent:—

R Magnesii Ponderosi

Olei Ricini

āā ℥ss

Mellis Depurati

℥j

M. Ft. conf. One teaspoonful to be taken at bedtime.

Senile insomnia is very obstinate. One of the hypnotics before mentioned may be given, with exceptional caution as to dosage. In many cases the bromides, with full doses of hop or of henbane, afford the most efficient and least harmful medicinal means of relief.

JAMES SAWYER.

Now I ought to make two additions to the foregoing article: 1, a hypnotic which may be fatal in an excessive dose may be fatal in an ordinary dose in a person who takes it habitually, by a kind of cumulative effect; 2, in senile insomnia arterial gymnastics may be indicated.

IV.

THE TREATMENT OF GASTRALGIA.*

Pain of gastralgia.—Importance of negative diagnosis.—Romberg's description of a gastralgic seizure.—Temperamental and sexual associations.—Clinical cautions concerning it.—Exhibition of arsenic.—Counter-irritation.—Diet.—Possible risks of very prolonged exhibition of arsenic.

GASTRALGIA is a very painful malady. It is a disease which our skill can surely distinguish and which our art can cure, and cure quite and quickly, given an accurate diagnosis of it, followed by the skilful administration of arsenic, with free and full feeding of the patient, and the application of judicious counter-irritation to the skin overlying the painful part. I do not propose to-day to attempt a complete exposition of the nature and cure of gastralgia. I desire to draw your attention to some salient features of practical and directly clinical import in the definition, etiology, symptomatology, and diagnosis of the

* A Clinical Lecture: published in *The Lancet*, August 13th, 1887; now revised and extended.

disorder, and especially to point out to you a means of treatment in which I have found confidence, based upon a long and frequent experience of satisfactory results.

Gastralgia inflicts the acutest suffering.* The pain has marked characteristics as to its position, duration, and onset, and as to its sexual, constitutional, and temperamental associations. The disorder has been variously called gastralgia, cardialgia, and gastrodynia. The nomenclature of the Royal College of Physicians authorises the last name, and it gives "stomach-ache" as a popular synonym. The malady is usually held to be a neurosis, affecting the gastric nerves. According to Dr. Leube, gastralgia is limited essentially to the sensitive sphere of the gastric nerves.† That the disorder is a neurosis is, perhaps, not quite proven—indeed, it is scarcely demonstrable. But the idea is a good "working hypothesis," which I commend to you. Romberg distinguished two forms of gastralgia: one, which he called gastrodynia neuralgica, he held to be a hyperæsthesia of the gastric branches of the pneumogastric nerves; the other, which he called

* A medical friend who, himself the subject of gastralgia, writes to me, "no adjective is strong enough to describe the pain."

† Von Ziemssen's Cyclopædia.

neuralgia cœliaca, he regarded as a hyperæsthesia of the solar plexus. Although Romberg has indicated what he thought to be the signs and conditions upon which a clinical differentiation of these varieties of gastralgia might be established, my experience has led me to agree with Niemeyer in his view that, in a given case, it cannot be determined by any methods of clinical investigation whether the patient's pains occur in pneumogastric or in sympathetic distribution. As Henoch has taught, although the distinction may rest upon a correct theoretical and anatomical basis, it is one which is inapplicable and worthless in practice.* It has been sometimes objected that the term gastralgia is unscientific, because it is only the name of a symptom. In practice, however, and especially in private practice, we meet with many cases for which there appears to be no other name. I apply this name to a clearly conceived and clearly defined pathological condition. I call a case one of gastralgia in which pain, deep-seated and paroxysmal, in or about the stomach, of a neuralgic or quasi-neuralgic character, is the leading symptom. But this statement is inseparable from the following important qualification. Pain of the character

* Niemeyer : Text-Book of Practical Medicine.

and position described can only be regarded as that of gastralgia when it is unaccompanied by marked evidences of gastric or gastro-hepatic catarrh, and when, also, it is wholly unaccompanied by physical signs of structural disease either in the stomach or in its neighbourhood. The latter part of this definition involves a conclusion which is essential and which is a negative one. A negative conclusion, of course, in any particular case is proverbially difficult. Such a conclusion should only be formed in a supposed case of gastralgia after a complete examination of all the circumstances. Further, a diagnosis of gastralgia should only be held in the conduct of a case of pain in the gastric region as a conclusion which is to be subjected to frequent diagnostic revision; that is, such a diagnosis can only be continued when repeated physical exploration fails to reveal any other "coarser" interpretation of the patient's suffering. I desire to impress this last statement upon you as an important clinical caution, which you must especially remember when your patient is in middle life or beyond it, and more especially when the patient is a male. In such a person the danger of mistaking a graver and more material condition for gastralgia is especially imminent. The diagnosis of gastralgia is one which should never be lightly made, nor

negligently maintained. Pain in the gastric region, you should always remember, may long appear to be simply gastralgic—that is, independent of any local organic basis—when the appearance of a tumour, or the discovery of an aneurismal pulsation, or a sudden gastric or intestinal hæmorrhage may prove a diagnosis so comparatively favourable to be tenable no longer.

Romberg's short and vivid description of an attack of the severest gastralgia has been accepted as classical. Let me read it to you. He wrote:—"A violent contracting pain at the pit of the stomach supervenes suddenly, or after being preceded by a sense of oppression; it generally extends to the back, there is a sense of fainting, the face has fallen in, the hands and feet cold, and the pulse small, cramped, and intermittent. The pain attains such a pitch as to cause the patient to scream out. The region of the stomach is either swelled and distended like a ball, or, as is more frequently the case, it is drawn in, and the abdominal parietes are tense. It is common to find pulsation at the epigastrium. Pressure is not only well borne, but the patient frequently forces the pit of the stomach against some firm object, or compresses it with his hands. Sympathetic sensations occur in many instances

in the thorax, under the sternum, or in the pharyngeal branches of the vagus nerve, while they are seldom met with in the superficial parts.”* That is Romberg’s account of a typical and violent seizure of that form of gastralgia which he called *cœliac neuralgia*, or *paroxysmal hyperæsthesia* of the solar plexus. You may accept his clinical portrait as accurate, although it is doubtful whether he was correct in localising the pain primarily in nerves of the sympathetic system. Under the heading of *gastrodynia neuralgica*, you will find in Romberg’s excellent book a faithful clinical description of the milder cases of gastralgia, or “attacks of painful sensations in the stomach,” especially as they are manifested in association with the nervous temperament, and with the reflex expressions of sexual irregularities in women. I have ventured, from my reading and clinical experience, to form the opinion that Romberg did not describe two distinct diseases under the several names of *cœliac neuralgia* and *neuralgic gastrodynia*, but merely one and the same affection, which I have been accustomed to call gastralgia, as he met with it in different degrees of severity. Of course, a dual interpre-

* Romberg’s “*Nervous Diseases of Man.*” Translated for the Sydenham Society by Sir Edward Sieveking, M.D., etc.

tation of painful neuralgic affections in the gastric region has an anatomical basis in the dual nerve supply of the stomach—namely, in the innervation of the organ by nerves of the sympathetic system, and also by the vagus. But, truly, in the words of Leube, “in the present state of uncertainty with regard to the mode of action of the gastric nerves, especially with regard to the conditions of sensation, and in view of the anastomotic connections between the vagus and the sympathetic in the stomach, such a division of cardialgia appears to be both theoretically and practically untenable.”

Gastralgia may occur at any age. It is rare at the extremes of life. It is rarer in children than in old people. It is most commonly met with in early middle life. Like all neuralgias, it follows hereditary constitution, and is especially associated with what is known to physicians as the nervous temperament. You should study temperaments in patients. In them you will find many clues to morbid tendencies. Temperaments denote distinct types of physical form, of habits of life, of industrial capacity, of symptomatic proclivities, and of diagnostic and prognostic probabilities. A person of the nervous temperament is mostly slightly built, is generally in a hurry, is hypersensitive to all feelings, and to pain amongst

things felt. Such a person usually talks volubly, abruptly, and earnestly, often splitting up phrases, or recalling and correcting them, and especially modifying qualifying words.*

As so in all neuralgias, women are more liable to gastralgia than men. As, also, in all neuralgias, the manifestation of gastralgia is favoured by every condition which reduces the vigour of a patient's "general health." Asthenia sharpens neuralgic pain, and favours its development and persistence. Gastralgia is a frequent neuralgic development of hysteria; and, in women who are not hysterical, its incidence is often determined by the prostration of anæmia or by the exhaustion which arises from prolonged uterine discharges. In men, gastralgia may be a consequence of sexual excesses or of masturbation. All these circumstances must be remembered and dealt with in the causal diagnosis and effective treatment of the disorder.

The diagnosis of gastralgia is usually not difficult. Pain is the leading symptom. When we are satisfied as to the genuineness of pain in the region of the stomach, its correct interpretation largely depends upon an accurate

* I have given a fuller account of the nervous temperament in the chapter on the causes of insomnia, and in my Lumleian Lectures, in which latter is first described the sign of lingual physallization.

appreciation of various diagnostic data, *per viam exclusionis*. I cannot deal exhaustively with this part of the subject to-day. I desire, however, to give you these three cautions, which I have learned in practice, namely:—(1) Gastralgia is not a wasting disease. (2) It is not safe to diagnose cancer of the stomach until you can, to speak colloquially, feel the cancer; that is, until you can appreciate by your touch a local tumour which you are justified in regarding as a cancerous growth. (3) Do not diagnose ulcer of the stomach if you have not evidence of bleeding from the stomach, either in hæmatemesis or in melæna, or in both of them. You may take it as a clinical truth, as the late Dr. Wilson Fox clearly insisted, that pain arising in the stomach when the organ is empty, and relieved by the ingestion of food, is almost diagnostic of its nervous origin and nature.* Sometimes the pain of ulcer or cancer of the stomach may for a time appear to be relieved by taking food, but such a condition is highly exceptional. There is sometimes a kind of gastric “sinking,” even amounting to craving for food, in gastric catarrh, and, with greater rarity probably, in gastric ulcer; the local discomfort is not, however, relieved by feeding, but, on the contrary,

* Reynolds's System of Medicine.

usually made worse. There is another diagnostic sign of great importance in the recognition of gastralgia. It is this: firm pressure over the region of the stomach relieves the local pain. Some patients find this out for themselves, and press a closed hand or the upper rail of a chair strongly against the epigastrium, and so find relief.

My chief object in drawing your attention to the subject of gastralgia is to explain to you a plan of treatment which I have found very successful. I can tell you of a drug which cures gastralgia. Before you prescribe it, however, you ought to find out if there be any prominent pathological concomitants or causal antecedents of the disorder in the particular case in question, and to deal with them if you discover any such. Anæmia, sexual excess, overwork, work under wrong conditions, uterine discharges, masturbation—all must be appropriately “met.” But, for the cure of the gastralgia something more is usually necessary. Of all the directly therapeutic results in medicine with which I am acquainted, one of the most demonstrable is that which can be produced by the suitable exhibition of arsenious acid in uncomplicated gastralgia. I give one-twenty-fourth part of a grain of arsenious acid, made into a pill with two grains of extract of

gentian, thrice daily, between meals. The use of this remedy must be continued for a few weeks. In a case of moderate severity, no other medicinal treatment is necessary. The gastralgic pains become less frequent and less severe, and recovery is steadily and surely attained. In severer and more "obstinate" cases, some form of counter-irritation to the epigastrium must be used, and used sometimes for several days, or weeks. In the less severe of these cases, I usually employ a rubefacient liniment of ammonia, or of ammonia and ethereal tincture of capsicum, well rubbed in by the hand, over the epigastrium, for five or ten minutes at a time, once or twice daily. Here is a formula for a good liniment of this kind:—

R. Ol. Cajuputi, ʒj.
Tinct. Capsici Æther., ʒiij.
Lin. Camphoræ Ammon., ʒiv.
Misce, ft. lin.

or,

R. Camphoræ, ʒss.
Ol. Terebinth., ʒi.
Misce, ft. sol. et adde,
Sp. Æther. Co., ʒi.
Liq. Ammon. Fort., ʒiij.
Ol. Lini, ad ʒiij.
Misce, ft. lin.

In still severer cases, I use severer counter-irritation, by the employment of an ointment from this formula:—

R. Pulv. Ipecac., ʒss.

Lin. Crotonis, ʒss.

Adipis, ʒj.

Misce, ft. ung.

Of this ointment, a portion of the size of a filbert should be rubbed into the skin of the epigastric region, for five minutes, once daily, for as often as may be necessary.*

In still severer cases, vesication by a fly-blister is of service, and the blistered surface should be kept raw for some days or weeks by means of a daily dressing of savin ointment. In the severest cases, a seton in the skin of the epigastrium may be employed, and it is an excellent chronic counter-irritant.

As I have elsewhere laid down, we must ever remember that protean syndromes evaluate manifold succedanea;† and cases of gastralgia vary much in therapeutic indication. Here are some remedies which I have tested and found successful in such cases in my practice:—Dry cupping over the seat of pain; compresses of whiskey and absorbent cotton wool, similarly,

* I learned the use of ipecacuanha as a counter-irritant from Neligan's "Medicines, &c."

† *The Prescriber*, December, 1909.

locally; hand-rubbing by an attendant, over the patient's epigastrium, during a paroxysm of pain; infusion of mustard (five grains of sinapis, B.P., infused in two ounces of boiling water), taken hot, during pain; or, tinctura zingiberis, B.P., or tinctura zedoariæ composita,* of either half to one fluid drachm, in a wineglassful of hot water. The therapeutic virtues of human saliva, and especially of "fasting spittle," are well established, and have been the foundation of many popular cures of divers maladies. Some gastralgic patients suffer in the early morning. In such cases I have found good results from this prescription: chew very slowly and in small mouthfuls, say, at 5 a.m., an ounce or an ounce and a half of wheat bread, and reduce it in the mouth to a soft, thin, lumpless pulp, and so eat and swallow it mixed with the copious flow of "fasting spittle" arising from its mastication, and lie in bed afterwards for three hours without taking more food. In some cases twelve minims of tinctura capsici, B.P., in a little water, thrice daily, between meals, are beneficial.

* Tinctura Zedoariæ Composita used to be known by the name of Wedel's Essentia Carminativa. I gave the formula for it from Beasley, with some practical comments, in *The Prescriber*, December, 1909.

But in this malady you must not rely upon medicinal treatment alone. Every hygienic adjuvant which tends to raise the strength of the patient is of high value in the cure of gastralgia, as of all neuralgias. I especially advise you to make sure the sufferer feeds well and fully. The diet should be generous. A "dyspeptic" regimen makes a case of gastralgia worse. When you are satisfied there is no, or but slight, gastric catarrh in the gastralgia of a fairly vigorous adult, you should direct a dietary after this plan:—Breakfast: bread-and-butter or dry toast, with some fresh white fish, or some cold chicken or game, or a mutton chop, with a breakfast-cupful of cocoa, or of weak tea or coffee, with milk or cream, and with sugar, if sugar be relished. Dinner (1 P.M.): fresh beef or mutton, with bread, potatoes, cooked green vegetables, a fruit tart or a farinaceous pudding, with a glass of ale or of stout. Tea (at 5 P.M.): bread-and-butter or dry toast, with a small cupful of cocoa, of tea, or of milk-and-water. Supper (not later than 9 P.M.): white fish or some cold chicken or game, or a little cold meat, with bread, and a glass of ale, or of stout. The dietetic restrictions which are proper in cases of gastric catarrh, of gastritis, of atonic dyspepsia, of dilatation of the stomach, and of gastric ulcer are not suitable for cases of gastralgia.

In gastralgia, indeed, such restrictions are usually very harmful. Gastralgic patients have come to me who have been getting worse and worse upon a restricted "dyspeptic" dietary; in some proportion, as they have become worse, such restrictions have been increased improperly. In such cases, I have at once given a full diet, with the happiest results. For a patient who has gastralgic pains, judicious boldness in feeding is often very beneficial. Such patients are not slow to learn this for themselves. Trousseau's caution that we should never advise what a patient should eat without knowing what he does eat, is shrewd and sound. Let me advise you never to assume a patient is dyspeptic because he has pains in his stomach. To take one full meal and three poor ones daily is a good rule in good health: in gastralgia two of either sort would be better. You must know, too, that it is not what can be got within a patient's stomach by authority, by coercion, or by persuasion which does him most good, but that which he takes of his own desire.

In the drug I have found so useful in the cure of this very painful malady we have a quasi-specific of reliable potency. Its dosage, the duration of its exhibition, its appropriate adjuvantia, and all other technical details of its employment can only, of course, be decided

in any particular case of gastralgia after competent medical examination and judgment. Arsenious preparations can only be selected by medical choice and only properly exhibited under continuous medical guidance. The limits of physiological tolerance can only be discerned and determined by the skilled medical observer. In the cure of gastralgia any long administration of these medicaments is never necessary, so that any risk which might attach to prolonged employment of this valuable medicine is not incurred. Sir Jonathan Hutchinson, the eminent surgeon, and some other medical writers have thought that the very prolonged internal exhibition of arsenical preparations, such as has occurred in the treatment of certain chronic and obstinate cutaneous affections, might excite the development of malignant disease, and have brought forward some cases in support of their hypothesis. Truly the *causa causans* of malignant disease is at present unknown. Observation, experiment, and induction will surely reveal it some day. Meanwhile, we must keep an open mind as to every detail of the subject and allow hypotheses which rest upon the support of clinical experience their due influence in our practice. Of course, any observations upon a therapeutical question coming from Sir Jonathan Hutchinson command full professional respect;

but we may remember that exceptional proclivity to malignant neoplasms has not been described as occurring amongst the manufacturers of arsenious acid in Cornwall and elsewhere, and that it would be easy to find instances of such diseases amongst persons who have ingested other drugs of general use for a long time, as cod liver oil, iron, or bromides, iodides, or hydrargyrum, without there existing any causal connection between such courses of treatment and any subsequent illness.

V.

INSPECTION AS A METHOD OF PHYSICAL DIAGNOSIS IN DISEASES OF THE LUNGS AND PLEURÆ.*

Importance of inspection.—Methods of inspection.—Inspection from below.—Thoracic expansions.—Bulgings.—Retractions.—Movements of the chest-walls in health, in men, in women, in children.—Morbid modifications of the thoracic respiratory movements.

To parody a well-worn latinity, *crescit amor inspectionis quantum ipsa experientia crescit*. In proportion as a clinical observer ripens in experience, inspection, as a method of physical diagnosis, continually appreciates for him in value. In time, at least, inspection should always take precedence of palpation, percussion, and auscultation in particular cases of systematic physical exploration of the signs of disease and of the characteristics of health. After the employment of these other usual methods of clinical exploration, inspection may be used, and again used if it have been used

* A Clinical Lecture : published in *The British Medical Journal*, July 6th, 1901.

before, to confirm their evidence, or to correct it, or to amplify it.

Inspection, palpation, mensuration, succussion, percussion, and auscultation are the six chief methods of physical diagnosis. Severally and jointly, they find their most general and widest application in the discovery and observation of diseases of the chest. I propose to make some statements concerning the inspection of the chest in disease. I assume that my hearers have a fair acquaintance with the anatomy of the thorax, the physiology of the contents of that cavity, the clinical topography of the chest, the form of the healthy chest, and the healthy movements of the chest-walls. Inspection, as a method of physical diagnosis in the case in question, simply means surveying the surface of the chest. This survey must be a skilled one, and in it, as in all visual judgments, the mind supplies more than the sense receives.

I propose to place our subject before you now only in what may be called its broader outlines; its finer lines and fuller details will be filled in by your later work.

Inspection enables us to judge of the size and of the shape of the thorax, to watch the movements of the thoracic parietes, to observe the beat of the heart, and to ascertain the

character of the respiration. For such inspection, a good light is necessary, and the surfaces to be examined must be fully exposed to view. Partial inspections lead really to no complete results, and are fertile of errors — of errors both of non-observation and of mal-observation. Inspection may be accomplished when the patient is in the erect, the sitting, or the recumbent postures, and sometimes examinations in two or in each of these postures may be pursued in turn with advantage. The sitting posture, however, is usually preferred. All mechanical restraints of the thoracic movements must be removed, care being taken that nothing hampers the free expansion of the chest.

The front of the thorax should be systematically inspected first, and then the chest should be viewed from behind, and afterwards from each side. The two sides of the chest should be compared, point by point, from every aspect, as to their size, configuration, and movement. Sometimes valuable information is afforded by inspection from above, with the patient in a sitting posture, and by inspection from below, from the patient's feet, when he is lying down upon his back, or when he is lying prone. Inspection of the chest from above and from below furnish us with two important developments of this method of physical diag-

nosis, which I designed some years ago, which I have since found of great clinical utility, and which I do not remember to have found insisted upon or taught by other clinical teachers or writers. Inspection of the chest from above is useful in the detection of hypertrophous pulmonary emphysema, of cardiac enlargement, of pleural expansion or retraction, and of pulmonary shrinkage, and of some other morbid changes. Especially is it useful in the demonstration of shrinkage of the apex of the lung. The patient should be seated in a chair, the chest being stripped of all clothing, with his head a little bent forward and downwards. The observer stands close behind the patient's chair, and explores with his eyes the outlines of the chest as seen from above, comparing in turn the outlines on each side with their correspondents on the other side, observing the shape and size of the supraclavicular hollows, and the play of the thoracic parietes in the movements of respiration, and observing other points as experience may suggest them.

Inspection from below is also very useful, bringing out very strikingly many morbid alterations of shape and movements. The patient lies flat, either prone or on his back, with the chest quite bare as to clothing. The clinical observer stands about a yard from the

patient's feet, and "takes a sight," either along the anterior middle line of the patient's trunk or along his dorsal spine. It will be found that lateral deviations from symmetry are often more apparent in inspection from this aspect than from other points of view. The observer, by moving his head a little, may notice a variety of striking profiles. I may also now tell you that, outside the examination of the thorax, what may be called inspection from the feet finds an excellent clinical application in many abdominal maladies, and may often give signal service as a variety of the method of physical diagnosis under our present consideration.*

Now let us examine the chief diagnostic indications yielded by inspection in the examination of diseases of the lungs and pleuræ. In various diseased processes many important changes occur in the form, size, and movements of the chest, and inspection is of striking value

* This particular method of the employment of inspection as a means of physical diagnosis, which may be called "inspection from below," and which I venture to think is an original device of my own, is useful especially in demonstrating certain morbid changes to students, in clinical teaching. My son, Dr. James E. H. Sawyer, has employed it in his training of clinical clerks at St. Thomas's Hospital, and he tells me he has used it with much advantage; his subsequent and present experience in this practice, as one of the Assistant Physicians at our General Hospital in Birmingham, has confirmed him further in its employment, in treating patients and in teaching students.

in the detection of these morbid alterations. For teaching purposes, it will conduce to clearness of exposition to speak of these morbid changes at first in general terms, and to explain the names which are usually used in the description of those changes. We may notice, in the first place, the various morbid changes in the shape of the whole of the chest, or of parts of it; then we may afterwards observe the manifold modifications of the thoracic movements which mark certain different thoracic affections. Notice shape first; then, movements.

Expansion means a general prominence of the whole of the chest, or of one of its sides. In abundant pleural effusion, in pneumothorax, and in hydropneumothorax, one side of the chest is expanded, and is evidently larger than the other side. General large-lunged vesicular emphysema produces general expansion of both sides of the chest. Such vesicular emphysema of one lung only, a very exceptional condition, may be the cause of unilateral expansion. When large-lunged vesicular emphysema exists to a greater degree on one side of the chest than on the other, both sides are expanded, but unequally so.

Bulging is a local expansion. Bulging may appear at the lower part of the chest in pleural

effusion, and it may be seen in large-lunged vesicular emphysema in the supraclavicular and infraclavicular regions. A local expansion of the chest-wall, bulging, may be due to an intrathoracic tumour, (to a neoplasm or to an aneurism,) and bulging may be seen in a case of empyema, when pus in a pleural cavity is making its way towards the external surface. A liver which is enlarged may cause the ribs and costal cartilages under which it lies to bulge. An enlarged spleen may lead, though less usually, to a similar condition in the left hypochondrium. In pericardial effusion, especially in young subjects, and also when the heart is hypertrophied, the ribs in front of the cardiac region may bulge, the intercostal spaces being also widened. An aneurism of the arch of the aorta, protruding anteriorly, is likely at some stage of its course to be marked by bulging of the chest-wall over it.

Retraction, or "contraction," as the condition is often called, is the term applied to a general sinking-in of the wall of the chest on one side. Retraction usually marks either pulmonary shrinkage from fibroid changes in a lung, or it shews the reduced pulmonary bulk which follows compression of a lung by pleural fluid, and which reduced bulk is declared by local retraction, when such shrinkage in the

lung persists after the removal of pleural fluid by absorption, or otherwise.

Note well the respiratory movements of the chest in health. You will observe that the capacity of the chest becomes increased in all directions during inspiration. This movement is most apparent anteriorly and laterally. The respiratory movements may roughly be regarded as healthy when the anterior and lateral parts of the chest dilate equally, distinctly, and moderately during inspiration.

That prince of clinical topographers, Dr. Sibson, in his great work on *Medical Anatomy*, has furnished us with a classical description of the normal movements of the chest in breathing. He says: "During inspiration the clavicles, first ribs, and through them the sternum, and all the annexed ribs are raised. The upper ribs converge, the lower diverge; the upper cartilages form a right angle with the sternum, and the lower cartilages of the opposite sides, from the seventh downwards, move further asunder, so as to widen the abdominal space between them, just below the xiphoid cartilage, the effect being to raise, widen, and deepen the whole chest, to shorten the neck, and apparently to lengthen the abdomen. During expiration, the position of the ribs and cartilages is reversed, the sternum and ribs descend; the

upper ribs diverge, and the lower converge; the upper cartilages form a more obtuse angle with the sternum, and the lower cartilages of opposite sides approximate, so as to narrow the abdominal space between them, just below the xiphoid; the effect being to lower, narrow, and flatten the whole chest, to lengthen the neck, and apparently to shorten the abdomen." I advise you to observe these changes over and over again in your observation of healthy chests, until all their details are familiar to you, until they pass securely into your unconscious cerebration, there to rest as a standard of comparison by which morbid deviations will be revealed to you with unerring certainty, and soon with immediate quickness. You will observe that the movements of the chest wall are made up, in inspiration, of expansion and elevation, and, in expiration, of retraction and depression. In each of the sexes and at different ages there are natural and characteristic modifications of the respiratory movements. In young children inspiration depends mainly upon the contraction of the diaphragm. In them, therefore, the movement of the abdomen is relatively very marked. This type of respiration is named abdominal. The healthy differences between the respiratory movements of a man's chest and of a woman's are marked.

In women, the movements of the upper parts of the chest in inspiration and in expiration are more obvious than that of its lower portions; in men, the movements of the lower parts of the chest are more apparent than those of its upper portions. These healthy sexual types of the respiratory movements have been named, respectively, the superior costal and the inferior costal. You will further notice that there is nothing abrupt, nothing jerky, nothing laboured, nothing unequal between the play of the two sides of the chest in the healthy respiratory movements. These movements have an ease and rhythm and wave-like flow of their own. The eye can observe no interval between the end of the movements of inspiration and the beginning of the next succeeding movements of expiration. An interval of rest from movement can be seen at the end of each expiration, between it and the next succeeding inspiration. This interval is relatively short. If the whole time occupied by a respiratory act and its succeeding pause be represented by 10, the value of the duration of the inspiratory movement may be estimated at 5, of the expiratory at 4, and of the pause between the expiratory and next inspiratory movement at 1. In calm breathing, in health, from 16 to 20 inspirations occur in a minute of time, corresponding to the

number of the beats of the heart in the same time in the proportion of about 1 to 4. You may notice in examining healthy chests that the impulse of the apex of the heart in its normal position is usually visible. But it is not always so. Absence of a visible cardiac beat is not necessarily a morbid sign.

Numerous are the possible modifications of the respiratory movements of the chest which are morbid signs. Let us now notice the chief of them, in a few general and particular conclusions. You will have observed that the movement of the chest-wall in healthy inspiration is a movement in which expansion and elevation are concurrently combined, occurring together at the same time, but in varying proportions, at every part of the thoracic surface. When some portion of lung is increased in solidity, when it is relatively airless, the expansion of the corresponding part of the chest-wall is impaired, and, by contrast, the elevation of this part often becomes unusually evident. This is especially obvious upon the occurrence of what is called forced inspiration. Volition may drag the chest-wall upwards, but it cannot expand impermeable lung. This elevation of the chest-wall, without expansion, or with less of it than is normal, is seen in the infraclavicular region of one or of both sides in

phthisical consolidation of the pulmonary apex or apices. In large-lunged vesicular emphysema, the inspiratory expansion of the lungs is less than in health, and inspiratory elevation is seen in relative and exaggerated prominence. Further, there is a healthy balance between the respiratory movements of the thorax and the corresponding respiratory movements of the abdomen, which you must observe and learn to recognise at once. This balance may be upset in disease in the forms of impairment or of excess in either direction. For instance, the thoracic respiratory movements are diminished and the abdominal are increased in pleurodynia and in the early and painful stages of pleurisy. The abdominal respiratory movements are diminished, and the corresponding thoracic movements are increased, in many diseases of the abdominal contents, in peritonitis, and in painful rheumatic affections of the abdominal muscles and of the diaphragm. These changes in the respiratory movements are involuntary. To explain them, the phrase, the "consensual avoidance of pain" has been used. In many and in various diseases the respiratory movements of the chest are diminished. These movements are diminished in disease, either locally or generally, and in varying degrees of intensity and extent of distribution, according to

the position, extent, and nature of the cause, when there is a physical obstacle to pulmonary expansion, as in pleural accumulations, liquid, solid, or gaseous, as in consolidation or as in emphysematous distension of pulmonary tissue, as in obstructions in any part of the air passages, and as in paralysis of some of the respiratory muscles.

The respiratory movements may be excessive when dyspnœa—which is a morbid state which is due to many and varied causes—compels increased respiratory effort to overcome some difficulty in respiration.

When a mechanical and substantial obstruction to the entrance of air into the lungs exists high up in the air passages—namely, in the fauces, at the glottis, in the larynx, or in the trachea—in the form of some morbid product, or as a foreign body introduced from without, a retraction of the lower and lateral parts of chest-walls is observable during inspiration. This form of retraction, under the circumstances I have just sketched for you, is more marked in children than in other persons, by reason of the greater elasticity of their costal arches. In croup the very elastic chest-walls of a child may become extremely retracted at the sides, while at the same time the supra-sternal hollow is greatly enlarged and the abdominal walls

are unduly protruded. Again, you will remember the normal duration of the expiratory movements of the walls of the chest as compared with that of the inspiratory movements, in each respiratory act. Relatively to that of the inspiratory, the duration of each set of expiratory movements is increased whenever the exit of air from the lungs is impeded, either from impairment of pulmonary elasticity, as in pulmonary emphysema and in other conditions, or from obstruction in the air passages.

VI.

ACCENTUATION OF THE PULMONARY SECOND SOUND OF THE HEART.*

*What accentuation of this sound indicates.—
Clinical import.—Prognostic value.—Thera-
peutic indications.—Baillie's pill.*

ACCENTUATION of the lesser or pulmonary second sound, or, to speak more precisely, accentuation of that portion of the second sound of the heart which is produced at the orifice of the pulmonary artery, and is especially heard in the "pulmonary" as distinguished from the "aortic" area, although discovered and taught by the great Skoda in the earlier days of cardiac auscultation, is not generally recognised, if I may judge from the scanty references to it in text-books, and from my observations of its frequent neglect in the practice of stethoscopists,

* A Clinical Lecture: published in *The British Medical Journal*, March 31st, 1883; lately revised. I dealt with this subject in my Lumleian Lectures on "Points of Practice in Maladies of the Heart," at the Royal College of Physicians, in 1908, which lectures are included in this book. Dr. Walshe (W. H., of University College Hospital, the greatest authority in his time upon cardiac auscultation), dealt with the important subject of this chapter as "accentuation of the second sound at the pulmonary cartilage," and so called it in a letter he kindly wrote to me, in 1883, upon the issue of my clinical lecture thereupon from the press.

as one of the most striking and one of the most significant of the physical signs of disturbance in the mechanism and dynamics of the heart. It is a sign which is to be found in association, in causal relations which are tolerably clear and approximately constant, with the most frequent of the organic defects of the cardiac orifices and valves, and with the most frequent of the manifold consequences and complications of organic embarrassment of the action of the heart. Rightly interpreted, it is a sign which traverses the whole domain of practice, for it conveys reliable indications in the three chief divisions of our relations with a patient, inasmuch as it is significant alike in diagnosis, in prognosis, and in therapeutics. Skoda, with his usual tendency to over-refinement—that frequent fault of physicians—did not grasp the simplicity and singleness of the significance of accentuation of the pulmonary second sound. He observed the physical fact, but he went too far, and in one line in a wrong direction, in his speculation upon its import. He was wrong in his teaching, for example, as Dr. Walshe has pointed out,* that the presence of reinforcement of the second sound in the pulmonary artery will distinguish a systolic murmur at the left apex, caused by

* Diseases of the Heart and Great Vessels. By W. H. Walshe, M.D., &c. Fourth edition, 1873, p. 93.

mitral regurgitation, from a murmur of like time and site, caused by friction of the blood against roughness on the inner surface of the ventricle. The essence of the case, the conclusion of the whole matter, is this: accentuation of the cardiac second sound, as heard over the origin of the pulmonary artery, is an unfailing indication of increased tension in the blood current in that vessel. In that it is this, it is a trustworthy sign, which a little consideration will enable you to understand, of a grave pathological condition; it is an unmistakable physical accompaniment of a portentous change in an area of the blood-circulation which is vital, and which is removed beyond the reach of those tactile and metric methods of exploration which are applicable in the examination of variations of tension in the systemic arteries.

In health, the aortic portion of the second sound of the heart predominates over that produced at the valves of the pulmonary artery. The second sound is louder in the "aortic" than it is in the "pulmonary" area. The pulmonary second sound may be called the lesser second sound; it is the lesser of the two parts of the second sound of the heart, of which the other and greater part is the aortic. The second sound is louder close to the right edge of the sternum, over the lower portion of the second

right costal interspace, than it is close to the left edge of the sternum over the upper portion of the second left interspace. The blood-tension may be raised abnormally in certain pathological states; it may be so raised either in the systemic circulation, of which the aorta is at the commencement, or in the lesser circulation, which passes from the right to the left sides of the heart through the lungs, and at the commencement of which is the pulmonary artery.

Whatever raises the blood-tension in the aorta intensifies the aortic second sound; whatever raises the blood-tension in the pulmonary artery intensifies the pulmonary second sound. What, then, is the clinical import of the variety of abnormal loudness of the second sound of the heart, to which I am directing your attention? Answering the question broadly, I say it is beyond dispute that an increased intensity of the pulmonary second sound is due to an increase in the blood-tension in the pulmonary artery, and that this heightened tension is due to some obstruction in the pulmonary or lesser circulation. The sign is clinically associated with organic and permanent lesions of the mitral valves and of the mitral orifice. In any given case, either insufficiency of the mitral valves, or narrowing of the mitral orifice, or both these lesions, add

a distinct and new physical obstacle to the flow of blood through the lesser circulation. In so far as such an obstacle elicits increased force in the contraction of the right ventricle, by so much does it raise blood-tension in the pulmonary artery, and consequently accentuate the pulmonary second sound. But, while this statement is strictly true as a generalisation, you must remember certain qualifying circumstances which may hold good in particular instances. Advanced mitral regurgitation, or advanced mitral stenosis, or both, may be present, and the pulmonary second sound may not be accentuated, but may even be less loud and clear than in health. This may arise from one of two causes, or from a frequent combination of them, namely, from failure in the power of the contractions of the right ventricle, or from the appearance of tricuspid regurgitation. In the course of mitral disease, when the force of the right ventricle at last fails to compensate for the obstacle on the left side of the heart, the blood-tension in the pulmonary artery inevitably fails and falls, and with it the accentuation of the loudness of the pulmonary sound inevitably declines and disappears. When also, in the course of mitral disease, the tricuspid valves, as so often happens near the end, fail in their function, the tension of the blood stream in the

pulmonary artery is at once lowered, and the physical sign under our discussion disappears. Let me emphasise these important points by quoting some words of Rosenstein. He writes:—
“When the tension decreases in the pulmonary artery, the intensity of the second sound ceases; this takes place either when the right ventricle’s force has been impaired by disease in the performance of its increased work, or when the right side of the heart is so filled by the increased stagnation that the ring of insertion of the tricuspid valve is widened, and the valve is no longer able to close the orifice.”* I must also point out to you that, in comparing the pulmonary second sound with the aortic sound in cases of mitral disease, you must remember that the aortic second sound is likely to be relatively weakened by reason of the reduced systemic tension which mitral defects entail. As Dr. Walshe pointed out, there is a “pseudo-accentuation of the pulmonary second sound, from real weakening of the aortic second sound, through the lessened current and diminished calibre of that vessel, that follows on long-continued mitral regurgitation.”† You must not fall into the error of mistaking a pulmonary

* Rosentein. Ziemssen’s “Cyclopædia of Medicine.” English Translation, Vol. VI., p. 129.

† *Op. cit.*, p. 100.

second sound of normal loudness for an accentuated sound, because it co-exists with a feeble aortic sound. On this point, which undoubtedly is sometimes a difficult one in practice, you must look to an extended experience of cardiac auscultation to aid you. The recognition of variations in the tone and loudness of the heart's sounds is a refinement of stethoscopy which only long practice can develop. It is only when, by patient clinical work, you have acquired in your minds a sure standard of the characters of cardiac sounds that you can readily detect deviations from their normal intensity. To an experienced stethoscopist, the decision of such a question comes with striking quickness and sureness.

So far as I have been able to judge from my own observations at the bedside, the presence or the absence of accentuation of the pulmonary second sound, or the presence of a high or of a low degree of such accentuation, is valueless as a differential sign in itself in the diagnosis of mitral stenosis from mitral insufficiency. I know this statement is opposed to the teaching of some physicians and of some writers of acknowledged authority in cardiac diagnosis. Both these varieties of mitral disease, whether they exist singly or howsoever they may be combined, impose a morbid obstacle to the passage

of blood from the right to the left side of the heart, and tend, *pro tanto*, to increase the blood-tension in the pulmonary artery. So long as this obstacle is met by a compensating increase of force in the contraction of the right ventricle, so long is the pulmonary second sound louder than in health. The presence of such accentuation is not a sign which distinguishes one form of mitral disease from another, but it is a sign common to mitral lesions in general, which rises and falls in direct proportion to the vigour of the right ventricular systole. When, in the backward march of the results of a mitral lesion, the saving force of the right ventricle becomes impaired by dilatation of that ventricular cavity or by degeneration of its muscular walls, or by both, the pulmonary second sound loses its accentuation, and the sound may become almost or quite inaudible.

You will now be able to appreciate the help which may be gained in the diagnosis, prognosis, and treatment of a given case of organic disease of the mitral orifice or of the mitral valves, from observation of the condition of the second sound in the pulmonary artery. Stating the case broadly, it may be said, with approximate truth, that mitral valvular defects are generally results of acute endocarditis. Of such results, they are usually both immediate in

time and permanent in duration. Once established, the affection of the valves or of the orifice becomes a permanent defect, which never grows less, but which rather tends, by further organisation and contraction of inflammatory exudations, and by other well-known consecutive changes, to become more and more pronounced as time goes on. From the date of the endocarditis which first damaged the heart, there occurs a variable period of practically good health, or of quasi-health, but slightly impaired by certain of the less pressing signs of cardiac embarrassment. This period may vary in length from a few weeks or months to a few or many years, being determined by a variety of variously combined circumstances, such as the extent of original mitral damage and the degree of subsequent compensation, and the age, mode of life, and occupation of the patient. But, whether this period be short or long, there surely comes, sooner or later, an ultimate or penultimate stage, marked by failure of compensation and by dropsical complications, leading on to death.

Accepting this brief outline as a rapid sketch of the usual progress of mitral affections, let us answer this question:—what is the usual state of the pulmonary second sound in the progress of such a case? When the mitral disease

arises, that is, from the time acute endocarditis so affects the mitral orifice, or the mitral valves, or both, as to set up a physical obstacle at the site of the lesion to the normal progress of blood through the heart, the pulmonary second sound becomes accentuated; but it is only slightly accentuated, for the most part, at this early stage of the cardiac malady. During the second period, of quasi-health, that is to say, from the time of convalescence from the acute endocarditis until the onset of the later secondary complications consecutive to the mitral defect, the pulmonary second sound remains only slightly reinforced. You will generally find it, during this period, as loud as the aortic sound, or a little louder, but not very markedly increased in loudness. But towards the end of this second period, when the tension of the blood stream in the pulmonary artery is nearing the point when it will overcome the compensating force of the right ventricle, the pulmonary second sound becomes very distinctly accentuated, and attains the maximum development of such accentuation. The sign is at this time of grave portent, for it is the sure index of an extremely heightened tension in the pulmonary circulation, which is not likely to be borne long; it is an unfailing sign that the pulmonary circulation is only maintained by an increased expenditure of force

by the right ventricle, which cannot long be kept up. At this point, a straw breaks the back of the labouring camel, so to speak. A little added difficulty to the circulation through the lungs, which usually comes as a bronchial catarrh, which would be trivial under some other circumstances, and the next, the ultimate or penultimate, stage of mitral troubles is ushered in. Compensation fails, and with it falls, in proportion to such failure, the accentuation of the pulmonary arterial sound. With failing compensation, viscera and surface become engorged with blood, anasarca gradually develops, and dropsical exudations begin to gather in the serous cavities.

You often see a patient just admitted to my wards in this condition of mitral disease with its usual consequential complications. Under the remedial influences of rest, of good and carefully adjusted evacuants, and, above all, of digitalis, our great heart-restorer, many patients improve, lose the later complications of their mitral disease, revert to the second stage of quasi-health, which I have been describing, and return to their occupations. As they improve, as rest, suitable food, evacuants, and digitalis do good, you may notice the pulmonary second sound, which had waned before, wax strong again, surely marking the recovery of compen-

sation in the propulsive power of the right ventricle, which is the essential factor in the patient's relief. Here observation of the pulmonary second sound is of inestimable service. With a rising sound, our treatment is doing good, and our patient is making progress towards recovery.

But the complications of this later stage of mitral disease, unhappily, cannot always be removed even once; and if removed once, or twice, or thrice, or oftener, there surely comes a time when all our remedies are at last of little or no avail. Be our treatment never so patient and skilful, the patient's condition remains stationary, or goes on from bad to worse. Here the compensating power of the right ventricle is finally and irretrievably exhausted; it is past all repair. Here the pulmonary second sound never rises under our treatment, but remains feeble to the end. Its continued feebleness, in the presence of dropsical complications, and in spite of our best therapeutic efforts, is a sure sign that the end is not far off, and that the patient is suffering his last illness.

In the congestive and dropsical complications of advanced mitral disease, I have often proved the therapeutic efficacy of a well-known combination of digitalis, squill, and blue pill.

Here is the formula for this excellent prescription, as I am accustomed to write it:—

R. Pulv. Digitalis, gr. j.
Pulv. Scillæ, gr. j.
Pil. Hydrarg., gr. j.
Conf. Rosæ Gall., q. s.

Ft. pil. One to be taken thrice daily, between meals.*

In some cases, a larger dose of digitalis is necessary for the development of the good effects of the remedy; in such, the dosage of the drug may judiciously be increased, under skillful guidance and competent observation.

* This might be called Baillie's pill. There is some confusion in medical writings as to the connotation of this use of the name of one of the greatest physicians of the past. *The Chemists' Annual*, of the year 1906, gives the following: "Baillie's Pill. Synonym, Gilmour's Pill. Digitalis Leaves, in powder, 1oz.; Squill, in powder, 2oz.; Mercury Pill, 1oz.; Syrup of Glucose, a sufficient quantity. Mix to form a mass. Dose: 4 to 8 grains." See also my reference to this subject in the last of my Lumleian Lectures at the Royal College of Physicians, in this book,

VII.

FLOATING KIDNEY.*

Cases of floating kidney established by post-mortem examinations.—Physical signs.—Case. — Causation of floating kidney. — Frequency in women.—Comparison of anatomical relations of the kidneys.—Symptoms.—Treatment.—Illustrative cases.

FLOATING kidney is a substantial reality, and one which must always be remembered in clinical explorations of the abdomen. Its existence has been established by post-mortem examinations, in numerous instances. An opportunity of verifying or of correcting, post-mortem, a diagnosis of floating kidney occurs very rarely. The malady is not a fatal one. It is not a frequent one. In several hundreds of post-mortem examinations which I have made at the Queen's Hospital, at the Birmingham Children's Hospital, when I was pathologist

* A digest, lately revised and enlarged, of two papers: Floating Kidney, *Birmingham Medical Review*, July, 1872; Remarks on Floating Kidney, *Ibid.*, October, 1883.

there, and elsewhere, I have met with one instance only of a floating kidney. In this instance I had discovered and declared the condition of the kidney during the life of the patient.

Some years ago a committee of the Pathological Society of London, consisting of Dr. Hare, Dr. Bristowe, Dr. Wilks, Dr. John Williams, and Dr. Wickham Legg, was appointed "to inquire into the matter of displaced, movable, and floating kidneys." From the report of this committee, which was published in 1876,* I quote the following paragraph: "Cases of undue mobility of the kidney verified by examination after death have been several times recorded. One specimen was brought before our society sixteen years ago by Mr. Durham.† Dr. Priestley has described a case, under the care of Sir James Simpson, in which after death the peritoneum was found reflected over the posterior surface of the right kidney, thus allowing great motion on the right side.‡ Other instances have been recorded by Mr.

* Transactions of the Pathological Society, Vol. XXVII., 1875-6.

† Durham, Transactions of the Pathological Society, 1860, Vol. XI., p. 142.

‡ Priestley, *Medical Times and Gazette*, March 14th, 1857.

Adams,* Dr. Iago,† in which the state of the kidney was diagnosticated during life and verified by examination after death, Dr. Sawyer,‡ Girard,§ Urag,|| and others.”

A floating kidney is a movable kidney, and something more. For a clear definition of this distinction we were indebted to Sir William Jenner. “A movable kidney is one thing; a floating kidney is another. . . . A floating kidney is a kidney that has a mesentery—a fold of peritoneum attaching it very loosely to the spine. A floating kidney, therefore, can be moved about to a considerable extent—to the extent of the length of its mesentery. A movable kidney can only be passed up and down a little; it slips a little under your fingers.”¶

The largest statistics concerning movable and floating kidneys with which I am acquainted are to be found in the well-known treatise of Sir William Roberts on renal diseases. From these figures, from six cases of floating

* Adams, *Ibid.*, p. 651.

† Iago, *Ibid.*, 1872, Vol. II., pp. 328 and 409.

‡ Sawyer, *Birmingham Medical Review*, 1872, p. 120.

§ Girard, *Journal Hebdomadaire*, 1836, p. 445.

|| Urag, quoted by Fritz. *Arch. Gen. de Med.*, 1859, p. 167.

¶ Clinical lectures on the “Diagnosis of Extra-pelvic Tumours of the Abdomen.” By Sir William Jenner, Bart., M.D., &c., *British Medical Journal*, January, 1869.

kidney which I published in the first volume of *The Birmingham Medical Review*, from several cases which I have met with since in my practice, and from other instances which I have found recorded, it appears that preternatural renal mobility may be either unilateral or bilateral, that it is more frequently unilateral than bilateral, that the right kidney has been affected about four times as often as the left, that floating kidney is much more common in women than in men, and that, amongst women, by far the larger number of the subjects of floating kidney have been women who have borne children. Each of these points has been established by adequate observation and collection of instances; their clinical bearings are very important.

When we palpate the abdomen of a person presenting a floating kidney, the patient lying in a recumbent position, with the abdominal walls relaxed, we can feel a swelling, which is rounded, smooth, of the size and shape of a kidney, and which we can move in various directions, the movement being free and peculiarly slippery in its character. All the borders of the tumour can usually be easily defined by the fingers: the inner concave edge of the swelling, however, is often somewhat obscured. The displaced organ occupies usually a diagonal

position, from above downwards, lying just below the free costal border, midway between the umbilicus and the last rib. The swelling can be readily moved in various directions: it is most movable in a direction forwards, downwards, and towards the middle line; and it is next most movable in an opposite direction, namely, upwards, outwards, and backwards. The directions of the renal blood-vessels and of the ureter, respectively, appear to me to determine mainly the chief direction of the mobility of a kidney which floats freely. The kidney forming, as it may be taken to do, the apex of a triangle, of which the renal blood-vessels and the ureter constitute, respectively, the two sides which end in the kidney, the organ moves more freely than in any other direction in a resultant direction, towards the base of the triangle, that is, downwards and inwards, towards the middle line. The position of the tumour is affected a little by the position of the patient, the swelling descending when the upright posture is assumed, and falling towards the right side, or towards the left, according to the inclination of the body.

The respiratory movements, too, influence the position of a floating kidney. When the patient is lying upon the back, a deep inspiration may be necessary to bring the tumour forwards and downwards, so that we can feel it

with the fingers. Sometimes pressure upon the corresponding renal region behind will suffice to bring a floating kidney forwards; sometimes such pressure alone, and a deep inspiration alone, alike fail to do this, and both together are needed to bring the organ into palpable prominence in front. The displaced kidney can generally be restored by pressure with the fingers to its normal position, but it usually falls forward again when such pressure is removed. Cases in which both kidneys "float" are comparatively infrequent. In hospital and private practice during many years, I have met with only two patients who had both of their kidneys floating freely. In one of these cases I could easily bring the two organs forwards at the same time, and maintain their concave margins in contact, in the middle line of the abdomen.

When we examine a patient in whom a floating kidney is displaced from the position it should occupy in the normal condition, some diagnostic information may be gained from a skilled examination of the corresponding loin. My own clinical experience in these cases has taught me, however, not to rely so much, as some writers on the subject appear to have done, upon exploration in this region. A hollowness in the renal region can be felt in some cases; in none have I been able to see any hollowness.

Percussion in this locality has not given me much diagnostic help. In one case which I examined with especial reference to this point, a case in which the right kidney floated freely, dulness of sound upon percussion of the loin in the right renal region remained the same when the kidney was displaced, and retained by the hand in its abnormal position, as when it occupied its normal site. In a healthy individual, the percussion-note in the loin is usually not quite so dull over the left kidney as it is over the right; perhaps the position of the descending colon explains this. Only in a comparatively few cases of floating kidney have I been able to gather any confirmatory evidence from an examination of the loins.

The account here following is a record of the only instance in which the very rare opportunity of verifying, by post-mortem dissection, a diagnosis of floating kidney happened in my own experience in practice.

Early in the year 1870,* I examined Mrs. Mary Ann H., aged 35 years; I saw her in consultation with my friend the late Dr.

* I quote from these early notes to combat a false notion which is widely spread that the condition here under consideration has been discovered recently. That the kidneys often "float" and "drop" is not new; that they indicate a surgical operation when they do so is not true, with the rarest exceptions.

Hickinbotham, of Nechells. The patient was a spare woman, rather anæmic, and of nervous temperament. She had had seven children; her labours had been tedious, but natural. For six years she had suffered pain in passing her urine, with a constant desire to micturate. The urine was turbid, containing pus and phosphates; it sometimes contained a little blood. Sometimes her pain was very severe, and then she frequently passed some membranous shreds in her urine, and occasionally these appeared in rolls as thick as a straw. After the passage of these substances, she was usually better for several weeks. A sound introduced into the bladder indicated excessive tenderness at one spot. A tumour, having all the characteristics of a floating kidney, was found upon palpating the abdomen, occupying a position midway between the umbilicus and the anterior superior spine of the right ilium; this tumour could be moved freely upwards, it could be easily grasped, and handling produced neither sickness nor pain. I regarded the pus found in the urine as of renal source. I diagnosed a right floating kidney, and that the kidney was also pyelitic, and I suggested that the pyelitis might be of calculous origin.* This woman died a few

* I was indebted to Dr. Hickinbotham for the history of the case.

weeks afterwards, and Dr. Hickinbotham exhibited her right kidney at a meeting of the Pathological and Clinical Section of the Birmingham Branch of the British Medical Association, held November 25th, 1870. The following account of the case is taken from *The British Medical Journal*, December 24th, 1870:—

“Dr. Hickinbotham showed a specimen of abscess occurring in a movable kidney. The woman from whose body the specimen was taken had repeatedly suffered from great pain in the region of the bladder, with difficult and painful micturition; the urine being loaded with pus. She had never had any pain in the kidney itself until about fourteen days before death, when acute inflammatory symptoms came on, and, in spite of treatment, she sank and died on the 17th of September. The post-mortem examination showed general inflammation of the whole peritoneum; and the right kidney, which lay midway between the umbilicus and the anterior superior spine of the ilium, was completely riddled by abscesses. The ureter was dilated and thickened. The bladder, except near the opening of the right ureter, was healthy.”

The production of a floating condition of the kidney is an effect which is the result, doubtless,

of the concurrence of several causes. Oppolzer thought that the affection is usually congenital, and this view seems to have been suggested by the lengthened condition of the renal vessels which has been usually found in these cases after death; this opinion, so far as my own reading extends, does not appear to have been fully shared by other writers on the subject. If the abnormality were congenital, it would be difficult to account for the disproportionate frequency of its occurrence in females. Cruveilhier thought the practice of tight-lacing mainly contributes to the production of this affection.

In the paper by Sir William Roberts, to which I have alluded already, child-bearing and tight-lacing are given as the most probable predisposing causes of the affection. As to a further cause in women, he wrote: "Becquet has proposed a somewhat novel theory for the production of movable kidneys in women. In the cases encountered by him, there was a striking coincidence of time between the displacement of the kidney and the menstrual period; and he was led to believe that the kidney became congested and tumefied at these periods, and that displacement was the consequence of its increased volume and weight."* More or less rapid emaciation, occurring in persons who have previously

* Urinary and Renal Diseases, by Sir W. Roberts.

been corpulent, has been considered, and reasonably so, I think, to favour, or of itself produce, displacement of the kidney, by removing the fatty cushion which normally invests and supports the organ, and helps to retain it in its natural position. Such a mode of causation probably existed in a case which was published by Mr. Adams.

There is abundant evidence to show that a blow or a violent concussion of the body may be the determining causes in some cases. Dr. Fleming attributed the mobility of a kidney in one of his cases to mechanical injury.* Sir William Roberts quoted two cases, related by Henoch: in one the right kidney became movable after a blow on the right loin; in another, in the case of a military officer, both kidneys became movable after a fall from a horse.

It is found in practice that many of the subjects of floating kidney are women who have borne children. Nearly all examples of the malady which have fallen under my own notice have been observed at some period after child-bearing. To what extent a difficult and protracted labour may be concerned as a cause, I am unable to say.

* A case I saw in his practice at the Queen's Hospital; published in *The British Medical Journal*, August 21st, 1869, from my Clinical Notes.

The powerful and prolonged contractions of the diaphragm which are incidental to such a condition, would, doubtless, favour displacement of the kidneys. I think, however, the circumstances which determine a liability to this affection in paræ arise as a result of the sudden removal of the pressure which a distended uterus exercises on the kidneys, as it also does upon other organs within the abdomen. Furthermore, the tendency to falling forwards of the viscera, as a result of the impaired support afforded to them by the abdominal walls, in some women who have borne children, appears likely to contribute to the production of floating kidney. Feeble women, with lax and atonic tissues, would seem to be more prone to floating kidney than are those of firmer fibre.

The cause of the disproportionate frequency of a floating condition of the right kidney, as compared with the left, is to be found, doubtless, in the natural differences between the anatomical relations, and also between the normal movements, of the kidneys on the two sides of the body. Cruveilhier, as quoted by Roberts, observed:—"If the left kidney is not so frequently displaced as the right, that is owing to the fact that the left hypochondrium, occupied by the spleen and the great end of the stomach, bears the pressure of the stays with much more

impunity than the right." We must remember, also, that the kidneys are moved a little by the respiratory movements. "The right kidney," wrote Sir William Jenner, in the admirable lectures which I have already quoted, "is more depressed during deep inspiration, than the left, probably from its relation to the liver." The pressure of the liver—the pressure of its weight and the pressure of its diaphragmatic movement—contributes, unquestionably, to render the right kidney more liable to displacement than is its fellow. The renal blood-vessels, too, are usually a little longer on the right side—the artery especially—than are those on the left. The ascending colon is not so closely applied to the right kidney, as is the descending portion of the large intestine to the left kidney. The chief support of the spleen, the costo-colic ligament, (the band of folded peritoneum which passes from the left angle of the transverse colon to the abdominal wall, opposite the last rib,) appears to help in the relative fixity of the left kidney.

Healthy floating kidneys bear manipulation in clinical palpation exceedingly well. Some authors allude to the production of a sickening sensation in the patient when the tumour is squeezed. I cannot say that I have observed this; firm pressure, however, causes pain.

The subjects of floating kidney sometimes experience feelings of dragging, uneasiness, and

of weight in the abdomen, which they refer to the tumour, and which may be increased by standing for some time, or by exercise, or which may never be felt excepting under such circumstances. Sometimes movements of the displaced organ are perceived by the patient, and then they may give rise to delusions; such delusions we find great difficulty in dispelling. In one of the cases I have published, the patient persisted, in spite of all we could say to the contrary, in believing the movements to be those of a "child."* Sir W. Roberts quoted a similar case.

Unless a displaced kidney be the seat of structural disease, preternatural mobility of the organ is not attended by urinary abnormalities. In uncomplicated cases, the secretion of urine is always healthy, and there is no interference with micturition. The irritating condition of the urine was quite a sufficient cause for the frequent desire to empty the bladder noticed in Dr. Hickinbotham's case.

As to treatment, when any treatment is necessary in a case of floating kidney, my experience in practice in such cases enables me to make the following statements. The dragging and uneasy sensations I have just now described may be removed or relieved by suit-

* *Birmingham Medical Review*, July, 1872.

able local support. In some cases they are removed completely by the patient's wearing of a tolerably tight, elastic, abdominal bandage. Concurrent anæmia, dyspepsia, or disorders of the uterus, must not be overlooked, and suitable means must be adopted for their removal. Treatment of a tonic nature may be pursued with great advantage. When the abdominal walls are weak and relaxed, shower baths, or douche baths, rest in the horizontal position, and chalybeates are indicated, and the development of the muscles of those walls by suitable physical exercises may be useful. Useful, too, may be a course of daily faradisation of these muscles. All constriction of the lower part of the thorax, by stays or waistbands, or the like, must be avoided, and petticoats should be worn suspended from the shoulders rather than from the waist. The action of the bowels must be regulated, and defæcation must be done in the squatting posture; constipation, and the consequent straining, aggravate invariably renal displacements. Violent exercise, such as riding on horseback or dancing, should be prohibited. Rest in bed and good food do much for our poorer patients.

The abnormality of a floating kidney, of itself, can never shorten life; it usually persists for an indefinite period. It is necessary that

we should clearly understand this curious irregularity, and be able to form a correct diagnosis of it, that we may remove all alarm from the mind of the patient, and prevent the adoption of useless, perhaps injurious, measures of treatment. Certainly the majority of the cases need no treatment whatsoever. Some of my medical brethren have taught, and have taught, as I venture to think, erroneously, that a floating kidney is a cause, and a frequent one, through the medium of reflex nervous influences, of a variety of morbid conditions, and especially of some abdominal pains; of such pains as we usually ascribe to primary gastrointestinal disturbances, or regard as gastralgic pains arising upon a neuralgic basis. I have never seen a case in which such reflex effects appeared to occur. Some physicians, when they discover a floating kidney, prescribe a padded belt, to be worn with the intention of keeping the wandering organ in its normal position. I never prescribe such a belt. I do not think such a belt can accomplish the object of its employment, and the pressure of it may be harmful. It may be harmful by its circumscribed pressure upon the abdominal contents,—upon organs, upon ingesta, upon absorbents, upon excreta, upon ducts, upon blood-vessels. It may be harmful by inducing muscular atrophy of the abdominal

walls, so reducing the natural supports of the kidneys. The kidneys would not be so smooth if they were not designed to slip, like the testicles in the scrotum. Exercises which develop the abdominal muscles are beneficial when the kidneys are too loose, while pressure upon these muscles induces muscular weakness and increases any tendency of the kidneys to "drop." Some surgeons, when they think a floating kidney is the seat of pain which calls for surgical interference, perform a serious surgical operation, with the object of fixing the erring organ by stitches to its normal bed. I have never met with such a case in my practice. I admit, however, from my reading of reported cases, that such a case occurs sometimes, but very rarely indeed.

In my experience, a floating kidney is an abnormality which is practically negligible in nearly all of the cases in which it is found. In such majority of the cases, the less the patient's attention is directed to the abnormality by a medical adviser the better. On the whole, so far as the intricacies of a difficult clinical problem can be generalized in a single sentence, the end of the whole matter is well put by a recent reviewer in *The Lancet* thus:—"However, we agree that cases do occur in which a movable kidney is causing symptoms, and that fixation of the

kidney will be very beneficial to the patient. But care should be exercised in the choice of cases, for it is easy to seize upon a common lesion like mobility of the kidney and account through it for various nervous conditions which may happen to be present."

The following brief records of cases of floating kidney and of floating kidneys, which have been under my own observation, will illustrate, I hope, the account I have here given of the malady.

Eliza D., aged 38. For the last two years she has noticed a movable lump in her abdomen, on the right side, and for about a year she has found another and similar swelling in her belly, on the left side. Her general health has not been good; but she has not had any severe illness. She has complained of weariness and of anorexia, and of uneasy feelings in her abdomen, which she could localise in the movable lumps. She has borne several children. Her menstruations have been regular, with some severe dysmenorrhœal pains at the beginning of each flow; and she has suffered considerably from uterine leucorrhœa. Her womb is found to be retroflexed completely, and its fundus is studded with small, nodular, sub-peritoneal masses. Upon palpating the abdomen, there can be felt, on each side, an oblong, rounded

swelling, having the size, shape, and feel of a kidney. The right descends lower than the left; each can be felt usually below the costal arches. A deep inspiration drives the swellings downwards. The displaced organs can be slipped back into the loins, but they easily, and of themselves, fall down again. Each kidney can be moved for a limited extent in every direction—the right kidney much more so than the left. The urine is normal.

Charlotte R., aged 32. She has borne five children, the last two years ago; her labours have been tedious. Her health has been failing for about a year; she is feeble and emotional, and she suffers from globus and flatulence. Her menstruation is normal. Nine months ago, she noticed a movable lump on the right side of her belly, which, in spite of all evidence and assurances to the contrary, she persists in regarding as a foetus arrested in its growth. When she lies upon her back, a swelling, of the size, shape, and feel of a kidney, can be found in the right hypochondriac region. When the swelling is not evident, it can be made to appear by placing the patient upon her left side, firm pressure being made at the same time in the right loin. The kidney can be moved freely downwards and inwards, and so far that its upper edge may be at the level of the navel and half

the tumour beyond the middle line. It can be pushed back again to its normal position easily. A similar swelling can be palpated on the left side of the belly; it cannot be moved so freely, nor brought so far downwards and inwards as its fellow. The two floating kidneys can be so manipulated as to make them meet in the middle line in front, and they may be kept in that position easily. Handling the displaced organs through the abdominal walls does not cause the patient any uneasiness. When the kidneys are brought forwards, the patient at the same time lying prone, a marked hollowness in the loins is evident upon palpation. Percussion over the normal positions of the kidneys, the patient lying prone, yields a muffled and dull note, the sound on the left side being clearer than on the right. The other organs are normal. The urine is healthy.

Elizabeth R., aged 24 years. Five weeks ago, after good health previously, she noticed a beating in her belly, together with a swelling, on the right side, just below the costal arch. At this time she suffered much pain after taking food; occasionally from sickness and vomiting; and she felt weak. She has suffered from what she calls "hysterical fits." Seven months since she bore a child, which she did not suckle, her supply of milk failing. Latterly she has

menstruated regularly. She says the strength of the beating in her belly and the prominence of the swelling vary much, and that each is more marked when her general health is bad. She denies tight-lacing, and she can give no account of any blow or undue exertion preceding the appearance of the swelling. When the patient has taken a deep breath, a swelling, renal in size, shape, and feel, can be felt lying below the ribs on the right side, its lower edge reaching almost to the anterior superior spine of the ilium. The swelling can be slipped about in the belly easily; it can be moved for a limited extent in every direction, but it can be pushed most easily upwards and backwards under the costal arch, towards the normal position of the right kidney. When she lies upon her back, the tumour does not appear until she takes a deep breath, when it passes from under the ribs, and slips downwards so far that its lower edge almost touches the crest of the ilium; it can then be grasped by the hand through the abdominal walls and kept in its unnatural position. Handling the swelling does not cause pain. When the patient stands up, the lump is to be felt easily; it is most apparent when she lies upon her back and inclines a little towards the left. When the lump is protruded downwards and forwards by a deep inspiration, a slight

hollow can be felt in the back, at the normal situation of the right kidney. She refers some uneasy sensations to the displaced kidney. The abdominal aorta pulsates prominently, presenting the signs of simple dynamic pulsation of a functional nature. The other organs are healthy. The urine is normal. The patient obtained much relief from treatment as a hospital in-patient, which treatment embraced the tonic regimen and medication, and the wearing of an abdominal bandage.

VIII.

THE TREATMENT OF HABITUAL CONSTIPATION.*

Difference between constipation and intestinal obstruction.—Definition of constipation.—The human fæx.—Cure without drugs.—Rules of practice.—Causes.—Regularity of effort in defæcation. — Habitual constipation in women.—Position of the body in defæcation.—Advantages of an erect carriage of the body.—Bodily exercise.—Kinks and sagging.—Diet.—Drugs.

I PURPOSE to offer to you some considerations and observations upon habitual constipation, and especially upon its successful prevention and upon its successful treatment. I venture to do so because the details upon which I shall touch have especially and long engaged my attention as a physician, and because I hope I may be fortunate enough to lead the way to a discussion from which we may all reap substantial profit. It is not my intention to

* An Address delivered before The Leicester Medical Society, December 7th, 1900; revised and rewritten for the edition of 1904; and again, with copious augmentations, for this present edition.

attempt anything like a complete examination of the whole question of constipation, much less of intestinal obstruction. The subject, if treated systematically, could not be dealt with, even in a cursory manner, within the limits of the time at my disposal. You know that the literature of the subject is very extensive, that it reaches back to the earliest records of medicine, and that I could not give a summary of it within the compass of a readable paper; you know that intestinal lesions, and especially those pathological changes which tend to fæcal accumulation and to slow fæcal passage, have shared in being subjects of the analytical precision which is the leading note of the medicine of our century, and that I could not recount their details within a single sitting of your society. Keeping to what is practical in the pathology and practicable in the treatment of some of the commoner forms of constipation, and especially of habitual constipation, as I have met with them in my own clinical experience, I purpose to ask you to consider with me the progress of our art in one of the most important and most striking of the various departments of its usefulness.

We must avoid a common confusion of terms in the use of the familiar words constipation and intestinal obstruction. It is not strictly

accurate to speak of intestinal obstruction, as some writers have done, as an exaggerated, an ultimate, form of constipation. It is quite true that some of the worst and most fatal forms of intestinal obstruction are usually long-marked by a prodromal constipation, as, for example, cancerous constrictions of the larger intestine. But the phrases constipation and intestinal obstruction, when properly understood, do not merely mark different degrees of a similar result. They apply to different extents of the intestinal tube. Constipation concerns the large intestine only; intestinal obstruction the whole of the intestines, small as well as large.

For the accurate diagnosis and for the intelligent therapeutics of constipation we must have a clear conception of what constipation is. Here, briefly, is a definition of it which I have long held:—Constipation is slow fæcal progress in the large intestine, where alone true fæces are to be found. Intestinal obstruction is a grave disturbance of intestinal permeability in any part of the intestinal canal; it is practical impermeability of the intestines to the passage of their contents, either in the large or in the small intestine, in any part of the bowel, from pylorus to anus. “Constipation is essentially slow progress of the fæculent mass from the

cæcum to the anus.”* It is this, and nothing more than this, so far as the mere position of the difficulty concerns us, albeit the pathological causes of constipation, when organic, and when such as narrow the lumen of the bowel, are apt, in their extremer developments, to determine intestinal occlusion. Coprostasis is a good old name for fæcal stagnation. Habitual constipation is more or less imperfect fæcal stagnation between the cæcum and the anus.

What is the human fæx? This is a question very pertinent to our purpose. Let us answer it briefly, and strictly to illuminate the therapeutic issues of the subject. Our usual general idea is that a healthy human fæx is a pasty mass made up of insoluble and superfluous food, mixed with intestinal mucus, pancreatic and other glandular secretions, and moulded into a sausage-shaped form in the large intestine, with numerous secondary convexities marking the concavities of that tube. We are apt to forget that there is much evidence that fæces, besides being all that I have just stated, are, in an important physiological sense, in an important pathological sense, and in an important therapeutic sense, much more—namely,

* This sentence is quoted from a clinical lecture on “Retention of Fæces,” by Dr. Matthews Duncan, published in *The Medical Times and Gazette*, November 8th, 1879.

in part an excretion formed by secretion. If we recognise that fæces are in part a secretion from the blood of noxious excretory products of life and activity, the elimination of which is essential to health, and the non-elimination of which causes various sufferings, we shall understand that the therapeutics of constipation is much more important than it would seem to be, if we do not include this secretory view of the fæces in our consideration. Let me quote to you one or two sentences on this point from Dr. Headland, in his great work on the Action of Medicines. He says:—"It was some time ago supposed by many that the fæces consisted simply of those parts of the food which remained unabsorbed, and that all purgative medicines alike acted by exciting the peristaltic motion of the bowels, and causing thus the ejection of these undigested matters. Such an opinion is now rarely maintained. Although very little is known of the separate functions of the glands of the intestinal mucous membrane, yet it is generally supposed that the fæcal matters consist in great part of excrementitious substances which are separated by their means from the blood. The excretion of fæces continues when no food is taken. It is known to go on with starving men, and with patients in fever. Liebig argues for the secretion of the

greater part of the fæces, on the ground that they contain nitrogenous matters, whereas all the nitrogenous parts of the food should be absorbed for the purposes of nutrition. Thus these are probably the excreted products of changes in the system, which it is the province of the bowels to separate from the blood."

The manifold errors of habits, of effort, and of diet which tend to constipation are well recognised by our profession. In the discovery of some of these, and in their timely and persistent rectification, we can cure, without drugs, many of the slighter forms of fæcal retention. We should make quite sure we exhaust these measures in the treatment of every case of habitual constipation. In the slighter cases, such non-medicinal treatment is usually sufficient for a good result; in severer cases, when drugs and instrumental aid cannot be avoided, all that well-ordered habits, well-directed efforts, and well-chosen diet can do should be regarded as the indispensable adjuvants of a more direct therapeusis.

In the treatment of habitual constipation, I have formed certain rules of practice, which my experience has abundantly confirmed. They are these:—(1) We should never leave the medicinal treatment of constipation of the bowels to our patients. (2) We should never

prescribe drugs in the treatment of habitual constipation until we find that the constipation cannot be cured without such medicaments. (3) We should never prescribe drugs in the treatment of habitual constipation without the conjoined use at the same time of a well-selected and judicious combination of the numerous adjuvants of natural alvine relief which are at our disposal, and which we should especially select by our experience in practice, and dispose in each particular case of costiveness, according to the individualities of the patient. No one but a very skilful prescriber can treat constipation best. To open the bowels is not to cure constipation, but only to relieve for a few hours one of its symptoms. The second of these canons, that of always withholding drugs until drugless methods prove insufficient, establishes a sound therapeutic principle, and is a counsel of perfection which is salutary in its aim, and should be followed generally; but the insistence of patients for a purgative dose when alvine dejections are defective has taught me that patients are sometimes right in this matter, and that a cathartic dose may be an essential preliminary to a more causal cure, and give a fair and the best start for successful treatment by further medication, and by dietetic, disciplinary, and other hygienic methods.

Now that we are engaged in the particular consideration of the therapeutics of habitual constipation, it is useful to expand our definition of the malady by the addition of some definitions of the causes of the affection. Habitual constipation is a penalty of our imperfect civilization. It is due to a habitual abstinence from emptying the rectum whenever the physiological (or natural) urgency to empty it is felt; it is also due to habitual defæcation when seated upon a high seat; it is also due to habitually diminished activity of the abdominal muscles, including the psoai and iliaci, of the respiratory muscles, and of the muscular fibres of the large intestine. It is also due to habitual abstinence from fruit. Each of these causes is avoidable. Each of these causes should be avoided before a drug is taken for the cure of habitual constipation. For causal treatment, we may note, too, that fatness of abdominal walls and abdominal contents favours constipation, while constipation disposes to fatness, and especially to intra-abdominal fattiness. Here is a vicious circle, of therapeutic suggestiveness. In the cure of costiveness our therapeutic clues arise well from an old definition of the malady, namely:—"In constipation the fæces are hard, and may be retained from that cause, from weakness of the muscular coat of the large in-

testines, or from diseases of the anus, making defæcation difficult or painful.”*

By habit, in a healthy person, the emptying of the rectum in defæcation, day by day, can become to some extent a regular rhythmical process, occurring at a fixed time, once in each twenty-four hours. The best time for this is after breakfast, when the stimulus of the entry of food into the stomach after the abstinence of the preceding night, aided by mental expectation, by habit, by a visit to a suitable place, and the assumption of a suitable bodily position, will very usually, and, by practice, with great regularity, excite the act of unloading the rectum and sigmoid flexure. Before going to bed is the best time for a person who suffers from hæmorrhoids; defæcation strains and protrudes them, and the horizontal repose of a night in bed favours hæmorrhoidal decongestion and subsidence. Such an effort should always be made, day by day, at the usual time, whether the desire to defæcate be felt at the time or whether it be not so felt. But, besides this, defæcation should always be attempted whenever the local urgency for it is felt. This feeling should never be “put off.” If it be so postponed, what happens? The distended rectum empties itself, if it can, backwards into the sigmoid flexure,

* New Sydenham Society's Lexicon.

and the returned fæces are held up there if possible. Perhaps this holding up of fæces in the sigmoid flexure of the colon is often the determinant of cancer there. Malignant disease is more frequently met in that place in men than in women. Women appear to neglect to try for defæcation at a rhythmical time. But men "put off" more than women do; they like to defæcate at a fixed time, and at no other time. Defæcation, then, should be attempted whenever the rectal impulse thereunto is felt. The habit of fæcal retention in the rectum carries with it many dangers; locally, from irritation; remotely, from absorption. Cancer of the sigmoid flexure and rectum is practically unknown amongst our agricultural labourers; with them opportunities for opportune defæcation, and for defæcation in the natural position, are present in exceptional prevalence.

I think the general experience of my medical brethren will accord with my own, in our finding habitual constipation to be more prevalent amongst women than amongst men. The causes for such greater prevalence of the malady amongst women are to be found in irregularity as to the time of effort in defæcation, from procrastination therein, in the putting off the act, in relative feebleness of the muscular factors of the act, in the wearing of waistbelts, and in the

wearing of "stays" and corsets, and from inhibition, that is, from drinking water or watery fluids in insufficient quantity, from bad habit, bad example, or from a desire to diminish their urine.

The cure of habitual constipation must begin upon our plates, in the proper division of our food, and in the mouth, in its complete trituration and admixture with buccal secretions, by slow mastication; small morsels for each mouthful.

The best position of the body for successful defæcation, that is, for the complete and easy doing of the act, is the crouching position.* This is the natural position, the position assumed when defæcation is attempted upon the "ground." The parts concerned in the act are then in the best position for its accomplishment. Moreover—and this is an important consideration—the hernial openings are then guarded by their natural physiological protection, during the increased intra-abdominal tension which is a normal constituent of the act of emptying the lower bowel, and so the production of hernia from such tension is prevented. The inguinal form of intestinal hernia is a frequent result of straining at stool, when such

* "For this I squat on my hams." Mr. Jago, in his poem "The Scavengers," written about the year 1750.

straining is made in the usual position of the body upon a high seat. A fruitless effort at defæcation, when seated upon the usual high seat, (a seat generally of the height of eighteen inches from the ground,) will often be followed at once by success if the effort be thereupon renewed in the physiological attitude I have described. In habitual constipation I am accustomed to amplify and explain these considerations to the patient, and counsel the acting upon them before having resort to drugging. It will be found in practice that the resumption of defæcation in this natural position for the act will often make the exhibition of laxatives unnecessary, and if not quite unnecessary at the least restrict by much their employment. Especially may women be so advised; and they will be found to be the patients most benefited.

Certain habitual postures of the body favour fæcal sluggishness, or even fæcal retention in the large intestine; namely, a slouching posture, a stooping posture, and especially that form of arching backwards of the lower dorsal and lumbar spine, and doubling up of the abdomen, which occurs in sitting "all in a heap" in a large and low "easy" chair. The habitual assumption of this last attitude leads to the development of one or more deep transverse wrinkles in the skin, running horizontally

across the epigastrium. I think I have discovered these wrinkles. I observed and interpreted them long ago, and I know of no reference to them in print. Certainly the observation of them is very helpful in practice, in a causal diagnosis and in the cure of habitual constipation. This "all in a heap" position of the body embarrasses the movements of the abdominal contents in many ways, which will be obvious to the anatomist. Amongst these, it tends to fæcal retardation by the production of two additional angles in the large intestine, one in the ascending colon, and one in the descending colon, by an antero-posterior bend on each side below the hepatic and splenic flexures, respectively. The cure of habitual constipation without drugs certainly demands, on these grounds, that an erect carriage of the body should be cultivated habitually, and such a carriage is necessary to give fair play to any remedies whatsoever which we employ in the malady under our present consideration.*

Daily bodily exercise, especially out of doors and in sunlight, favours the emptying of the bowels. Such bodily exercise is a natural

* One of our medical poets, John Armstrong, M.D., wrote, in the year 1744, in his "Art of Preserving Health":

"To lean for ever cramps the vital parts,
And robs the fine machin'ry of its play."

hygienic activity, an exertion or action of the body conducive to the keeping of its organs and physiological functions in healthiness. There are several modes of such exercise which are of direct and especial use in the cure of habitual constipation. Exercises should be selected for this purpose which tend to promote biliary flow, such as deep respiratory movements, which bring into play the muscles of the abdominal walls, and which promote movement of those portions of the large intestine in which fæcal stagnation and accumulation is most apt to occur. Such are the indications to be fulfilled in practice in these cases. By keeping them in view we may select exercises which are especially suitable in particular cases. I will now mention certain exercises which I have found useful. Respiratory exercises are healthful in many ways, and should be performed daily, and they are useful for our present purpose. Three or four deep inspirations in succession, each taken slowly, whilst the waist is free from constriction, taken, say, just before breakfast and just before dinner, promote biliary flow into the intestine, (and bile is the natural laxative,) and promote also movement of the intestinal contents. Riding on horseback, too, is healthful in many ways; it may be performed daily, and best before breakfast, with the effect of helping

the habitual intestinal evacuation after that meal. Walking helps intestinal movement; running helps it more; jumping, more still. Cycling helps it too, if a fairly erect position of the body be preserved during such exercise. Progression "on all fours," on hands and feet, like a quadruped, with a cat-like movement of lateral flexion of the trunk at each step, before breakfast, helps intestinal movement very markedly. Various gymnastic forms of drill have been well arranged for the purposes of the promotion of biliary flow and intestinal movement. These can be quickly learned from a good drill master, and they may be practised daily in the treatment of habitual constipation with curative advantage. Furthermore, it is likely, for anatomical reasons, that sluggishness of fæcal movement in the large intestine is most apt to occur in two places, namely, in the cæcum and in the sigmoid flexure. Fæcal movement in these parts of the bowel may be excited and promoted by movements which bring the psoas and iliacus muscles, on each side of the body, into full play. For such movements, suitable daily exercises may be pursued, such as, for example, running upstairs by taking two steps of the stairs at each stride, which is an excellent exercise for giving a fillip to the sluggish parts. Soldiers have an exercise, called "knees

up," which is good for this purpose; while the subject of this drill stands erect each of his knees is brought in turn towards the front of the chest, the movement being aided by his grasping the moving knee with his hands and bringing it with a jamming motion, several times repeated, towards his trunk. "Pottering" on a pony, before breakfast, help much against coprostases about the sigmoid flexures.

My friend, Mr. Arbuthnot Lane,* bases coprostasis and its consequences upon surgical foundations, and he proposes and performs surgical operations for their treatment. He points out that the human organism has not yet adapted itself with physiological perfection to the erect posture. He teaches that our habitually erect posture during our waking hours leads to sagging downwards of abdominal viscera, and that such displacements cause certain intestinal kinks, which lead to stasis of intestinal contents, and require surgical treatment. (I venture to suggest the use of the verb to sag, as meaning displacement by gravity, especially in a vertical direction.) Mr. Lane pursues this subject with much detail in a valuable paper, in which he cites the effects of gastro-intestinal stasis, of kinks, and "pulls,"

* Surgeon to Guy's Hospital.

with consequent absorption of toxins, as they affect the appendix, the ovaries, the uterus, menstruation, the liver, the production of visceral cancer, respiration, tuberculosis, the skin, the mammæ, the kidneys, the sexual appetite, the mind, "neurasthenia," the pancreas, and the formation of gall-stones.* This is a wide range of indictment; but it comes from a good and experienced worker, who supports it with physiological and pathological evidence, and it commands our attention in practice.

Sagging of the abdominal viscera, as a cause of habitual constipation and of coprostasis, may be counteracted by the assumption for a while at intervals during our long waking hours of the recumbent posture, in dorsal decubitus, in which the abdominal viscera tend to upward displacement; by squatting upon the haunches upon the floor, tailor-like, in which ancient sartorial attitude viscera are pressed upwards and supported by the thighs; and by the wearing of a belt, especially in the condition known as "pendulous belly," such belt being adapted under medical guidance, after physical examination of the affected parts. Help in the same directions may be afforded by exercises in quadrupedal

* Civilisation in relation to the abdominal viscera, with remarks on the corset. By W. Arbuthnot Lane, M.S. (Lond.), F.R.C.S., &c., *The Lancet*, November 13th, 1909.

progression, which suit so well the quadrupedal pattern of our abdominal contents. Resting at mid-day in the horizontal position helps against overloading of the ascending colon. If the evacuant powers of the stomach be enfeebled, lateral decubitus on the right side in bed is helpful; if of the larger intestine, on the left side. It is good to sleep for the former portion of the night upon the right side, and for the later portion upon the left side.

As to corsets, those who wear them must submit the details of them to our judgment and direction, if we are to treat aright constipation or coprostasis in such persons.

The dietetic details of the successful treatment of habitual constipation are manifold. A diet of foods which make too copious alimentary residues tends to constipation from muscular fatigue of the intestines, with the ill effects arising from putrefactive and fermentative changes in retained excreta. Also, a diet of foods too nutritious or too easily digested tends to constipation by not exercising the intestinal muscular powers sufficiently. The best diet in the treatment of habitual constipation is a mixed diet; that is, a diet of ordinary food taken at fixed times, without the use of any ordinary article of food being forbidden. If, with the use of such a diet, habitual constipation do

not yield to habitual and suitable effort at defæcation, aided by suitable exercises and by suitable restings, articles of food which are found to have a laxative tendency when ingested should be added to the dietary, or increased therein, that is, foods full of cellulose. "Cellulose is proof against all organic solvents" in its passage through the alimentary canal,* and in man is the chief natural excitant of intestinal movement. Such laxative foods are found in green vegetables, in fruits, in fruit jams, and especially in orange marmalade, and in honey. In the milder cases of habitual constipation, a cure of the malady, without the use of drugs, follows the free ingestion of cooked green vegetables, with dinner, or the daily eating of ripe fruit after the evening meal—say, of one or two ripe apples, uncooked, or of one or two oranges, or the taking of orange marmalade freely, at the end of breakfast, or with afternoon tea, or the daily consumption of honey, which last may be eaten freely on bread, at breakfast or at afternoon tea, or it may be used as a sweetener of tea or coffee, instead of sugar.† Honey is an emollient, that is, that

* Lehmann, *Physiological Chemistry*: published in three vols., by the Cavendish Society.

† Honey should be pure. In our own county excellent honey, the produce of cottagers' hives, is supplied to the public under the auspices of the Warwickshire Bee-keepers' Association.

it has the property of softening and soothing irritated and irritable portions of the external or internal surfaces of the body, when appropriately applied to them; honey is a valuable nutrient, that is, that it possesses conspicuously the property of nourishing the human body when taken into the stomach as food, maintaining the muscular, nervous, and functional energies of the body, especially sustaining animal heat, and moreover, presenting its materials to the stomach in a condition of particular preparedness for assimilation; and honey is an evacuant, that is, that it has the property of promoting the expulsion of refuse and noxious matters through the chief of the natural emunctories. Honey may be taken in "open" honey tartlets, like "cheese cakes." Good gingerbread biscuits eaten freely at bedtime are excellent matinal laxatives; a good variant of them may be made with oatmeal, instead of wheat flour. As to beverages, either oatmeal water or prune tea are helpful, and may be drunk hot, warm, or cold.

These details as to diet are of physiological prophylaxis, which is a science of preventive medicine as found in the laws of life. We cannot have too much of physiological prophylaxis in the treatment of habitual constipation and of coprostasis.

Our pharmacopœias, officinal, non-official and popular, are richer in purgatives than in remedies of any other class. I must not digress into a comparison of the relative values of our cathartic drugs, although the subject is a very tempting one. The practitioners of rational medicine have accumulated a vast store of precise and valuable information concerning the actions of purgative medicines, and this important branch of therapeutics is still growing. Each of us has his favourite selection of cathartics; if we have tried their adoption well, we should not lightly change them. For cases of habitual constipation which do not yield without drugs, my favourite remedy is aloes. The capital therapeutic effect of aloes is that it is a purgative of steady action, affecting principally the larger bowel, producing but little excess of its secretions while augmenting peristalsis, with the result of "formed" and slightly softened fæces, of easy passage. Aloes is especially useful in the fæcal sluggishness of sedentary persons. Properly given, the drug may be taken daily for years, without either losing its aperient efficiency or producing any but the best results. In some cases I give one, two, or three grains of Socotrine aloes in a pill, combined with a quarter of a grain of sulphate of iron and one grain of extract of hyoscyamus, at bedtime, every

night.* In using this pill, I find out, in the case of each patient, the exact quantity of aloes which will produce one full alvine evacuation after the first morning meal. The quantity of aloes in the pill will need readjustment from time to time, usually in the direction of reduction.†

* We are indebted to that veteran therapist, the late Sir Robert Christison, for the valuable suggestion of combining iron with aloes when we use aloes as a laxative. Neligan, in reference to the use of aloes in habitual constipation, wrote:—"Christison states that the cathartic property of aloes is much increased by its combination with sulphate of iron, and that its irritating action on the rectum is counteracted by combining it with the extract of hyoscyamus; both of which statements my experience fully confirms."—"Neligan's Medicines," edited by Macnamara, sixth edition, p. 130.

† I was led to adopt this combination of aloes and iron in the treatment of habitual constipation by reading a paper by the Rev. David Bell, M.D., which was published in *The British Medical Journal*, November 5th, 1870, entitled "Remarks on the Beneficial Effects of Combining Tonics with Aperients in Chronic Constipation." Dr. Bell stated in this paper that he had tried various combinations of drugs in the treatment of constipation, and had come to the conclusion that the best formula was the following:—℞. Aloes Socotrinæ, extracti hyoscyami, āā gr. xij.; quinae disulphatis, gr. vj.; ferri sulphatis, gr. iv. To be well mixed and divided into twelve pills. Dr. Bell had found these pills to produce uniformly good results, without inconvenience. Upon his reading what I had written upon this subject, Dr. Kent Spender, of Bath, kindly drew my attention to his admirable paper on "The Therapeutics of Chronic Constipation," published in *The Medical Times and Gazette*, February 19th, 1870. Dr. Spender recommended minute and frequent doses of watery extract of aloes, given in combination with sulphate of iron. He informed me he had treated cases of habitual constipation with pills of aloes and iron for very many years, with excellent results.

A perusal of a biographical memoir of the late Dr. Marshall Hall brought to my notice a favourite pill of his composition and use for habitual constipation.* I have modified this pill a little, and I have prescribed it with much success. Here is the formula for it, as I prescribe it:—

R. Aloes Barb.,
 Theriacæ,
 Ext. Glycyrrhizæ,
 Ext. Taraxaci,
 Saponis Mollis, singulorum partes
 æquales.

Solve in aqua, et calore lente inspisse; deinde divide in pilulas, pondere gr. iiss. Sig.: one or two pills to be taken at bedtime.†

Lately I have directed in my prescriptions that pills should be made into the form of beads (*sphærulæ perforatæ*), and I think the central opening in them facilitates their disintegration in the alimentary canal. It is convenient to keep them strung upon a slender cord.

As a mild laxative, for occasional use, I have arranged the following combination of remedies, and it has proved to be an excellent one:—

* Memoirs of Marshall Hall, M.D., F.R.S. By his widow. London, Bentley, 1861. p. 274.

† Dr. Marshall Hall's pill contains no taraxacum; that is an addition of mine.

R. Magnes. Pond., $\bar{3}$ ss.

Ol. Ricini, $\bar{3}$ ss.

Mellis Depurat., $\bar{3}$ j.

Misce, fiat confectio. Sig.: a teaspoonful to be taken at bedtime.

Our art, as you know, gives us many other useful combinations of laxative drugs, of which experience in practice will suggest to you the best choice in particular cases. No case of habitual constipation can properly be treated by "rule of thumb"; nor by copying medication or other remedies designed for somebody else. Each case must be skilfully investigated with full acumen as to the causal relations and other associated details of the malady, and each case must be diagnosed carefully and individually prescribed for, watched, and guided, by an experienced medical adviser.

IX.

PRACTICAL SUMMARY OF THE ETIOLOGY, PREVENTION, AND TREATMENT OF HABITUAL CONSTIPATION.*

WHEN you enter into your practice, perhaps the treatment and the cure of habitual constipation will engage your attention oftener than other details of our remedial art. Although this subject is of the tritest, it is well worth frequent revision. We must keep it always in our minds in our daily work as medical men, and it becomes us to reconsider it often by the lights, respectively and combinedly, of physiological, clinical, pathological, and therapeutic progress. In this great subject, as in so many others of ours, clinical observation and physiological investigation go on working together in converging directions, with the best results in practice, sometimes the one anticipating, and each confirming, the other.

Constipation is retarded progress of fæces from the cæcum to the rectum, or it is retention of fæces in the rectum (dyschezia), or it is both of these. In our conceptions of the causes,

* A Clinical Lecture : published in *The Lancet*, September 16th, 1911.

progress, and cure of habitual constipation we must include the knowledge that human fæces consist in great part of excrementitious matters excreted by the glands of the intestinal mucous membranes as well as of insoluble and superfluous food, mixed with intestinal mucus and biliary and pancreatic excretions. Human excrement, then, is made up of glandular and other excretions, as well as what may be called alimentary refuse. We must recognise both these factors and not contemplate the dietetic effluent only. The manifold errors of what may be called habits of life and ways of living, of defæcational effort, and of diet, which are causal as to constipation, are well understood. In their continued and persistent rectification may be found the cure, without the exhibition of drugs, of most of the slighter forms of costiveness. In a severer case, in one in which drugs, manipulative efforts, and even instrumental aid cannot be avoided, all that well-ordered and daily habits, well-directed efforts, and well-chosen diet, can accomplish—and they can accomplish much—are indispensable adjuvants of mere physicking in the cure of habitual constipation under skilled medical guidance.

There are three canons which should guide your treatment: (1) You should not leave the medicinal treatment of their constipation to

your patients; (2) you should not prescribe a drug in the treatment of habitual constipation until you find that the constipation in the particular case before you cannot be cured without drugs; and (3) you should not prescribe drugs in the treatment of habitual constipation without the conjoined use of a judicious combination of the numerous adjuvants of natural alvine relief which are at your disposal, and which you should select especially accordingly to your experience of their use in practice, and combine them in particular cases of costiveness suitably to the individualities of your patients.

You should ascertain fully the characteristics and ways and circumstances of life of each patient, and then arrange the details of your treatment in each case upon such knowledge. In all therapeutics the individuality of the patient is the supreme law. None but a skilful prescriber can treat constipation best. To "open the bowels," to force the appearance of a copious "stool," cures not constipation, but only relieves for a few hours one of its symptoms.

The second of these canons you should remember, that of withholding drugs until drugless methods shall have failed, is a counsel of perfection which is basic in its aim, and should be followed generally; but the insistence of constipated patients for a purgative dose teaches

one that patients are sometimes right in this matter (perhaps *fas est ab ægro doceri*), and that medicinal catharsis may give a fair start for a cure in some cases, which you will be able to distinguish in practice, by disciplinary and dietetic methods. Sometimes an immediate evacuation is desirable, but no real cure of the malady is possible unless disciplinary and dietetic methods have play.

In costiveness our therapeutic clues arise well from an old definition of it—namely, “in constipation the fæces are hard, and may be retained from that cause, from weakness of the muscular coat of the large intestines, or from diseases of the anus, making defæcation difficult or painful.” Habitual constipation is a penalty of our imperfect civilisation. It is due to habitual abstinence from emptying the rectum whenever the natural impulse thereunto, the physiological call for defæcation, is felt; it is due to habitual attempts at defæcation when seated upon the usual seat, eighteen inches high; it is due to habitually diminished activity of the psoai and iliaci, of the respiratory muscles, and of the muscular fibres of the large intestines, and to rectal paresis from rectal distension; it is due to habitual abstinence from fruits and other vegetable foods rich in cellulose. It arises in some women from habitual diminution

of beverages, from the design of minimising urination. It is due to insufficient mastication of food, especially of meat. The curative treatment of habitual constipation may have to begin in the mouth, and it may be upon the dinner plate. Each of these causes is avoidable. Each of these causes must be sought out and avoided before a drug be taken for the treatment of habitual costiveness; if the avoidance of these causes should not be curative, such avoidance should concur continuously with all medicinal exhibition.

Many hearts throb to the fetich of a punctual fæx. By long-continued habit in health the act of voiding fæces can become to some extent a rhythmical process, done at a fixed time, by an acquired periodicity each twenty-four hours. Perhaps the best time is after breakfast. Before bed is the best time for a patient who has hæmorrhoids. Defæcation strains and protrudes piles, and the horizontal rest of a night in bed yields venous subsidence. Chosen the time, the voiding effort should be made daily, at the chosen time, whether the "call" to defæcation be felt or not. Besides this, defæcation should always be attempted immediately whenever the rectal prompting thereunto shall arise. Such feeling, such *mens conscia recti*, should never be "put off." By putting it off

the rectum empties itself, if it can, into the sigmoid flexures, or the feeling of rectal pressure subsides in the exhaustion of the local neuro-muscular sense into an unfelt rectal retention of fæces, and habitual constipation, with or without dyschezia, with or without rectal coprostasis, is caused and kept up. Perhaps this holding up of returned fæces in the sigmoid bendings may be a determinant of cancer there. Cancer there is much more frequent in men than in women. Women are more likely than are men to neglect to try defæcation at a rhythmical time; but men put off the act more than women do. Men like to defæcate at a given time, and at no other time. Again, as between the sexes, habitual constipation is more frequent amongst women than it is amongst men, from irregularity in the time of alvine effort, from procrastination therein, from intrinsic feebleness of the muscular factors of defæcation, from the wearing of waist-belts, of "stays," of corsets, of tight skirts, and from inimitation.

The best position of the body for the complete accomplishment of the act of defæcation is the natural one, in crouching. In such a position only are the parts acting in the proper voidance of fæces in the best position for doing it; the anus is in the best position for opening and the rectum for emptying its contents, all the

muscles concerned in the act are in the best position for their efficient play, and the parts liable to injury from strain are guarded by their natural protections, certain hernial orifices, for example. Failure of defæcation upon the usual seat will often at once issue successfully if the effort be renewed forthwith in the physiological attitude.

In a case of habitual constipation you should amplify and explain these considerations to the patient, and counsel acting upon them before placing perilous reliance upon purgative drugs. Further, you should keep in mind that certain faulty and habitual somatic postures are apt to lead to, and to keep up, sluggishness of fæcal movement in the larger bowel, even to coprostasis—namely, stooping forwards, slouching, and slackness of attitude and gait, and especially that form of arching backwards of the lower spine and doubling-up of the belly which occurs while sitting “all in a heap” in a large and low “easy” chair. Such habits of bodily postures are declared by the production of transverse wrinkles in the skin across the epigastrium. Look for these wrinkles in every case of habitual constipation, and counsel correction of postures which cause them. These postures hinder and hamper normal movements of the contents of the belly in many ways and

with many ill-effects. They tend to the production of two more angles in the greater gut, one in the ascending colon and one in the descending colon, by an antero-posterior bend on each side, below the hepatic and the splenic flexures respectively.

So there must be physical uprightness in the cure of habitual constipation before drugging, and, if you give drugs, during their exhibition, and always, excepting during horizontal rest, afterwards.

Daily bodily exercise, especially out of doors and in the sunshine, favours defæcational normality. In the successful treatment of habitual constipation further helps may well be given by exercises which promote biliary flow, such as developed respiratory movements, by physical exercises which bring into play the muscles of the abdominal walls, and by such exercises as promote movement of those portions of the larger intestine in which fæcal stagnation is most apt to occur, that is in the cæcum and in the sigmoid flexures, for which last the psoai and the iliaci must move well, as in running up stairs two steps at a stride, or as in "knees up" exercises. If there be visceral sagging, quadrupedal exercises, appropriate restings, an appropriate belt, or other measures may be indicated, as determined by complete examination.

The best diet in the cure of costiveness is what is known as a mixed diet, the ordinary diet in use in English households. If, in a person living upon such diet, habitual constipation does not yield to habitual and physiological alvine effort, aided by suitable physical exercises of the kind I have described briefly to you, then food of a laxative character—that is, foods full of cellulose—should be increased in the dietary, such as cooked green vegetables, fruits, fruit jams, and chiefly marmalade of oranges. The fibres of cellulose appear to be the chief natural stimulant of the muscular movements of the intestines, as was shown, especially in favour of preparations of oranges, by certain striking experiments a few years ago.

Cathartics increase the peristaltic movements of the human intestinal canal, evacuate its contents, usually augment its mucous secretions, and promote the separation of the secreted products which Liebig taught us it is the province of the intestines to separate from the blood and from the tissues. These medicines may be distinguished according to their energy of action as laxatives, which promote the gentle evacuation of the intestinal contents, and purgatives, which increase secretion and accelerate evacuation. This was Royle's and Headland's practical and excellent definition of them, and

it is a good one to keep in mind in our prescriptions. Numerous are the cathartics at our disposal; their distinctions and several utilities are well known in medical practice.

For a case of habitual constipation which does not cure without medicines my favourite remedy is Socotrine aloes, suitably combined and exhibited as a pill, at bedtime. "Myrrh and aloes and cassia" can still make coprostatics glad: myrrh, with its old repute of giving an impetus to the digestive organs, and an increase of muscular power to the digestive canal; Socotrine aloes and cassia pulp, of each equal proportions, made into a pill of the weight of 5 grains with syrup or with castor oil. One pill or more may be given for a dose, as found to be needed, and their administration should be gradually reduced and omitted altogether so soon as may be. I give you this formula only as an example.

Many other cathartics are at our therapeutic disposal in pilular and in other forms, and you must learn to choose from amongst them by your experience in practice according to the particular indications in each patient. No case of habitual constipation can be treated by "rule of thumb." It will always be your duty to your patient and to yourself to investigate each case skilfully, by complete methods, with your full

acumen, and by adequate clinical study of it, as to the causal relations and other associated details of the malady in the individual instance of it in question, as to sex and as to temperament, and each case must be diagnosed *in propria personâ* and individually prescribed for, watched, and guided by an experienced adviser in the science and art of medicine. Faulty habits of life must be corrected appropriately, diet must be confirmed or rearranged if need there be, and you must make a suitable selection of medical gymnastic exercises, to restore and improve the health of the body at large, and of the intestines in particular, and fitting medicaments must be prescribed if their employment be unavoidable, while visceral saggings may indicate other details. And all this must be done with a lively remembrance of the manifold conditions which ever modify the effects of medical treatment, for, as one of the best therapeutists of a recent day, Dr. Scoresby-Jackson, taught, "the general habits of the patient, his profession, business, or occupation, his diet, and other circumstances connected with his daily pursuits, influence the actions of medicines; and there are certain indications of treatment in the cases of the rich and the poor, the spare and the plethoric, the man of active and the man of sedentary habits, which are far more easily learned from careful clinical observation than from volumes of literature."

For counsels of perfection in the cure of habitual constipation you must win and sustain the patience and perseverance of your patient, and you must have the courage to insist that the habitual use of cathartics alone to meet a troublesome symptom is harmful, and may lead to the worst results.

X.

SOME POINTS IN THE TREATMENT OF THE SEVERER FORMS OF CONSTIPATION.*

Fæcal retention.—Case.—Enemata.—O'Beirne's tube.—Cancer.

THE ordinary symptoms of extreme fæcal retention are well known. Our experience, in the main, justifies us in expecting that such symptoms shall be acute, or subacute, at the least, in their urgency and duration; and that they shall be associated for a time with a complete absence of alvine dejections, or, at the least, with a very obvious insufficiency of such evacuations, both in quantity and frequency. But we shall fall into error sometimes if we expect considerable fæcal retention always to be marked in this way. Of exceptional forms of extreme fæcal retention, I have met with two distinct varieties. In both the process of accumulation has been but slow: in one the graver signs of intestinal obstruction have at last become developed urgently and rapidly, as it were as a climax; while in the other and rarer form of slowly-

* Part of a paper published in *The British Medical Journal*; just now revised.

developed fæcal retention the condition has been chronic throughout, and the disorder has not been recognised, perhaps, until after a belly only distended by a dilated colon filled with fæces has been regarded as the seat of a huge tumour, the nature of which has been interpreted variously. I have seen the extremest fæcal retention, filling the belly, encroaching on the thorax, and displacing the liver, lungs, and heart, presenting itself as a chronic condition, lasting for many years.

Let me quote, very briefly, an extreme and very instructive instance of this kind, from my notebook. Some years ago, a medical friend sent a case to me at The Queen's Hospital, as one of obscure abdominal tumour, which had long resisted treatment at two neighbouring medical charities, and about the nature of which he was in doubt, and desired my opinion. I found the patient a pale, ill-developed girl, of fourteen years. Her mother stated that, when the child was only two years of age it was noticed there was some enlargement of her belly. The patient's bowels had been confined habitually, a week or more often elapsing without the passage of a motion. Her alvine evacuations consisted usually of small portions of hardened fæces; from time to time, frequent and scanty liquid stools were passed. The quantity of

urine appeared to have been normal; the appetite poor and capricious. The abdominal enlargement had gradually increased up to the time of the patient's application to me. I at once admitted the girl as an in-patient. I found she complained of occasional griping pains in the belly. She had never had any vomiting. Her fæces were small in quantity and watery. The tongue was clean. There was no pyrexia. The body was fairly nourished. There was a general enlargement of the abdomen, and the lower part of the thorax was expanded. The superficial veins of the abdomen were slightly enlarged. A solid tumour could be felt to occupy the whole of the right side of the abdomen. It had no distinct margin above, and reached, laterally, about two inches to the left of the middle line; below, the edge of the hand could be readily passed between the tumour and the pelvis. The tumour was uniformly dull on percussion; palpation gave the impression of a doughy consistence, and firm and sustained pressure with the tip of a finger upon the mass produced a depression, which lasted for some minutes after the finger was withdrawn. The heart was displaced upwards considerably; its apex was found to strike the chest wall at a point one inch and a half above, and one inch to the inner side of the left nipple. The cir-

cumference of the abdomen at the umbilicus was thirty-one inches. The rectum was found to be largely distended, and filled with hardened fæces. The patient was directed to take a pill, consisting of a grain and a half of Socotrine aloes, half a grain of extract of hyoscyamus, and a third of a grain of extract of nux vomica, together with a drachm of sulphate of magnesia dissolved in one ounce of infusion of roses, thrice daily. An enema of cold water and table salt was administered night and morning. Before the administration of the first enema, I freely broke up the contents of the rectum with my forefinger and with the handle of a large tablespoon, and I evacuated a very large quantity of hardened fæces, together with three plumstones. On the following day, her passages of pultaceous fæces filled two chamber-pots to their brims, and the abdomen was thereupon found to be diminished markedly in size. On the next day, two chamber-potfuls of fæces followed the morning enema. On the following day three copious motions were passed. On the next day there were two free actions of the bowels, and it was noted that the abdomen was smaller and softer, and that the heart's impulse had fallen to the level of the left nipple. In three days more, the enemata were discontinued, and they were not used again. Then

careful physical exploration failed to find any abnormal signs in the abdomen. Faradisation was gently applied to the abdominal muscles daily. From this time the patient did well, without interruption, and was discharged from the hospital fourteen days after her admission. She attended a short time as an out-patient, taking iron and an aloetic purgative, and remained well, without any fæcal reaccumulation. In this case we may notice that extreme fæcal retention, sufficient to displace the heart into an infraclavicular region, to distend the superficial veins, and to form a very large abdominal tumour, was unattended by vomiting, by scantiness of urine, or by abdominal tenderness, and that the only local disturbance was "occasional griping pains in the belly." We may notice, too, the record of an important point in diagnosis. A large portion of the patient's abdominal cavity was obviously occupied by some solid mass. I had to decide upon the nature of the abnormality. I found that firm and sustained pressure with the fingers over the tumour produced a palpable depression in its mass, which lasted for some minutes after pressure was withdrawn. This very exceptional physical sign is almost absolutely diagnostic of considerable fæcal accumulation. The successful progress of the case illustrates, also, the value of

using together a variety of therapeutic measures. In the treatment of fæcal retention, the best results are only obtainable by the adoption of a well-considered combination of remedial resources. One did not rely on only one method of emptying the distended intestine. I broke up and dug out all the excrement I could reach through the anus; and kept up the concurrent and continued use of aloetic purgatives, of enemata, and of faradisation.

It may be our learned faculty does not appreciate adequately the immense advantages to be derived in the treatment of many of the severer forms of constipation and of intestinal obstruction by the efficient use of the enema. In France, I understand the enema is the routine domestic aperient. We do these things better in England. The custom of relieving slight constipation by an immediate resort to an enema has never become popular on this side of the Channel, and it is well it is so. My experience has led me to discountenance the systematic use of rectal injections in the ordinary domestic treatment of the slighter forms of fæcal sluggishness. Such cases may be treated better, and especially with less tendency to chronicity, by other means. On the other hand, however, in the severer forms of fæcal retention, we ought always to use aperient enemata,

and we must take care we use them efficiently. In persons past the meridian of life, and especially in persons of sedentary habits, what may be called simple fæcal retention is a very frequent form of constipation. In such persons this form of constipation is relatively very frequent, both as compared with other varieties of constipation, and also as compared with the same form of constipation at other times of life, and in individuals of other habits. In such persons coprostasis, (that good old name for fæcal stagnation,) is especially apt to produce complete intestinal obstruction. It is in these cases, especially, that life may be saved by enemata. I do not know of any form of intestinal obstruction in which enemata can do harm. In most cases they take a chief place amongst our most potent means of doing good. In many cases which at first are unpromising, and even when the predisposing cause of the obstruction is some organic and incurable disease, we may repeatedly relieve a threatening fæcal accumulation, and long keep off a fatal fæcal stagnation, by the due use of enemata. It is, perhaps, not too much to say that enemata far surpass any other remedies in curative value in the simple coprostasis of advanced life. Within the limits of this paper, I cannot particularise all the practical details of apparatus, of quantity, quality,

and frequency of intestinal injection, and the various manipulative niceties of administration, concerned in the question of the therapeutic use of aperient enemata. But I would take this opportunity of affirming that in all severe cases of constipation, and in all cases of intestinal obstruction in which we use enemata, we can only administer our injections efficiently by means of the long tube of O'Beirne. Let me recommend O'Beirne's classical treatise on defæcation to those who are unacquainted with it.* Than from a study of its pages I do not think I have ever reaped more practical profit from any of my medical reading. The gist of O'Beirne's book is the recommendation of the long enema tube, which for eighty years has been known by his name. Never entrust the use of O'Beirne's tube to a nurse. The efficient passage of the instrument into and through the sigmoid flexure of the colon is a delicate and difficult operation, which the medical attendant ought always himself to perform for his patient. Much unnecessary detail has been taught about the composition of enemata. When we use an enema, for the purpose of clearing the bowel of fæces and flatus, the quantity of the injection, if the liquid used be a suitable one, is its chief

* "New Views on the Process of Defæcation," &c. By James O'Beirne, M.D., Dublin. 1833.

quality. As to enemata, I am accustomed to tell my pupils of this well-tried clinical rule of mine, namely, that when they give an enema they should always ask themselves whether it is to be retained or returned: if it be designed that the injection shall be retained, as in the case of a nutrient or sedative enema, its quantity can scarcely be too small; if, on the other hand, it is intended to move the bowels to the expulsion of their contents, the quantity of an enema can scarcely be too large. The quantity of an aperient injection is precisely so much of it as can be passed into the bowel, without undue force. For such an enema to be so large as possible, is only for it to be large enough.

Experience in practice has taught me to add here an important caution. What, in a particular case, may appear to be simple constipation may be really impeded fæcal passage through a cancerous stricture of the lower bowel. Especially is this caution necessary when the patient is at or beyond the middle age. I have heard Professor Chiene, of Edinburgh, say, in advice to young practitioners, "Gentlemen, never lose an opportunity of passing your finger into the rectum." This is a wise caution, especially in the cases we have been considering in this and the last previous chapter—a sound caution for safe practice, shrewdly, if quaintly, expressed.

XI.

CLINICAL OBSERVATIONS ON INTESTINAL OBSTRUCTION.*

*Pathological varieties of intestinal occlusion.—
Estimation of probabilities as to nature and
site of occlusion.—Symptoms of intestinal
occlusion.—Spontaneous recovery.*

LONG is the list of the lesions which may determine the clinical urgencies of intestinal impermeability, and which, by causing that very grave condition, may demand from us relief if life is to be preserved. Intestinal obstruction may arise at any point in the intestinal tube from some change in one of three situations, namely, from some lesion outside the tube, from some lesion in the tubal wall, from some morbid condition of the intestinal contents. As intestinal compressions, constrictions, degenerations, displacements, distortions, impactions, obturations, and stenoses, these manifold pathological conditions have been fully described in medical literature. If, with practical purpose, we translate the pathological causes of intestinal

* Part of a paper published in *The British Medical Journal*; just now revised.

occlusion into their clinical manifestations and history, we shall find that they fall into three fairly defined groups. *A: Causes which come into operation quite suddenly, and which lead at once to complete intestinal occlusion.* Here we have sudden compressions, displacements, and distortions, as all kinds of strangulations and torsions or kinks, some cases of intussusception, especially in children, and some cases of plugging by gall-stones. *B: Causes which manifest themselves acutely, but which do not give rise to immediate and complete occlusion, although they produce very grave disturbances of intestinal permeability.* Here we have partial strangulations of all kinds, many cases of intussusception, many cases of peritonitis, and cases of partial obturation by gall-stones and by foreign bodies. *C: Causes which are developed slowly, and which give rise, often for weeks, months, or years, to marked signs of impaired intestinal permeability, and which either lead to a series of subacute seizures of intestinal occlusion, yielding for a time to treatment, but successively increasing in severity and danger, or culminate in a single sudden and final attack of complete and unyielding obstruction, or lead to death in some indirect way, as by perforation, peritonitis, or by asthenia.* Here we have in-

testinal cancers and neoplasms generally, strictures and stenoses of all kinds, chronic local or general peritonitis, compressions from the pressure of slowly growing tumours, and fæcal impactions and chronic fæcal retention from degenerative changes in the muscular coats of the larger intestine.* These various conditions teem with practical clinical interest, both in the niceties of their differential diagnosis, and in the details of their varying therapeutic requirements. Into many of these points I cannot now enter; but it may be stated generally that, in any given case, by a consideration of the age of the patient, of the history of the illness, of the particular symptoms and physical signs, and of the results of our treatment, checking such considerations by a recollection of the pathological possibilities of intestinal occlusion and by some accurate knowledge of their relative frequencies, we can usually make a practically correct diagnosis, both of the particular portion of the intestine which is affected and of the pathological nature of its lesion. I cannot, however, leave

* This classification is a modification and amplification of one to be found in Dr. Leichtenstern's valuable essay on "Constrictions, Occlusions, and Displacements of the Intestines," contained in Dr. Von Ziemssen's *Cyclopædia of the Practice of Medicine*. See English translation, Vol. VII., p. 487, *et seq.*

this part of my subject without making some reference to certain well-ascertained statistics and approximate generalisations which are of great practical importance, and which have often stood me in good stead at the bedside, in the diagnosis of the kind and place of an intestinal occlusion. Firstly, it is generally true that sudden and very marked obstructions, such as strangulations, torsions, intussusceptions, and pluggings, affect the smaller intestine, while more chronic but less accentuated difficulties of permeability, such as strictures, cancers, and intestinal degenerations, affect the larger intestine. Again, an intestinal stricture is a circumscribed diminution of the lumen of the bowel. It arises either from contraction of the mucous and submucous tissues, or from the encroachment upon the intestinal canal of some new growth from the intestinal walls. The latter process is usually cancerous, the former is usually a consequence of ulceration. "Stricture may be met with in any part of the intestine, yet it occurs in different parts with very different degrees of frequency. The published statistics of fatal cases show that its occurrence as a fatal disease in the small intestine is comparatively rare (according to Dr. Brinton* in

* Intestinal Obstruction. By W. Brinton, M.D., F.R.S. 1867.

8 out of every 100 cases); and that, as regards the large intestine (to quote again Dr. Brinton's figures, with which those of other writers agree pretty closely), out of 100 fatal cases, 4 are in the cæcum, 10 in the ascending colon, 11 in the transverse colon, 14 in the descending colon, 30 in the sigmoid flexure, and 30 in the rectum. Dr. Brinton calculates that stricture occurs three times in men to twice in women; and that the average age at death is $44\frac{2}{5}$ years."*

From these figures we may gather the important practical generalisation that at least four-fifths of the strictures of the larger intestine are situated to the left of the middle line of the body. Again, excluding the grosser forms of hernia, of all the different forms of obstruction of the bowel, intussusception is the one which is "most commonly attended with the presence of manifest tumour;"† and furthermore, excluding cancerous disease of the larger intestine, the discharge of blood through the anus is characteristic of intussusception, and is present usually from the onset of the affection. Again, we have Sir Jonathan Hutchinson's valuable generalisations, from which I select the following, as being the most reliable, and therefore the most important. "When a child

* Obstruction of the Bowels. By J. S. Bristowe, M.D., F.R.C.P. Reynolds's System of Medicine, Vol. III., p. 74, *et seq.* 1871.

† Dr. Bristowe. *Op. cit.*, p. 100.

becomes suddenly the subject of bowel obstruction, the malady is probably either intussusception or peritonitis. When an elderly person is the patient, the diagnosis will generally rest between impaction of intestinal contents and malignant disease. In middle age, the causes of obstruction may be various, but intussusception and malignant disease are now very unusual. If repeated attacks of dangerous obstruction have occurred, with long intervals of perfect health, it may be suspected that the patient is the subject of a chronic diverticulum, or has bands of adhesion, or that some part of the intestine is pouched and liable to twist. If, in the early part of a case, the abdomen become distended and hard, it is almost certain that there is peritonitis. If the intestines continue to roll about visibly, it is almost certain that there is no peritonitis. This symptom occurs chiefly in emaciated subjects, with obstruction in the colon, of long duration. The tendency to vomit will usually be relative to three conditions, and proportionate to them. These are: (1) the nearness of the impediment to the stomach; (2) the tightness of the constriction; and (3) the persistence or otherwise with which food and medicine have been given by the mouth.”*

* Notes on Intestinal Obstruction. By Jonathan Hutchinson, F.R.C.S. *The British Medical Journal*, August 31st, 1878.

No clinical spectacle is more terrible than that afforded by a case of acute and complete intestinal obstruction. All of us, probably, have seen some examples of it. In the midst of perfect health, without obvious cause or warning, or after some unusual and sudden muscular effort, or after a blow on the belly, or after a trifling diarrhœa, or after some slight constipation, or following some ordinarily insignificant error of diet, a vigorous adult is seized with severe pains in the abdomen. The pains are mostly griping and colicky in character, they usually come and go at short intervals, and they are usually referred to the neighbourhood of the navel. Sometimes the pains are excruciatingly violent and intermittent, or they are persistent, or they spread over the whole of the belly, or they are of a "bearing-down" character, and are attended by painful but fruitless efforts at stool. Acting on the familiar hypothesis that something has "disagreed" and requires clearing off, the patient usually forthwith takes a domestic purge. The pains continue and grow more frequent and severe, and the bowels remain unrelieved. At this stage, vomiting generally appears, and a doctor is summoned. The gravity of the patient's condition is usually recognised, and pains are quelled and peritonitis staved off by opium, while efforts are made to

open the bowels by enemata; sometimes, unhappily, the pathological possibilities are not adequately appreciated, and the stronger cathartics are injudiciously administered. Save for the passage of a little delusive flatus, or of the contents of the bowel below the difficulty, the belly remains ominously closed. Vomiting continues, and, in a variable time, the vomited matter becomes fæcal in appearance and odour, while at first it consisted only of ordinary stomach-contents, or of a bilious watery fluid. The case grows more desperate; marked collapse soon declares the patient's increasing danger. The extremities chill, the respirations become shallow and frequent, and the voice fails and thickens, while the pulse is small and rapid, the abdomen distended and drummy, and the face pinched, with pointed nose, sunken eyes, and thin, retracted lips. Hour by hour, and day by day, the sufferer grows worse, bathed in cold sweats, with parching thirst, frequent fæcal eructations, hiccup, shortening and shallower breathing, voice all but extinguished, dry brown tongue, Hippocratic face, failing and uncountable pulse, and mind unclouded to the end or gently wandering in the last few hours, until death closes one of the saddest and sharpest scenes of human misery which one ever has the pain to see.

But the terrible and lethal condition* I have endeavoured to describe is not wholly hopeless. It is true it is very generally fatal, within six days at the most, yet patients have got well in some cases without surgical operation, even when internal strangulation has brought them to the very verge of death. Surgical art, I freely and thankfully acknowledge, has rescued not a few whom the skill of the physician has proved powerless to save, and this great art promises, with abundant record of achievement, to include in a not distant progress a material reduction in the present high mortality of intestinal closure. "There is no cause of acute occlusion of the intestine," writes Leichtenstern, "which cannot spontaneously disappear as well as originate. An intestinal knot can loose itself, an incarcerated or strangulated loop can become free, an invagination can become disengaged, compression cease, twisting or dislocation of the intestine with angular bend can straighten itself, a lodged gall or intestinal stone or foreign body may be dislodged and evacuated, and severe fæcal obturation may be overcome."† But we must never forget, I would strongly insist, that the relative proportion of cases of spon-

* "Morbus terribilis, creberrime letalis."—De Haën.

† Leichtenstern. *Op. cit.*, p. 508.

taneous recovery from acute intestinal occlusion is very small indeed—so small as to support only a very uncertain hope of life in any particular case. I fear such a hope is often a harmful one, for I am afraid that its sympathetic exaggeration has sometimes inspired a disastrous inactivity, which has frittered away in fruitless endeavours and vain expectations the time for the fairer chances of life which may be given by timely surgical help.

XII.

LUMBAGO COPROSTATICA: NOTE ON THE CAUSE AND CURE OF A FORM OF BACK- ACHE.*

Backache of loaded colon. — Character and position of the pain.—Cure.

LUMBAGO is a well known myalgic pain in the loins. I propose the name lumbago coprostatica for a painful affection of the upper part of the same region, due to fæcal accumulation in the colon. The pain of lumbago coprostatica may be reflex or it may be direct in origin as a kind of pain, or it may be both of these. It yields to the recognition and removal of its cause: *cessante causa cessat et effectus*.

Early in the year 1881, in a note which was published in a weekly professional journal, I asked the attention of my brethren to a form of backache which had not, so far as I knew, been described before.† I desire to refer now to the subject again, and to record that my further

* Published in *The Lancet*; now revised.

† *The British Medical Journal*, February 19th, 1881.

experience in practice has confirmed my previous observations upon the point in question.

Our therapeutics is always especially satisfactory when we remove pain by removing the cause of it. Subjective symptoms are always important diagnostic signs, and they are often clear therapeutic indications. Amongst such sensations backache is frequently a leading symptom, and one also which is dwelt upon pressingly by patients. Of backache there are divers forms, with different causal and curative indications. The late Sir George Johnson, in an able clinical lecture, and Mr. William Squire, in a practical memorandum, have drawn the attention of the profession to many of these.* But they have not mentioned a variety of backache in which the cause of the pain is traceable to the condition of the larger bowel. I find in my practice that some patients complain of a pain, aching, dull, and heavy in character, and extending "right across the back." When asked to point out the position of the pain, they indicate it by carrying a hand behind the trunk and drawing the extended thumb straight across the back, in a transverse line, about half-way between the inferior angles of the scapulæ and the renal region.

* *The British Medical Journal*, February 12th, 1881.

This pain I venture to attribute to a loaded colon; I conclude I have found its proximate cause in fæcal accumulation in the larger intestine. The quick cure of the pain depends upon the recognition of the final cause of the malady. The pain disappears after the exhibition of an efficient cathartic. This particular form of backache is a concomitant of habitual constipation, although not an invariable one. It is significant especially of the alvine sluggishness of sedentary persons. In such a condition, I find aloes, given in combination with iron, to yield the best therapeutic results. I prefer Socotrine aloes, and I prescribe one, two, or three grains of it in a pill, combined with a quarter of a grain of sulphate of iron, and one grain of extract of hyoscyamus. This pill should be taken every night. We must aim at producing a full alvine evacuation daily, after breakfast. When a saline cathartic is indicated, I usually employ the old-fashioned Rochelle salt, the officinal soda tartarata. This "goes" well with tea, coffee, or cocoa. One or two teaspoonfuls, or more, may be taken, an hour before breakfast, dissolved in a large cupful of one of those beverages. Or Rochelle salt may be prescribed in an effervescent combination; here is an excellent formula of this kind, for a flavoured variant of "seidlitz powder," namely:—

R. Sodii et Potassii Tart., ʒjss.
Sodii Bicarb., ʒss.
Acid. Tart., vel Acid. Cit., ʒiijss.
Ol. Limonis, ℥iv.

Misce, fiat pulvis. Sig.: two teaspoonfuls to be taken dissolved in a tumblerful of cold or warm water.

When lumbago coprostatica is recurrent, some of the prophylactic and therapeutic measures exposed in my chapter in this book, on the treatment of habitual constipation, would be indicated, under medical selection.

XIII.

PILEWORT AND PILES.*

Principles of treatment in the cure of piles.—

Pilewort.—Preparation of the ointment.—

Manner of using ointment.—Pilewort suppositories, and variants thereof.—Manner of using them.

HÆMORRHOIDS often cause much suffering, and may be a danger to life. Relatively to other diseases, they affect a very large proportion of invalids, and so may be said to be common or frequent. The successful medicinal treatment of them has made much progress in our times, and in this progress I hope to have helped. A hæmorrhoid or pile is a varicose rectal or ano-rectal vein, with some connective tissue and sensory nerves, and with a cutaneous, mucocutaneous, or mucous covering, according to its position.

I desire now to publish a formula which I have designed and used for a certain non-officinal preparation. This preparation I have

* From papers published in *The Birmingham Medical Review*, May, 1901, and in *The British Medical Journal*, 1904; with later additions.

employed in practice for many years past, and I am using it now, with much therapeutic success. While many cases of hæmorrhoids are distinctly surgical in nature, management, and cure, and are not rightly and not usually included within the scope of a physician's practice, there are many morbid conditions, of what may be called a hæmorrhoidaloid character, affecting the mucous membrane of the lower part of the rectum and the anal margins, with which the practical physician has to deal in his daily work, as troublesome incidents in the course of other greater or more general maladies; and he is often even called upon to relieve by medicinal means, and without the invitation of surgical measures, hæmorrhoids which are distinct tumours within or without the anal aperture, and which tumours, for various and sufficient reasons in particular cases, are not submitted to surgical cure by the knife, or by the ligature, or by the cautery. In such cases, various ointments, of officinal or of magistral formulæ, are usually used, with more or with less success, as local applications to the affected parts. Of the ointments I have used in such cases, I have mostly used for several years, and as I have found with prosperous therapeutic results, one made from an English wild plant, the *ranunculus ficaria*. Of course, we all know, if

we be sound therepeutists, that the use of any topical applications, in the treatment of piles and local hæmorrhoidal conditions, is only supplementary to the relief or cure of the well-known constitutional conditions and visceral obstructions which occasion the disease. As Erichsen rightly taught: "In conducting the treatment of a case of piles, that surgeon will succeed best who looks upon the disease not as a local affection, merely requiring manual interference, but as a symptom, or rather an effect, of remote visceral obstruction and disease, the removal of which may alone be sufficient to accomplish the cure, without the necessity of any local interference; or, should it be thought necessary to have recourse to operative procedure, this must be made secondary to the removal of those conditions that have primarily occasioned the congestion and dilatation of the hæmorrhoidal vessels."*

I was led to the construction of a formula for an ointment of *ranunculus ficaria*, and the use of that ointment in my practice, by dint of habitual herbal reading and botanical observation. It may well be maintained that a physician who wishes to advance his art may still study herbs and herbals with much advantage. The *ranunculus ficaria*—sometimes called *ficaria*

* The Science and Art of Surgery.

verna, and popularly known by the names lesser celandine and pilewort—is a well-known British, wild, perennial plant, showing in the spring, in meadows, in hedge-banks, and especially in woodlands where the trees are not crowded, its bright, glossy, yellow, starlike blossoms, and shining, green, kidney-shaped or heart-shaped leaves. The perennial root bears amongst its fibres many little fig-shaped tubercles; hence the name *ficaria*. The larger of these tubercles are of an elongated polypoidal form, and about half an inch in length. They are brownish externally, and fleshy upon section. To prepare the ointment, I direct that the whole fresh plant be used, gathered at the time of its greatest perfection—namely, when it is blooming in the spring. The plants, cut into small fragments, are kept immersed in melted pure hog's lard, at a temperature of about 100° F., in the proportion of one part by weight of the plant to three parts of lard, for 24 hours. At the end of that time the portions of infused herb in the melted lard are subjected to sufficient pressure to produce the further yielding of their juices to the fatty infusion, which infusion is thereupon strained, and allowed to cool and solidify, to form the ointment. Care must be taken not to raise the temperature of the mixture too high, lest the colour of the ointment be spoiled. The

ointment should be green, of a shade which may be described as a bright green olive-green. It should be applied to the affected parts by inunction, with the aid of a finger, about twice daily, preferably just after an alvine evacuation, and upon getting into bed at night. For its English name, the ointment might be called celandine cerate, and the word cerate might be justified literally by preparing the ointment with white bee's wax and oil, say almond oil, in due proportions, say, seven ounces of the wax to twenty ounces of the oil, instead of with hog's lard, infusing the plant in warmed oil.

In some cases in practice in which the use of this pilewort ointment may appear to be indicated, the prescriber may judge it to be advantageous to exhibit the remedy in the form of a suppository. To harden the ointment up to an adequate consistency for a suppository, I am accustomed to direct that one part by weight of spermaceti be mixed with four parts of the ointment, by fusion by heat. Of such a mixture one and a half drachms is a serviceable quantity for a rectal suppository. In a mixture of spermaceti and pilewort ointment, in the proportion of 1 to 4, the melting point of the solidified mixture would be kept well below the normal temperature of the rectum, taking the melting point of spermaceti at 120° F., and that

of the ointment at 83° F. The mixture of them here recommended would melt at a temperature of about 90.4° F., and it will be found in practice that a suppository so made will be sufficiently firm for easy introduction within the rectal cavity. The only reason why a rectal suppository should be sufficiently hard is, that it should be stiff enough to be easily placeable in the site of its employment; once in that position, its qualities of softness and lowness of melting point favour the application of the remedy it carries under conditions propitious to remedial action. For such a suppository, the formula may be as follows:—

R. Ung. Ranunc. Ficar., gr. lxxij.
Cetacei, gr. xviiij.

Misce leni calore, et fiat suppositorium.

This suppository is good, for its intrinsic virtues, but an experienced prescriber will know how to make it an adaptable basis and to combine in it an analgesic, or an astringent, such as alum, or a clotting hæmostatic, such as chloride of calcium, and so on from our great therapeutic repertory, *pro re nata*.

The use of a well-fitting and well-greased finger-stall helps the accurate placing of a suppository in locum actionis; and a little inunction of the anal margins by the tip of the medicament before passing the suppository into

the rectum tends to the comfort of this valuable mode of medication.

Of the ancient reputation of the therapeutic virtues of pilewort in hæmorrhoidal affections, and of the popular appreciation of those virtues in the domestic medicine of country places, abundant record is to be found in many English herbals and in many botanical accounts of our native flora. Medical archæologists will enjoy this little pilewort's lore, with its "doctrine of signatures," to which doctrine we owe our early knowledge of opium, and with its popular repute amongst the herb-curers of the people, a remedial vogue of the kind in which our immortal Birmingham Withering found and gave to us even the modern use of digitalis.

XIV.

THE CURE OF ECZEMA.*

The treatment must be both local and constitutional.—Sources of local irritation.—Struma.—Gout.—Other causal bases of eczema.—Use of improved oleates.

To cure eczema the therapeutist must be able to remove, or, at the least, to control into innocency, its local and its constitutional causes. There must be prevention, in any given case, that there be eczema at all, and also the healing of its local manifestations. In failure to recognise the general constitutional or underlying condition with which the affection of the skin is associated, or in failure to treat it success-

* On this subject I have published several papers, of which I give a list here. I have revised them, brought them up to the present time, and blended them in this chapter.

Oleate of Zinc in the Treatment of Eczema; *The British Medical Journal*, April 17th, 1879.

Notes on the Treatment of Eczema; *The Practitioner*, November, 1879.

Oleate of Lead in Eczema; *The British Medical Journal*, (1) May 29th; (2) June 19th, 1880.

Treatment of Eczema (Abstract of Clinical Lecture); *The British Medical Journal*, December 23rd, 1882.

Remarks on the Therapeutic Uses of some Improved Oleates; *The Birmingham Medical Review*, February, 1884.

fully, usually lies the cause of failure to cure a case of eczema. Eczema is nearly always a local expression of one of several diatheses, with which it is linked in intimate causal relation. Some local irritation may determine or keep up the local outbreak and be its proximate cause; but it is only a concurrent cause. The proneness to the local malady, its remote cause, the reason why the local irritation results in eczema, is to be found in some general constitutional abnormality. In the treatment of eczema, we should always search for, and, finding it, endeavour to remove, any sources of cutaneous irritation, such as scratching, the wearing of flannel next to the skin, uncleanness, exposure of the affected part to the irritating action of heat, cold, water, urine, discharges, bad soap, or any mechanical or chemical irritants, such as are met with in various occupations. But in the majority of cases no such external excitants are found; the eczema is merely the outward sign of an inward dyscrasia, merely the local expression of a constitutional vice: the cause is constitutional. To treat eczema successfully, we must not concentrate our attention and our remedies on the eczema only; but, while adopting suitable measures for soothing and healing the inflamed skin, we must carefully study and favourably modify the diathetic condition which

underlies the local mischief, and is its essential constituent.

The writings of Dr. Tilbury Fox, who brought to the study of dermatology the broad insight of the cultivated general physician, so necessary to its adequate illumination, are characterised by an enlightened recognition of the play of morbid constitutional states in the causation of diseases of the skin; he did more, probably, than any recent writer to expound and explain the dependence of cutaneous disorders upon what may be called general abnormalities of nutrition, upon diatheses it may be said.

The most prominent and best recognized of the causal relationships of eczema are those it owes to struma and to gout. The eczema of infants, children, and young adolescents, especially when the discharge from the affected surface contains pus, is nearly always strumous, and yields best to cod-liver oil, iodides, iron, and suitable hygienic measures. Fox went further; he taught that "senile struma is an important state to recognise." On the other hand, the chronic eczema of middle and advanced life, especially in men, is commonly gouty, and is benefited by natural purgative mineral waters, by colchicum, by iodide of potassium, by alkalies, and by lithia, and by

an arrangement of diet and exercise calculated to promote the excretion of uric acid. The nervous temperament seems often to have some pathological relationship with the gouty diathesis; we may see a gouty eczema suddenly aggravated by mental anxiety. Apart from gout and struma, a condition of what may be called "general debility," of nervous depression and general feebleness arising from worry or overwork, is often the chief factor in the production of eczema. In such a case, iron, arsenic, rest, and good food are needed.* A troublesome form of chronic eczema of the legs is apt to arise in connection with chronic renal œdema of the same parts; in this association there is often a gouty element. Chronic eczema may have a syphilitic basis and yield to specific anti-syphilitic treatment. Eczema does not occur as a syphiloderm; but the chronicity of an eczema is often due to an unexhausted syphilitic taint, either acquired or hereditary. As illustrations of the dependence of eczema upon general constitutional states, I have now only pointed out some of the more prominent etiological alliances of the malady. Other connections might be mentioned, such as "sluggish liver," gastric catarrh, and bronchial catarrh.

* See risks from arsenic in chapter on gastralgia,

I would say to my clinical pupils, do not neglect to learn the treatment of diseases of the skin, and especially of eczema—by far the most often of such affections. By attention to a few well-established details of practice, eczema can usually be cured by judicious treatment, and always greatly ameliorated. Our therapeutic measures must be adapted to the truths that eczema is often brought out and kept up by local irritation, and that the disease is always an expression of a diathesis. We can often best cure eczema by not regarding it as a disorder of the skin. In failure to recognize, and treat successfully, the general constitutional condition with which the affection of the skin is associated, and which is its foundation, lies a frequent cause of failure to cure eczema. Eczema is a local expression of one of several diatheses, or of the various combinations of such diatheses, namely, the strumous, the gouty, and the nervous. Some local irritation usually determines and frequently keeps up an eczema, and is its ultimate cause; but the proneness to the local malady, its penultimate cause, the reason why the local irritation results in eczema and not in something else, is to be found in some general constitutional abnormality. In a case of eczema, before we prescribe drugs, we should always search for, and finding, remove, causes of local

irritation—such as dirt, lice, scratching, rubbing, the wearing of flannel next the skin, or exposure of the affected part to the irritating action of heat, cold, water, urine, discharges, bad soap, or any mechanical or chemical irritants, such, for instances, as are to be met with in various industrial occupations.

One of the best of the local remedies for eczema is the ointment of oleate of zinc, for which the profession was indebted to Dr. Crocker.* After using the preparation for several months in a large number of cases, both in hospital and in private practice, I have ventured elsewhere to express my testimony in its favour.† Some time ago,‡ with a view of testing its action in the treatment of eczema, I desired some pharmacists to make for me an ointment of oleate of lead. After a series of experiments they produced an excellent ointment according to the following formula:—

Lead oleate, 24 parts.

Liquid paraffin, B.P., 14 parts.

The lead oleate is prepared by heating a mixture of oleic acid and oxide of lead. I can confidently recommend this ointment as a very

* *The British Medical Journal*, October 26th, 1878.

† *Ibid.*, April 19th, 1879.

‡ *The Practitioner*, November, 1879.

efficient local application in eczema, after the experience of successful use of it in a large number of cases.

About the year 1811, Chevreul discovered oleic acid.* Soon afterwards notices of the chemical and pharmaceutical qualities of medicinal oleates were published in France. Professor Attfield's is the first English paper on the subject.† From that time I know of no other publication on the use of oleates until the appearance of Mr. John Marshall's paper in 1872. Since that date, many papers have been published on the chemistry, pharmacy, and therapeutics of oleates, and various methods for the preparation of oleates have found favour. So early as 1879, I recorded my experience of the curative value of oleate of zinc in the treatment of eczema, and, in the same year, I published some observations upon the employment of oleate of lead in the cure of that affection. In a paper on the preparation and uses of oleates, read before the Medical Society of Pennsylvania, Dr. Shoemaker pointed out the use of chemically true oleates, in contradistinction to those previously prepared by the direct union of oleic acid with a metallic base, with or with-

* *Recherches sur les Corps Gras.*

† "On a Method of Dissolving Alkaloids in Oils." *The Pharmaceutical Journal*, 1862-3.

out the aid of heat.* The new oleates were obtained by the double decomposition of sodium oleate with solutions of neutral salts, the sodium oleate being prepared by the saponification of oleic acid with a solution of sodium hydrate. A solution of the sodium oleate in eight parts of water is precipitated by a neutral salt, and the precipitate, washed and dried, is the oleate required.

The therapeutic uses of the several precipitated oleates of lead and of zinc I have examined and tested extensively in my private and in my hospital practices. As compared with the older preparations, the improved oleates present the great advantage, that they can be used as dusting powders, as well as with an unguental excipient, so that their remedial virtues are available in those affections of the skin, and especially in those eczematous eruptions, in which greasy preparations do not "agree" with the morbid surface. It is well known to therapeutists, that medicaments applied as dusting powders are preferable to ointments in many of the acuter forms of those affections of the skin which are characterized by the issue of a local discharge. The zinc oleate is a fine pearl-

* *The Medical Bulletin*, July, 1882. An excellent summary of Dr. Shoemaker's paper appeared in *The Pharmaceutical Journal*, October, 1882.

coloured powder, with a peculiarly soft, soapy, feel, like that of powdered French chalk. The lead oleate is a white powder. Either of these oleates may be used alone as a dusting powder for the skin, or they may be so used when diluted with powdered starch, or with powdered talc, magnesian silicate. One drachm, or a drachm and a half, of the precipitated oleate of zinc, or of lead, well mixed with an ounce of soft paraffin B.P., or with a like quantity of benzoated lard, makes a good ointment, which I have found curatively efficient in a large number of cases of eczema, in various stages of the disease. When a soothing effect is desired, the lead oleate is to be preferred; when an astringent is indicated, the zinc oleate should be chosen.

XV.

THE CURE OF CHOREA BY LARGE DOSES OF ARSENIC.

*My early use of large doses of arsenic in chorea.
—Mode of administration of the remedy.—
Successful case.—Rarity of chorea in some
circumstances.—Possible risks from arsenic.*

It is now the general therapeutic experience of our profession that large doses of arsenic are often curative in chorea, when smaller doses, and what used to be held to be the usual doses, fail. Herein is one of the most striking of the therapeutic advancements of our times. Whose is the earliest discovery of this truth I know not. Perhaps I was the first to publish it. Perhaps several clinical observers arrived at the truth simultaneously, or about the same time. At the least, I made it out independently of other workers, purely by my clinical observation, and I published the fact thirty-two years ago.

In *The British Medical Journal*, for December 18th, 1880, I wrote:—"I think that arsenious acid is the best remedy for chronic chorea in the materia medica. If I remember rightly, some statistics of cases of chorea treated

by various drugs were published in *The St. Thomas's Hospital Reports*, about ten years ago. From these it appeared, that arsenic cured the malady more quickly than any other remedy; that is, the duration of the chorea was shorter under arsenical treatment than when zinc or other drugs were given. What I have seen in practice, especially when I was physician to our Children's Hospital,* is generally confirmatory of this conclusion. In determining our treatment of a case of chorea, we must always keep in view the causal antecedents of the disorder. We mostly find chorea associated with, and causally related to, one or more of four distinct conditions—namely, rheumatism, acute or subacute; faulty hygienic circumstances, especially an insufficiency of animal food; emotional shock, particularly fright; reflex irritation due to intestinal worms. Each of these separate circumstances calls for appropriate treatment. But, however arising, for the chorea itself, if I may be allowed the phrase, arsenious acid is the best drug we have. Whatever dose we give, it is best to administer it in solution, freely diluted with water, and immediately after a meal. The dose of liquor arsenicalis, as laid down in textbooks, is too small. Garrod, for instance, places

* The Birmingham and Midland Free Hospital for Sick Children

it at from two to eight minims. Some time ago, I tried how much arsenic a choreic young woman could bear. I found I could gradually increase the dose of Fowler's solution from ten minims up to a drachm, (equal to half a grain of arsenious acid,) thrice daily, apparently with good effect on the chorea, before I produced signs of gastro-intestinal irritation. Sometimes chorea is a very obstinate affection, and chronic cases often pass from doctor to doctor, and go through long courses of medicaments, without benefit. The point I want to insist upon is this: we may cautiously increase the dose of liquor arsenicalis far beyond the limit of the text-books with good effect; and we may so cure cases of chorea which smaller doses of the remedy would not affect."

Again, in *The British Medical Journal*, in an abstract of a clinical lecture delivered to the medical students at The Queen's Hospital, published on December 23rd, 1882, I wrote:—
"This little girl, ten years old, about to be discharged, owes her recovery from chorea to the administration of arsenic. We had to give the remedy freely before the disorder gave way. The case was one of subacute general chorea, of moderate severity, occurring in a weakly, nervous girl. We began with five minims of Fowler's solution of arsenious acid, thrice daily,
R

in an ounce of water. In three days the dose was increased to ten minims; in three days more, to fifteen; in three days more, to twenty; and so on until she was taking thirty-five minims of the solution thrice daily. When this last dose was reached, the choreic movements, which before had been gradually subsiding, entirely ceased; and a little vomiting warned us that we had reached the first and most usual physiological action of our remedy. We then withdrew the drug for two days; after that time we gave it again, in fifteen-minim doses, for a few days more, when we gave it up altogether, and the child remained well. You have seen me treat many cases of chorea in this way with similar success. The dose of liquor arsenicalis in chorea, as laid down in text-books, is too small. . . . Arsenic, freely and properly given, rarely fails. If a case of chorea come to you, and you learn that arsenic has been given and has failed, give it again, in large doses. You may cautiously increase the dose of liquor arsenicalis, far beyond the limits of the text-books, with the best results in chorea; in this way, you may usually cure cases which smaller doses of the remedy would not affect."

One is convinced of the causal force of faulty hygienic conditions in the production of chorea, by observing the extreme rarity of the malady in our practice amongst "the well-to-do."

I have made some comments upon views which some of my brethren have expressed recently as to the possible risks which have been thought might follow the prolonged administration of medicinal compounds of arsenic in my chapter upon the treatment of gastralgia, in this present volume.

XVI.

CHLORIDE OF CALCIUM IN THE TREATMENT OF PULMONARY TUBERCULOSIS.*

*Various remedies in pulmonary tuberculosis.—
Therapeutic value of chloride of calcium.—
Its old repute in struma.—Its value in night-
sweats.*

A DUE recognition of the dual origin of human tuberculosis has led to great improvements in the therapeutics of pulmonary consumption in recent years. By dual origin of human tuberculosis, I mean an origin in the causal union of the parasitic bacillus of tuberculosis and of the habit of body which favours the growth of such bacillus in the tissues of living man. The former is, to use a logical phraseology, the essence of the disease: the latter is a separable causal accident; separable, indeed, but practically constant. My present observations refer only to that part of the therapeutics of pulmonary tuberculosis which lies in medicinal treatment. Every

* My first paper on this subject was published in *The British Medical Journal*, June 5th, 1880. I have allowed it to appear again here without any possible qualification that the record it gives may be compared with the results of later medicinal procedures.

case of pulmonary consumption requires especial study, and ought to be treated by no routine or settled practice because it is what it is. In one case, anæmia is prominent and calls for iron or for arsenic; in another, continued but scanty hæmoptysis calls for ergot or for hamamelis; in another, a racking and frequent cough calls for opium or for some of its derivatives; in another, dyspepsia calls for alkalies or for acids, for bitters, or for proteolytic or amylolytic digestives, or for other especial medication; in another, we have to aim at controlling profuse perspiration, or at checking an exhausting diarrhœa. Apart from these and other particulars, I suppose medical practitioners are agreed that cod liver oil, given either alone, or variously combined with other agents which tend to promote its digestive assimilation, or supplement it as a restorative, stands at the head of remedies designed to advance the general nutrition of the phthisical. Have we any other general remedy? For a long time I trusted to syrup of the iodide of iron. This I gave up for a mixture of hypophosphites and iron—five grains of hypophosphite of lime, ten grains of hypophosphite of soda, and fifteen minims of syrup of the phosphate of iron, for a dose. This is a good combination, and I still use it. But chloride of calcium is my favourite general drug

in pulmonary consumption. I have used it very extensively for many years, in hospital and in private practice, and I believe with great advantage. Perhaps a reader would ask, in a commendable spirit of logical scrutiny, do you give chloride of calcium alone? I do not. I give it while the patient is taking cod liver oil, or some preparation of cod liver oil, and I combine it sometimes, according to the therapeutic indications of individual cases, say with a vegetable bitter, or with morphia, or with ergot; and I judge I get better results with chloride of calcium in these combinations than I do with anything else in the same combination. By a kind of reasoning from results under fixed circumstances, which appears in the instance under consideration to be like the logical method of "concomitant variations," in the limited and qualified sense in which that method is applicable to ordinary therapeutic experience, I have worked out, in prescribing practice, to my own satisfaction the practical induction, that chloride of calcium is, next to cod liver oil, our best medicinal remedy in tubercular pulmonary phthisis. Those of us, physicians and medical practitioners, who are in earnest in our therapeutics, and who believe that our therapeutic art—an art which includes, but which is much more than, the administra-

tion of combinations of the *materia medica*—can powerfully modify morbid processes, and can powerfully aid the *vis medicatrix naturæ*, and who think well of what we do, have done, have not done, and shall do for our patients, must be constantly arriving at conclusions, as the result of observation in our own practices, which modify, confirm, correct, or extend our therapeutic conduct. These conclusions may not always be framed by formal canons, nor may they be able to bear the test of an exhaustive logical scrutiny, but they may nevertheless be true, and if such conclusions, which we are constantly forming for ourselves, are accepted by each of us, as reasonable and responsible men, as guides for our own therapeutic action, they are eminently worthy of communication to our brethren.

Dr. Pareira wrote of chloride of calcium that, “by continued use it appears to exercise a specific influence over the lymphatic vessels and glands, the activity of which it increases; for under its use glandular and other swellings and indurations have become smaller and softer, and ultimately disappeared altogether. . . . It has been found most efficacious in the treatment of *tabes mesenterica*, on account of its checking purging, diminishing the hectic fever, allaying the inordinate appetite, and, in many

cases, ultimately restoring the patient to perfect health.”* My own attention was first called to the value of chloride of calcium in some tubercular diseases by a paper in one of our medical journals, wherein it was stated that the drug was much used by the late Dr. Warburton Begbie.† Scarcely mentioned, if noticed at all, in the therapeutic text-books of our day, chloride of calcium has an old and well-established reputation as a remedy for strumous glandular swellings. In 1808, Dr. James Sanders, of Edinburgh, in an important work on pulmonary phthisis, wrote:—“I think that I have ascertained that the muriate of lime has a more powerful effect in removing indolent scrofulous tumours than any other substance used as a remedy.”‡

* Elements of Materia Medica and Therapeutics.

†Dr. Warburton Begbie read an instructive paper on “The Therapeutic Actions of Muriate of Lime” before the Medico-Chirurgical Society of Edinburgh, on May 15th, 1872. This paper was afterwards published in *The Edinburgh Medical Journal*, and is contained in my friend Sir Dyce Duckworth’s volume of “Selections from the Works of the late J. Warburton Begbie, M.D., etc.,” issued by the New Sydenham Society, in 1882. Dr. Begbie wrote:—“The cases in which I have had occasion most frequently to employ the muriate of lime have been instances of struma, the most notable feature of which was the enlargement of the lymphatic glands in the neck.”

‡“Treatise on Pulmonary Consumption.” By James Sanders, M.D., Edinburgh, 1808.

In subacute and chronic cases of pulmonary consumption it is my usual practice to give ten grains of chloride of calcium, dissolved in three drachms of water and mixed with a drachm of glycerine, in a wineglassful of water, or of milk, twice daily, immediately after meals. It "goes" very well with milk. The use of this valuable drug appears to check phthisical night-sweats, and to favour increase of the patient's weight, and the drying up of pulmonary lesions. Of course, it could not be maintained that it does these things in every case of its employment. What I have stated are general conclusions, which have been and are for me those upon which I am accustomed to base therapeutic practice. When we prescribe chloride of calcium, we must be careful to write the name of the remedy distinctly and in full, in order to avoid a possible error in dispensing, from which one of my patients suffered, namely, the substitution of "chloride of lime" for the drug I had intended to use.

XVII.

MEDICATED LOZENGES.*

Modern therapeutic use of lozenges.—Officinal trochisci.—Magistral formulæ.—Borax in a lozenge.—Oil of turpentine in a lozenge.

“QUI miscuit utile dulci” may, with apologies to Horace, be spoken of a physician who prescribes a well-medicated lozenge, who knows how to combine efficient remedies in the acceptable vehicle of a delectable sweetmeat. In many affections of the mouth and of the fauces, of the tonsils, uvula, soft palate, and pharynx, in some laryngeal diseases, in some bronchial, and in some other pulmonary affections, and in some other morbid conditions which may indicate the exhibition of drugs, the form of lozenge offers a convenient, agreeable, and efficacious method of administering many remedies. We owe the modern therapeutic use of lozenges in some part to the old Edinburgh *Pharmacopœia*. In the twenties of the last century, Dr. Paris pointed out that, inasmuch as trochisci, troches, or lozenges were then re-

* A paper published in *The British Medical Journal*, November 30th, 1901.

garded as objects rather of confectionery than of pharmacy, neither the London nor the Dublin College condescended to notice them, while the Edinburgh *Pharmacopœia* contained several formulæ for their preparation, and while they were undoubtedly useful in medical practice, either in the officinal forms or in certain magistral combinations, for which last Dr. Paris gave some valuable suggestions in his classical *Pharmacologia*. Since that time, many considerations, physiological and pathological, and the use of improved diagnostic appliances, the laryngoscope, to wit, have extended the use of medicated lozenges. The last edition of *The British Pharmacopœia* gives the formulæ for seventeen forms of trochiscus, these being made up with a "fruit basis," with a "simple basis," with a "rose basis," or with a "tolu basis." Besides these officinal lozenges there are many other medicated ones "in the market," some of them being tarred with the black mark of proprietary possession, and not a few of them being of unknown composition. In my present communication, I have two objectives, namely, to encourage my brethren to prescribe medicinal lozenges in their own magistral formulæ, and to draw professional attention to a "basis" for such lozenges which I have found in my own practice to be useful. This "basis" is known

as the *pasta glycyrrhizæ alba*, or *pâte de réglisse blanche*. It is described in Beasley's *Pocket Formulary*. It is prepared like the better known *pasta althææ* or *pâte de Guimauve* of the French *Pharmacopæia*, liquorice root being used instead of marsh-mallow root. This white liquorice paste is prepared from the following formula, according to Beasley: Take of decorticated liquorice root $\bar{\text{z}}\text{iv}$. water Oiv .; macerate for 12 hours; strain and add lb.ijss of picked gum arabic and lb.ijss of refined sugar; dissolve, strain, and evaporate to the thickness of honey, constantly stirring, and add gradually the whites of 12 eggs well beaten with $\bar{\text{z}}\text{iv}$. of orange water; evaporate with constant stirring till the paste is so firm as not to adhere to the hands.

If the physician decide upon the exhibition in a given case of illness of a remedy in the vehicular form of a lozenge, the particular drug or drugs therapeutically indicated for this purpose in the particular case should be selected with a prescriber's usual care, and prescribed with the *pasta glycyrrhizæ alba*. The active drug or drugs should be skilfully combined by the dispenser, *secundum artem*, with the basis I have described, in the process of the making of that basis, at a time before the paste attains its final consistency. For example, borax is an excellent local subastringent, detergent, and

antiseptic. A lozenge of it may be prescribed magisterially as follows: *R.* Boracis gr.ij, pastæ glycyrrhizæ albæ (Beasley) gr.x; misce, fiat trochiscus. Signetur: one or two to be slowly sucked, as directed. A lozenge of borax, so made, is "nice" enough to be agreeable, without being quite a sweetmeat. When freshly made, it dissolves slowly and well in the mouth, and it is tough enough to be in part a masticatory. Again, a lozenge containing one minim of oil of turpentine and ten grains of this liquorice basis will be found to have remedial uses in several morbid affections; for instances, in some disorders of the throat, in chronic bronchitis, and in the treatment of oxyurides.

XVIII.

A NEW FORM OF TROCHISCUS.*

Wide range of therapeutic use.—The “chocolate cream” as a basis.—Cremules.

THE *τρόχισκος* of Galen (A.D. 131–201, next to Hippocrates the greatest physician of antiquity) was not the officinal flat, punched-out lozenge of present-day pharmacists, but it was a small globe or ball, may be of soap, may be of sugar, a pastille sometimes, in the sense of being a medicated “drop” of sweet confectionery. To some such ball, as a medicinal vehicle of frequent use, medicine may now well return and find therein abundantly suggestions of therapeutic usefulness. For such purposes I suggest the assimilation into medical practice of the excellent pharmacological basis afforded us by the popular modern sweetmeat known as the “chocolate cream.”

Ten years ago I published a paper on medicated lozenges,† and seven years ago I included a revised and extended version of the same paper in a book of mine upon subjects in a physician’s practice, addressed to my medical brethren.‡

* A paper published in *The Lancet*, August 12th, 1911.

† *The British Medical Journal*, November 30th, 1901.

‡ *Contributions to Practical Medicine*, fourth edition, 1904.

My present suggestion is an outcome of my continued and further attention to this very useful mode of medication in my therapeutic work. Surely the prescriber who ordains an efficient and grateful trochiscus will well fulfil the third article of a very authoritative precept of medical practice—namely, *curare cito, tuto, et jucunde*.* Horace's apostrophe, "*qui miscuit utile dulci*,"† may be held of a physician who can prescribe in his own magistral formula—that is, in a formula which is appropriately varied accordingly as he finds the individual therapeutic indications afforded by each particular patient—a skilfully medicated trochiscus, combining efficient remedies in the pleasing form of a delectable sweetmeat.

Many, indeed, are the remedies which an experienced and experimented prescriber may choose for exhibition in such a form of trochiscus, and so for direct application through the agency of that vehicle to the mucous membranes, and even to the deeper parts, of the lips, mouth, tongue, fauces, nares, throat, œsophagus, stomach, and further on in the alimentary canal, and of the respiratory passages below the pharynx, and also for their general as well as

* "*Asclepiades officium esse medici dicit, ut tuto, ut celeriter, ut jucunde curet.*"—Celsus.

† *De Arte Poetica*, l. 343.

their local physiological actions and therapeutic effects. In many maladies of the oral cavities, fauces, tonsils, uvula, velum palati, pharynx, gullet, in some diseases affecting the larynx, in some bronchial and in some other pulmonary disorders, and in some other morbid conditions which may indicate the accurate exhibition of drugs (all of which conditions can alone be contra-distinguished by the fully trained member of our faculty), the basis and form of a trochiscus supply to us a convenient, agreeable, and effective vehicle for our particular selection from a large repertory of remedies.

It may be useful to recall that we owe our present therapeutic use of "lozenges" largely to the old Edinburgh *Pharmacopœia*. Early in the century last past that veteran therapist, Dr. Paris, declared that "trochisci, troches, or lozenges" were then generally regarded as objects rather of the art of the confectioner than of that of the pharmacist, and so neither the London nor the Dublin Royal College of Physicians condescended to notice them, while the Edinburgh *Pharmacopœia* gave several formulæ for their preparation. Dr. Paris held such preparations as undoubtedly useful in medical practice, not only in the officinal forms but also in certain magistral combinations, for which latter he published some valuable suggestions in his

classical *Pharmacologia*. Since his time many clinical considerations, based upon advances in our knowledge in physiology and in pathology, and the employment of certain improved diagnostic instruments of visual research, have enlarged the use of medicated trochisci. *The British Pharmacopœia* gives 17 formulæ for trochisci, these medicaments being made up variously with a "fruit basis," with a "simple basis," with a "rose basis," or with a "tolu basis." Besides these officinal preparations, many others of a like kind are to be found in our hospital pharmacopœias, while there are many others in popular use, some of them of secret composition, and some of them under proprietary exploitation, with all its baneful consequences.

In my present communication, as in others I have made upon the subject, I aim at encouraging my professional brethren to prescribe medicinal trochisci in their own magistral formulæ, and I desire to draw their attention to a new vehicle of the kind which I have found useful in practice—namely, the "chocolate cream." As we know, chocolate is made by triturating in a heated mortar the roasted seeds of the *Theobroma cacao*, freed from their husks, with an equal quantity of sugar (saccharose), and making the mixture into a paste with water, having

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flavoured it variously, as with vanilla or with cinnamon, and the "cream" is made by filling a small globular envelope of this mixture with a small portion of milk which has been mixed with sugar and evaporated by the aid of fire to a pasty consistency. It is this latter paste which should be medicated from our prescriptions by the pharmacist. Some skilful members of the craft have succeeded well in carrying out my own wishes to such purpose. Such medicated trochiscus we may prescribe, for example, thus:—

R. Menthol, gr. $\frac{1}{10}$.
Ol. eucalypt., \mathfrak{m} $\frac{1}{5}$.
Pastæ lactis,
Pastæ nuclei cacao, āā q.s.

Fiat trochiscus, sec. artem.

Or the pasta lactis in each trochiscus may be medicated by the addition to it of a grain or two of borax, or half a grain of sulphate of zinc, or a minim of oil of turpentine, or of oil of cajuput, or half a minim of oil of anise. The various clinical indications for the choice of these and of other medicaments which may be exhibited in the vehicle I now propose are well known to our profession and are alone distinguishable by one of us, so that any enumeration of the symptoms which suggest the use of such remedies is unnecessary in any communication from me,

and in the public interest, for reasons which will at once occur to us, such enumeration would be undesirable.

Perhaps the trochisci I have now described might be called cremules and, Latinised, cremulæ. When quickness of preparation is to be wished for unmedicated ones can be medicated readily by remedies which are liquid in their form, by injecting a minim or so of the medicament into the centre of a "simple" cremule, by the aid of a hypodermic syringe, or such a cremule can "elegantly" be medicated by perforating its base, removing some of the cream, and filling in the medicament selected.

XIX.

FUMING INHALATIONS IN ASTHMA.*

Experience of their use.—Favorite formula for a fuming inhalation.—Therapeutic effects.—Other formulæ.

THE relief of dyspnœa which the use of a well-arranged fuming inhalation affords in spasmodic bronchial asthma is indisputable. The relief of dyspnœa in bronchial asthma, albeit an urgent necessity and a striking achievement, is only a part of the therapeutics of such a case. Such cases differ widely in their remedial indications, and these can only be ascertained by careful enquiry, by physical and other examination. Great is the popular vogue of the "asthma powder." The quack has pilfered not a little from regular medicine, and regular medicine may still learn something from the quack. We should consider popular quack remedies with care; they are often suggestive of better things,

* Revised from papers on the subject, which I published in *The British Medical Journal* in 1881; in *The Birmingham Medical Review* in 1887; in *The Midland Medical Journal*, March, 1904; and in *Folia Therapeutica*, April, 1907.

and many of them merit the attention of our learned faculty. But we should consider them to proscribe them, and never to prescribe them; to learn wherein their virtue, if they have any, may lie, and to beat them, as we always can beat them, from the truer and wider resources of our own therapeutic art. The need of breathing is an urgent necessity; the desire for air, when our lungs are short of it, is more pressing than any other human appetite; no skill is needed to appreciate its urgency; and the relief afforded by the use of certain burning and smoking inhalations in the throes of a suffocative paroxysm of bronchial asthma is now amongst current popular knowledge. Certainly the relief is real, great, and quick in many cases. Many proprietary nostrums "in the market" for this purpose agree in containing about 25 per cent. of saltpetre, and this salt is mixed with various combustibles of vegetable origin, usually taken from plants which have some sedative and antispasmodic virtues. Alike in the interests of our patients and of the advancement of medical science and practice, the use of proprietary medicaments, and especially of those of them which are of secret composition, should be firmly discouraged and strenuously resisted. It is sometimes not easy to surpass them; but here the easier course is not the best.

In my experience in practice the relief of dyspnœa which the use of a well-arranged fuming inhalation affords, in the difficult respiration of the bronchial varieties of asthma, is unquestionable. For many years I have prescribed, in that best way of prescribing drugs, namely, in my own magistral formulæ, each one carefully adapted to the individualism of particular patients, certain preparations of this kind, with signal therapeutic advantages. Some years ago public attention was attracted to this method of relieving the obstructed breathing of the asthmatic paroxysm by references in the newspapers to the relief from suffering which the use of a fuming inhalation, the material for which inhalation was supplied in the form of a well-advertised proprietary nostrum, the “ . . . Asthma Cure,” afforded to a dying statesman—the Earl of Beaconsfield.

Some years before this time an intelligent gentleman (and this kind of asthmatic is nearly always a man, and a markedly intelligent one) who had suffered long from severe dyspnœal paroxysms, recurring almost nightly, of bronchial asthma, consulted me as to his case, and told me that he had tried a large number of remedies, and that none relieved him so much as did the inhalation of the smoke yielded by the burning

of an "anti-asthmatic powder," which powder was a secret preparation and could only be bought at a particular place in London. Physicians and all medical practitioners of experience agree that the individual experiences of an intelligent patient who has suffered from a painful malady of long standing as to the remedies he uses are usually well worthy of our consideration. This case led me to examine with some care, both as to therapeutic and pharmacological details, the method of relieving the form of asthmatic paroxysm under consideration by the employment of the smoke of burning drugs as fuming inhalations. My work led me to the construction of a formula for an "asthma powder," for which I have found frequent employment in my practice, and it has fulfilled therapeutic expectations well. The relief of the kind of dyspnœa for which it is designed, obtained by the use of this powder, has been very evident; besides, if our patients are about to use an "asthma powder," surely it is best they should use one of our own prescribing, one the composition of which we know, one the action of which we understand, and one upon which we can rely. For many years I have prescribed the following formula as an adaptable basis for a fuming inhalation for many of my bronchially asthmatic patients, with therapeutic success:—

R. Potassii Nitratis Fusæ, ʒss.

Pulv. Anisi Fruct., ʒss.

Pulv. Stramonii Fol., ʒi.

M. ft. pulv.

A small teaspoonful of this powder is placed in the socket of an earthenware candlestick and lighted at the top with a match. It burns with a smouldering and gently deflagrating flame, and is held near and beneath the patient's face, who breathes in the smoke as it issues from this burning. I have devised lately this admirable use of a candlestick, so much "handier" than the obsolete pyramidal pile on a plate, or spoonful in the bottom of a teacup. The ingredients of the powder should be dry, well mixed, and finely powdered. To this formula, judiciously used as an adaptable basis, the skilful prescriber will know how to add various other ingredients from our therapeutic armamentarium, such as opoponax, storax, benzoin, and many others, accordingly to individualities of each case as ascertained by competent examination and observation of the patient's progress.

This method of treating the painful difficulty of respiration which arises in bronchial asthma is very marked in its good effects, in most of the cases in which it is properly employed. The inhalation of the pungent and

soothing smoke of the burning powder appears to produce several good results, namely, it allays bronchial irritability and spasm, promotes copious and free expectoration, and gives relief, *tuto, cito, et jucunde*, to the distressful dyspnœa. Such indications are important, and often imperative. For such help the patient presses urgently; want of breath is one of the most urgent of human needs; the patient's anguish—and no anguish is like unto it—is a mixed result of the physical and of the psychical, of his material necessity and of his mental alarm, of what he feels and of what he fears. As therapeutists we cannot expect the use of fuming inhalations in the treatment of bronchial asthma to be much more than palliative of the dyspnœal paroxysms; but this indeed is much. For fuller treatment of the disease and of the subject of it—that is to say, for the reduction of the frequency and of the severity of the asthmatic attacks, and for their abolition, many other resources of the physicians' art have efficacy; for example, in the several directions of medicinal, dietetic, climatic, hygienic, respiratory, and gymnastic therapeutics. These must be variously selected and combined according to the idiosyncrasies of individual patients, as ascertained by examination and determined by experience and skill.

In asthma, as in all disease, each patient is a law unto himself, and he who can read that law the best is the sufferer's best medical adviser.

As a variant of the powder, of which I have just given the formula, one may prescribe another containing lobelia, black tea, and oil of eucalyptus.

Or, when and where the pungent fumes of sulphur in combustion may be indicated, sublimed sulphur may be added.

Away from a pharmacy one might wish to extemporize a good fuming inhalation. A mixture of one part, by weight, of saltpetre and two parts of black tea powdered makes a good asthma powder for burning for emergency use, and both these ingredients are usually to be found as household possessions.

I have devised two other variants of the fuming inhalation, of a milder kind than those already detailed in this paper, which will be found useful in the management of some of those catarrhal bronchitic cases which manifest dyspnœal tendencies of the slighter kind. One is made by making spills of blotting paper and soaking them in the compound tincture of benzoin, B.P., for a few minutes; these are set aside to dry. One of the dried ones should be lighted, the flame blown out in two or three seconds, and the smoke from the smouldering spill should be

inhaled by the patient, the smouldering being kept up by sharply moving the spill to and fro. The other of these remedies is furnished by the fragrant smoke of burning Irish peat. A "brick" of this peat should be placed upon fire in a grate until it begins to smoulder freely, then, taken up in tongs it should be held a foot or so below the level of the patient's nostrils. In some of these cases we have to try many things before we can hold fast that which is best. Our resources must approach the infinity of the varieties of our patients.

A competent prescriber knows that no case of asthmatic dyspnœa can be treated properly as "asthma," and least so with only a fuming inhalation. In one case the effective basis of the suffering is cardiac, in another renal, in another bronchial, in another neurotic, in many one of the multiple combinations of such and other conditions. In any case all the indications of treatment claim therapeutic correspondence.

XX.

ETHEREAL TINCTURE OF CAPSICUM.*

External use of capsicum. — Advantages of ethereal tincture.

I AM finding excellent results in practice by the use of a preparation of capsicum as a rubefacient counter-irritant. In my hands, this old remedy, cayenne pepper, has been successful as a local application in cases of sub-acute gout, in chronic gout, in chronic articular rheumatism, in muscular rheumatism, and also in some cases of bronchial catarrh and chronic bronchitis. After some consideration and observation upon the subject, I decided to employ an ethereal tincture of the drug, of the strength of the alcoholic tincture of capsicum of the Pharmacopœia, but made with officinal pure ether instead of with rectified spirit of wine. After some satisfactory use of this ethereal tincture in my own experience as a physician, I venture to recommend the remedy to my brethren. I find an ethereal tincture of capsicum, by reason of the comparatively rapid evaporation of its ether, can be used

* A note published in *The Lancet*, May 17th, 1890.

more freely than an alcoholic tincture, as an application to the skin. Furthermore, the solvent action of ether upon the sebaceous secretion of the skin makes ether a menstruum preferable to alcohol for drugs designed to affect the cutaneous surfaces, or to produce therapeutic effect through the skin. If a little ethereal tincture of capsicum be gently rubbed upon the back of a hand, it will produce a feeling of warmth, with some sensation of burning and pricking, in about a minute's time, together with an irregular and patchy hyperæmic redness, which may last some hours. If the tincture of capsicum be used as a rubefacient in the form of a liniment, an oily admixture gives frictionability, and an equal part of some bland fixed oil may be added. Solution of ammonia, or oil of turpentine, or both of them, in such a liniment are good adjuvants, if a sharply rubefacient effect be desired. An excellent and powerful rubefacient liniment may be made of equal parts of ethereal tincture of capsicum, liquor ammoniæ, oleum terebinthinæ, and oleum lini. This tincture may also be applied to the skin upon spongio-piline.

XXI.

ETHER AS A MENSTRUUM IN MEDICATION BY THE SKIN.*

Absorption of medicines by the skin.—Faultiness of the officinal plasters.—Obstacles to absorption by the skin.—Advantages of ether as a menstruum. — Ethereal tinctures. — Belladonna.—Iodine.—Menthol.

IN some researches as to the remedial actions of medicines which I have been making for some years, it has occurred to me that the use of the skin in therapeutics, as a channel for the exhibition of remedies designed to affect either local or remote curative results, or both of them, might be extended in range, cleared in precision, and improved in efficacy. Every practitioner of medicine knows that the human body, in many of its organs and tissues, can be readily brought under the direct and distant influences of hydrargyrum by the cutaneous inunction of mercurial ointment. It is easy to question the efficacy of remedies exhibited by the skin when the effects which they produce are less objective in their demonstration than those of mercury.

* A paper published in *The Lancet*, July 12th, 1890.

The capacity of the skin to absorb medicinal substances from their aqueous solution in baths was accepted in the medicine of the ancients, whose therapeutic uses of medicated baths we are now learning, after a long time, to imitate. The question has been discussed frequently since the close of the eighteenth century.* At that time Abernethy and Falkner concluded, from a series of experiments, that the absorption of some remedies through the skin did take place under certain conditions; and, while some other observers were led to qualify or to contradict these inductions, affirmative conclusions upon the subject were fully supported by Braconnot, Chevallier, and Petit, and by other investigators. Some striking instances of efficient percutaneous medication are well known to us. For example, ointment of aconitia, when rubbed upon the skin of the face, produces anæsthesia of the subjacent sensory nerves, "so that a razor passed over the part in the act of shaving is not felt."†

We are accustomed in medical practice to present remedies to the skin, with a view of producing remote as well as local effects, in the various forms of the officinal emplastra, of the

* See Dr. Scoresby-Jackson's Notebook of *Materia Medica*, etc., fourth edition.

† Farre's *Pereira's Materia Medica and Therapeutics*.

officinal liniments (alcoholic, oleaginous, and saponaceous), and of fatty unguents. Of these separate forms of medicaments in enepidermic use, the ointments and the oily liniments are probably the most active, because of their easy admixture with the fatty sebaceous secretion of the skin. I do not think the structure of any Pharmacopœial plaster is such as is likely to permit of the absorption of its active ingredients. Neither a plaster of any of the officinal formulæ nor a solution in alcohol of the active principles of drugs is a scientific medicament for enepidermic employment and percutaneous action, if we have regard to the structure and physiology of the human skin.

I think it will be found there are in practice three separate obstacles to the absorption of a medicine through the skin—namely, the epidermis, the sebaceous secretion of the skin, and the relative insolubility of the drug which is employed in any particular case. After some observation and consideration, I thought ether would be the best menstruum at our disposal for the solution of many remedies designed for enepidermic application; and I concluded that ethereal liniments would be more active through the skin, and certainly stand upon a better scientific basis, than plasters, than any of the officinal liniments, or even than fatty unguents.

Ether presents several advantages over other bases and menstrua for remedies applied to the skin. It has great endosmotic capacity; it probably possesses in a high degree what has been called "diffusion power"; it is a solvent of high potency for many active drugs, or, more precisely, for the active principles of many such drugs; and it also is a ready solvent of the fatty constituents of the sebaceous secretion of the skin. When we use ether as a dissolvent for an active drug which we apply to the skin, we apply our remedy in solution in a menstruum which is a perfect solvent for the obstructing fatty sebaceous secretion of the cutaneous surface; we employ a menstruum which, by its solution of the fatty secretion, permits the most intimate application of the remedy to the bare epidermal surface. In *The Lancet* of May 17th, 1890, already quoted, I published a brief account of an ethereal tincture of capsicum, which tincture I have been using largely in practice, and which I have found to be a very active rubefacient and an efficient remedy in several painful maladies. I now venture to recommend to my brethren the employment of ether as a solvent vehicle for some other remedies which may be applied to the skin. After examining a large number of drugs, I have selected belladonna, iodine, and menthol, besides capsicum,

as suitable for external therapeutic employment in the form of ethereal tinctures. Ethereal tinctures of these well-known drugs have been made according to my directions, and it has been easy to find for these preparations some considerable application in the exigencies of daily practice. After using these ethereal tinctures with satisfactory results, I have searched my library for references to this employment of ether, and I am glad to find the following important passage bearing upon the subject, in Sir Lauder Brunton's text-book of therapeutics: "It would appear that the fat in the skin as well as the epidermis presents an obstacle to the absorption of substances in solution, but when they are applied in such a form that they can readily mix with the sebaceous matter of the skin, they are tolerably readily absorbed, as, for example, when they are used in the form of ointment. . . . They are also absorbed when dissolved in ether, and especially in chloroform, even when simply painted over the surface. Alcoholic solutions are not absorbed when painted in this way." This statement, by an authority in therapeutics so high, that medicinal substances soluble in ether are absorbed through the living skin when the ethereal solutions are "simply painted over" the dermal surface, appears to be an observation very pregnant

with remedial possibilities. It is not a little surprising that we should have overlooked so promising a development of our curative resources so completely, and so long. The disadvantages of chloroform as a menstruum of this kind are numerous and obvious; but ether serves our purpose well, either as a simple solvent, or as a menstruum in the preparation of a tincture from a crude vegetable drug. Ethereal tincture of belladonna, (*tinctura belladonnæ æthereæ*,) I propose should be made from belladonna root, with camphor, of the same strength as the belladonna liniment of the Pharmacopœia, using the officinal pure ether in its preparation instead of rectified spirit of wine. The result is a bright tincture, of a brilliant "apple green" colour. This tincture will be found useful as a paint upon the skin, in cardiac and other cases in which belladonna plasters or liniments would otherwise be employed. The external application of preparations of belladonna over the heart, to calm tumultuous, painful, irregular, and excessive beating of that organ, has long been accepted in medical practice. The preparation usually employed is the officinal plaster; if its good effects depend upon the absorption by the skin of the active principles of the extract of belladonna contained in the plaster, such a result is likely to be attained

with more potency and precision by the local use of an ethereal tincture. I have used belladonna root instead of belladonna leaves, because it gives a preparation which does not colour the surface of the skin as one made from the leaves does. In cardiac cases, *emplastrum belladonnæ* is a clumsy and inconvenient application. It is dirty, uncomfortable, not seldom irritating, and it always offers some obstacle to the examination of the heart by physical methods. Ethereal tincture of iodine I have made of the same strength as the officinal tincture of iodine. To form an ethereal tincture of menthol I have, after many experiments, fixed upon a solution of menthol in pure ether, of the strength of one drachm of menthol in a fluid ounce of the solution. This preparation can be readily applied as a paint to the skin, and it is an efficient means of using menthol for its local therapeutic effects, especially for the removal of superficial neuralgic pains. It should be lightly painted over the painful part. The quick evaporation of the ether gives a grateful sense of coldness, which supplements the analgesic action of the menthol, and allows the easy application of a succession of "coats," which leave pure menthol in a finely divided condition upon the skin. For the application of ethereal tincture of menthol I have found it best to use a brush of glass. When

the meshes of the brush become clogged with menthol by the evaporation of the ether of the preparation, they can be freed in a moment by dipping the brush into the tincture.

XXII.

DIET IN DIABETES MELLITUS.*

*Principle of dietetic restrictions in diabetes.—
Table of articles of diet permitted and forbidden.—Potatoes in diabetes.—Potato cakes.
—Bran and potato bread and biscuits.*

THE dietetics of diabetes is a subject which calls for frequent revision under experience in practice. Saccharine diabetes is an insanity of metabolism. Comparatively successful as is the modern medicinal treatment of diabetes mellitus, (glycosuria,) under skilled professional guidance, in many cases of the malady the appropriate regulation of the patient's food is a chief therapeutic point. In the management of this difficult malady it has been recognised for many years that abstinence from sugar and from articles of food which are convertible into glucose causes a great lessening in the quantity of glucose in the patient's urine, and also a marked diminution in the density and quantity of the urine, and that these changes are coincident

* A paper published in *The British Medical Journal*, 1904, and now revised and enlarged.

with arrest of bodily wasting, even with gain of flesh, and also with general improvement, in very many sufferers from diabetes. To meet these indications, much care has been taken by many physicians to devise an extended, varied, and practicable dietary. I hope it may be useful for me to give here a diabetic dietary which I have employed in practice for many years, which is sufficiently strict for all practical purposes, and printed copies of which, after making the particular emendations educed by study of the idiosyncrasies and other indications of each particular case, I am accustomed to give to patients in suitable cases. This bill of fare I published in the year 1904, amended to include potatoes and suitable preparations of them, in accordance with Professor Mossé's teaching.* We should revise the list of permissions and prohibitions in this diabetic dietary, from time to time, according to the indications of each instance of the malady.

MAY EAT :—

Butchers' Meat of all kinds, except Liver. Pork.
Ham. Bacon. Poultry. Game. Potatoes,
steamed with "skins" on. Fish, fresh or

* *Le Diabète et l'alimentation aux pommes de terre.*
Par A. Mossé, Professeur de clinique médicale à l'Université de Toulouse. Paris, 1902.

cured. Oysters. Crabs. Lobsters. Animal Soups, not thickened, excepting by potatoes. Mutton Broth. Beef Tea. Bran and Potato Bread or Biscuits.* Eggs. Cream. Butter. Cheese. Greens. Watercress. Mustard and Cress. Lettuce. Mushrooms. Nuts. Jelly or Custard, unsweetened.

MAY NOT EAT :—

Sugar. Any Bread or Biscuits but those made of Bran and Potato. Asparagus. Broccoli. Carrots. Cauliflower. French Beans. Parsnips. Peas. Turnips. Arrowroot. Macaroni. Rice. Sago. Tapioca. Vermicelli. Pastry. Puddings. Fruit, fresh and preserved.

MAY DRINK :—

Water. Coffee. Tea. Soda Water. Claret. Hock. Spirits and Water, unsweetened. Burton Bitter Ale, very sparingly. Milk, very sparingly.

* Made from pure bran and flour of steamed potatoes. For making flour of cooked potatoes, the potatoes should be cooked by steaming, with their "skins" on. If the potatoes be peeled and then cooked by steaming, they lose in the cooking large proportions of their potash and of their phosphoric acid, and they lose more of each of these their constituents if they be peeled and then cooked by boiling. I have devised this bread for the treatment of diabetes, upon adopting the beneficial results of Mossé's teaching.

MAY NOT DRINK :—

Cocoa. Chocolate. Champagne. Porter. Stout.
Home-made Wines. Liqueurs. Cider. Sweet
Wines. Ale.

Until the clinical researches of Mossé were published ten years ago,* it was a therapeutic rule to withhold potatoes in saccharine diabetes. The potato contains from 16 to 24 per cent. of starch, and it used to be classed amongst food inadmissible in glycosuria. His researches have led Mossé to conclude that potatoes are a useful food in diabetes, capable of being substituted advantageously for bread in proportions sufficient to maintain the equivalent of the alimentary ratio, that is, in the proportion of $2\frac{1}{2}$ to 3 of potatoes, weighed in the raw state, for one of bread. He found that a daily ingestion of potatoes, of from 1,000 to 1,500 grammes, roughly, of from 2 to 3 lbs., brought about in nineteen out of twenty cases of diabetes speedy diminution of the glycosuria, quick relief of thirst, and general improvement, and all this in all forms of diabetes. The salts of the potatoes are chiefly those of potash. Potash is contained in much larger proportion in potatoes than in bread, and Mossé attributes the superiority of potatoes in

* *Bulletin de l'Acad. de Méd.*, December, 1901, and *Revue de Méd.*, Fev. and Mars, 1902.

a diabetic dietary to the increased ingestion of potash.*

My experience in practice during the last ten years is confirmatory of Mossé's conclusions. I find that excellent and delicious baked cakes for diabetics can be made from a kind of flour prepared by rubbing down potatoes (cooked with their coats on by steaming), blended with cream and butter.

With the aid of some good cooks, I have made many experiments as to the formation of bread and biscuits from bran and the flour of potatoes. As the best results at present reached from these enquiries, I have decided upon the following details for the making of these new biscuits and bread for diabetics. For bran and potato bread: take, half a pound of flour of steamed potatoes; quarter of a pound of bran; half an ounce of German yeast; half an ounce of butter; one egg. Twenty-four hours before making the dough, cook the potatoes by steaming them in their "jackets," then peel and break up into flour with the fingers. Mix all the ingredients together, and let the paste stand near the fire for an hour, to "rise." Bake in greased tins for one and a half hours.

The permission of potatoes to diabetics is one of the greatest of the dietetic advances of our times.

* This brief summary of the papers published by Mossé is based upon an abstract of them by Dr. Cocking, in *The Quarterly Medical Journal*, August, 1902.

XXIII.

PLUMMER'S PILL IMPROVED.*

*Digestive insolubility of the officinal pill.—
Improved formulæ.*

PLUMMER'S pill is relied upon in certain maladies which are well known to medical practitioners. It is of the first and last importance that the activity of its specific ingredients shall be beyond suspicion. A few years ago, in a case of coarse disease of the spinal cord in a male adult I decided to exhibit hydrargyrum internally, for prolonged use. I prescribed for him a Plummer's pill, B.P., (*pilula hydrargyri subchloridi composita*), to be swallowed three times daily. After a few weeks of this medication I increased each dose to two of these pills, and these were taken three times daily for several weeks. No physiological effect of hydrargyrum appeared. Then the patient brought to me some of the pills which he had been passing per anum for some time and which incident, which he regarded as highly satisfactory, he thought he ought to report to me. The pills

* A paper published in *The Lancet*, December 1st, 1906, under the title "The Indigestibility of Plummer's Pill."

passed per anum were easily recognizable upon examination by their size, colour upon section, and consistency as Plummer's pills; their shape was a little flattened and elongated from the usual spherical pilular form. These pills had not been "coated." The patient said he had found them in his fæces many times. That the Plummer's pill of the B.P. can pass through the human alimentary canal unchanged was quite new to me. Such a possibility is of much moment in the therapeutics of those cases of disease in which we exhibit hydrargyrum, and calls for instant professional communication, together with certain considerations and experimental observations of mine, with the view of explaining and avoiding an important therapeutic mishap. The passage of this pill from mouth to anal voidance unaltered may explain some instances of failure in remedial medication in which this form of specific treatment has been relied upon. As is well known this pill has long been in general medical use. In conjunction with Mr. Bennison, F.C.S., of the staff of Messrs. Southall, pharmacists, I have made a number of experiments in examination of the digestive solubility of Plummer's pill. One of these pills, quite freshly made according to the B.P. formula, was digested in water at 100° F. for 36 hours, when it was found to be unchanged.

The officinal formula orders, of mercurous chloride and of sulphurated antimony, each one ounce; of guaiacum resin, two ounces; of castor oil, 180 grains; of alcohol (90 per cent.), one fluid drachm or a sufficiency. These have to be mixed "to form a mass," of which the dose is from four to eight grains, in pill or pills. When I found that this pill could be digested in water at 100° F. for 36 hours without change an examination of the officinal formula suggested that the fault might be the mixing of alcohol and guaiacum resin. This resin is soluble in alcohol to the extent of 91 p.c. It seemed likely that a mixture of this resin and alcohol, in the proportions ordered in the B.P. formula for Plummer's pill, would "set" with the other ingredients of the pill into a resinous mass, which could resist solution in water, as in my experiment, and resist the digestive powers of the human alimentary canal. Thereupon I made search for the original formula of Dr. Plummer. I found it in "Medical Essays and Observations, published Edinburgh," Vol. I., *circa* 1752. Therein, at p. 42, I found Plummer's paper, headed, "An Alterative Mercurial Medicine: by Andrew Plummer, M.D., Fellow of the College of Physicians, and Professor of Medicine in the University of Edinburgh." In this essay the author gives his formula, as follows:—R. Sulph. aurat. Antimon,

Calomel. non pp. a Drach. ii. Calomelas in crassum pulverem redactum lævigetur super marmor, per vices addendo Sulph. Antimonii portionem et diuturno tritu fiat pulvis subtilis. Dein. R. Pulver. præcedent, Unc. sem. Gum. Guaiac, Drach. iii. Resin. Gudiac. Drach. i. Balsam Cappyvi q.s. ut fiat massa pilularis ex cujus singulis Drachmis formentur Pilulæ xij.

Pills made accordingly to this formula also remained unchanged after digestion in water at 100° F. for 36 hours.

In the digestion used in my experiments, human gastro-intestinal digestion is not imitated identically; but my test is a fair one in concluding the probability of the activity of a medicament of the kind in question when ingested by swallowing. I propose to my brethren that instead of prescribing Plummer's pill we should use a magistral formula, in these terms:—

R. Hydrargyri Subchloridi, Antimonii Sulphurati, aa., gr. j; Resinæ Guaiaci, gr. ij; Syr. Glucos. q.s. ut fiat pilula.

A pill made accordingly to this improved formula disintegrates completely into a sedimentary powder in water at 100° F. in 90 minutes.

I hope this better formula may replace the old one in the new edition of *The British Pharmacopœia* now in preparation.

If there be risk of dispensing the pills in the old faulty formulæ it would be avoided by prescribing their three active ingredients as a powder.*

* My thanks are due to Messrs. Southall, and especially to Mr. Bennison, F.C.S., chief pharmacist of their staff, for help in the numerous experiments upon which this paper is founded.

XXIV.

PREPARATIONS OF OLIVE LEAVES.*

Therapeutic utility of olive leaves.—Records of their employment.—Constituents.—Tinctura. — Extractum. — Tinctura Oleæ Foliorum Ammoniata.

I HAVE found a promising remedy in the leaves of the olive tree (the European olive, *Olea Europæa*). Some time ago I directed Messrs. Southall to make a tincture of these leaves (*Tinctura Oleæ Foliorum*), in relative strength and in mode of preparation like the Tincture of Buchu, B.P.—namely, four ounces of the leaves being exhausted by alcohol (60 per cent.) to make a pint of the tincture. This tincture proves to be of a brownish olive-green colour, with a faintly aromatic odour, and a pleasant, hop-like, bitter, and faintly sweetish taste. With water it makes an opalescent mixture with slight dichromism between greenish and brownish tints. There are some qualifications as to its compatibility. With ferric salts it makes an inky mix-

* From a paper, "*Tinctura Oleæ Foliorum*," published in *The Pharmaceutical Journal*, October 6th, 1906; now revised and augmented.

ture, the colour and taste of which might be thought to be objectionable, although we have "Heberden's ink" as a precedent.

My attention was drawn to the therapeutic value and remedial opportunities of the leaves of the olive tree by another study of that mine of medicamental wealth, Pereira's "Elements of Materia Medica and Therapeutics." Pereira bases his account of the medicinal uses of the leaves upon a paper by the late Daniel Hanbury, which appeared in *The Pharmaceutical Journal* for February, 1854, and writing at the time of the Crimean War he declared that "in the treatment of the numerous cases of fever now presenting themselves in the military hospitals in the East it would be desirable that practitioners should give a fair trial to so easily accessible a substitute for the costly quinine." A copy of Hanbury's paper is before me as I write. He gives the following interesting and very suggestive quotation from a letter from his friend, Mr. Maltass, of Smyrna:—

I may here tell you of a discovery I made in 1843 which has proved valuable. I was in the island of Mitylene, and at a time when fever and ague of the worst description were raging in the island; in fact, it was so bad that death ensued frequently after a week or ten days. The small quantity of quinine at the druggist's was soon exhausted, and I could procure none to administer to patients. Knowing that biberine and salicine

were often used for fever and ague, I turned over in my mind all the bitters I could think of. . . . thought of olive leaves, and after several trials made on myself I commenced administering doses of a decoction of the leaves, say two handfuls boiled in a quart of water till evaporation had reduced it to a pint. This I gave in doses of a wineglassful every three or four hours. Obstinate cases of fever gave way before it, and for many years I have found it more effectual than quinine. . . . It is a most valuable remedy for the poor in an olive-growing country.

Hanbury found that during the Peninsular War, 1808-13, olive leaves were frequently prescribed by French practitioners as a substitute for cinchona bark; and he quotes the analysis of Dr. Pallas, published in 1828, from which it appears that the leaves and young bark of the olive tree contain a crystallisable substance which Pallas designated "vauqueline," and also a bitter principle, to which latter he especially attributed the febrifuge properties of the plant. It has been found that the young bark of the olive tree contains more of these matters than do either the leaves or the old bark; but, after consideration of this point, I have selected the leaves for therapeutic use, as likely to furnish preparations of relatively more constant constitution than any made from the bark, the latter varying in active materials according to its age. Tincture of olive leaves may be given as a tonic, in doses of 15 to 30 minims, and as a febrifuge

and antiperiodic in larger dose. At my suggestion pharmacists have also made an alcoholic extract of the fresh (green) leaves. This gives a preparation of a sea-green colour which may be given as a tonic in 5-grain doses or more in a pill, or rubbed up with some aromatic water in a mixture.

My later work in the therapeutics of olive leaves has suggested to me an ammoniated tincture, and I have directed the preparation of *tinctura oleæ foliorum ammoniata*, made in proportions analogous to the officinal ammoniated tincture of valerian, and I prefer it in practice to the simple tincture I first described.

XXV.

A NEW USE OF PIPER NIGRUM.

Black pepper in "drink" craving. — As a stomachic.

THE therapeutic uses of capsicum in the treatment of the craving and dyspepsia of alcoholic drunkards have long been well known to the medical profession. Sir Lauder Brunton wrote that capsicum "is recommended to relieve the sinking in the epigastrium felt by dipsomanics. It promotes appetite and stimulates the stomach." Others have corroborated his conclusions in this very important detail of everyday practice. It is always a gain in our adaptations to the variable idiosyncrasies of patients when a reliable substitutive succedaneum to a well-known medicine is established. It has come to my knowledge that in some of the poorer districts of London it is usual for dipsomaniacs, when their funds fail them for vinous drinks, to solace their cravings with considerable success by the consumption of an infusion of black pepper. From this fact I venture to suggest we should take an obvious therapeutic hint. So I have had made

a Tinctura Piperis Nigri Fortis, proportioned upon the analogy of the tinctura zingiberis fortior of a former B.P., thus:—Take of black pepper, in fine powder, 10 ounces; rectified spirit a sufficiency. Pack the pepper tightly in a percolator, and pour over it carefully half a pint of the spirit. At the expiration of two hours add more spirit, and let it percolate slowly until one pint of the tincture has been collected. Dose, 5-20 minims.

Besides the use in “drink” craving I have suggested, this excellent tincture may find frequent and felicitous employment as an adjuvant and corrigent when stomachic, carminative, stimulant, and digestive effects are desiderata.

XXVI.

LUMLEIAN LECTURES.

LECTURE I.*

POINTS OF PRACTICE IN MALADIES OF THE HEART.

Acknowledgments.—Statement of subject.—Progress in cardiac pathology and therapeutics in forty years.—Physical signs.—Juster estimation of valvular and mural lesions. — Improvements in prognosis. — Influence of discovery of the stethoscope. — Value of physical methods of examination.—Frequency of maladies of the heart.—Wide vital and pathological connections.—Importance of the lymphatic circulation. — Wide connections of cardiac disturbances.—Therapeutics in diagnosis and in prognosis.—A heart case is never only a heart case.—Recent advances in the histology and in the physiology of the heart.—Myoneurogenic theory.—Security against stoppage of the heart's action. — Co-operation of physiology and medicine in practice, after Harvey.

Mr. President, Fellows, and Gentlemen :—

I pray you allow me to express my high appreciation of the honour which the President and Censors of our College have placed upon me,

* Delivered before the Royal College of Physicians on March 28th, 1908, the President, Sir Richard Douglas Powell, K.C.V.O., Physician in Ordinary to the King, in the chair.

in their invitation to deliver the Lumleian Lectures. I understand that these historic and commemorative lectures are always given by a senior among the Fellows, and are upon some subject in the practice of medicine. Such an authoritative invitation conveys and imputes a prescriptive obligation to its acceptance. So I obey, and with pleasure. For the fulfilment of this allotted duty I have turned to records and memories of many years of clinical investigation, of bedside teaching, and of reading in medicine, and I have found amongst them a subject of our practice which is of perennial interest, which has, indeed, been brought before the College of recent times in many of its manifold aspects by several distinguished Fellows, but it is a subject which can never be absent from the minds of those who realize the possibilities which attend the physical investigation of the living manifestations of disease. Within the time at our disposal one could not relate an orderly and complete account, even with vigilant brevity, of the diagnosis, prognosis, and treatment of the heart's organic diseases and functional disturbances. I can attempt only to offer to my hearers, with great respect and deference, and in as orderly an arrangement as may be, some portions of those subjects, so far as they have engaged my experience in medical

practice, in thought, in observation, and in some literary and experimental research. With full confidence in the sympathetic support of my audience, I venture to invite my brethren to give their attention again to topics which are familiar to them, while I try to discharge the office which has been bestowed upon me, by those in authority in this renowned and venerable College.

There is nothing which pathology touches which does not adorn a physician's understanding of the heart. No therapeutics can ignore that organ's weal. Those of us whose memories of cardiac pathology and therapeutics extend over, say, forty years,—those practising physicians whose clinical experiences cover a participation in the views and work of our profession which were current at any particular time within those four decades, in our views concerning the several blended subjects of the diagnosis, prognosis, and treatment of maladies of the heart, will be likely to agree that certain movements of our points of view in these important matters have been evolved from our joint and several work. Such movements of thought are largely subconscious, and sometimes it is well to note their existence and to take stock of their effects. While several very distinct additions, and some of them enduring ones, have been

made to our knowledge of the origins, of the courses and of the treatment of diseases and disorders of the human heart, and whilst amongst those additions to our science and to the resources of our art are to be counted no less signal gains than the invention and the use of Marey's sphygmograph and of his cardiograph, the portentous discovery of a new and a microbic pathology, and Sir Lauder Brunton's great gift of the potent therapeutics of the nitrites, while these epoch-making advances, and many other improvements, perhaps less notable and of less momentum, have been achieved, our physicians' view, while it has broadened and brightened, does not appear to have spread and cleared quite symmetrically. Perhaps it is always so with an art which is perpetually indispensable to humanity, and which rests upon an ever widening and ever deepening science, like our art is and does. Forty years ago, the stethoscope of Laennec, as then not old, was biassing us towards a reliance which was, perhaps, not seldom an undue one, upon its enthralling revelations. That "gift of science to a favoured son," as Stokes called it, dazzled us, perhaps, and not a little. We might sometimes not recollect that physical signs, how plain and positive soever they may be, are not a diagnosis, but only a help to it; at the most, only one of its foun-

dations, and, great and reliable as they are, nothing more. I understand it is a maxim of criminal law that direct evidence is not so reliable as complete circumstantial evidence. So is it in medicine as to diagnosis, even in physical diagnosis. Of the great value of the physical signs of disease, as they are brought out by the stethoscope and other similar aids to their manifestation, we have all been long agreed. As Stokes soon pointed out, "it is on the discovery, explanation, and connection of those signs with organic changes, and with the symptoms and history of the case, that Laennec's imperishable fame is founded."* "With the symptoms and history of the case," of *the* case, be it noted, "case" in the singular, each one by itself, with its own unique individuality. But, forty years ago, physicians, it would seem, had not then quite "got over" the appearance of the stethoscope, and the comparative perfection of the science of auscultation. About twenty-five years ago, and many years after this great advance upon the ancient immediate auscultation, certain advances in microscopic and in comparative pathology, and in bedside research, turned us, perhaps a little too far for a just balance, turned us from our auscultatory refinements as to defects of valves and of orifices, and

* Treatise on Diseases of the Chest. Dr. Stokes.

from our explanations, perhaps too mechanical, of physical defects and their consequences, turned us to a fuller and truer examination and appreciation of the part which we had to give in our cardiac pathology and therapeutics to many vital changes in the shape and structure of the heart's flesh and in the form and texture of the blood-vessels. And, now, of later times, with a maturer mind, we find the just mean between these two views; each point of view is taking its right place in a better understanding of the maladies of one of the chief of the central organs of our lives. Amongst those of our leaders who have pointed out such a justly balanced view are two of my distinguished predecessors in this chair, the late Sir William Broadbent* and you, yourself, Sir,† each of whom has addressed the College with much illumination upon the principles and practice of physic in regard to diseases and disorders of the heart.

Of much interest would it be to practising physicians to trace the growth of knowledge of the nature and treatment of maladies of the

* Dr. (afterwards Sir) William H. Broadbent was the Lumleian Lecturer in 1891, and the subject of his lectures was:—"Structural Diseases of the Heart from the point of view of Prognosis."

† Sir Richard Douglas Powell was the Lumleian Lecturer in 1898, and the subject of his lectures was:—"On the Principles which govern Treatment in Diseases and Disorders of the Heart."

heart, not from the beginning of such a history, for that would be a long account remounting to the remotest records of our art, but during the last hundred years, or, as approximately that time, in the nineteenth century. In ailments of the heart, in that hundred years, a surely grounded hope, and our powers for the patient's good, have grown apace. At the beginning of that century Baron Corvisart, the learned head of the imperial medical service of France, opened his classic book on diseases of the heart with a line of well nigh hopeless sound: "*Hæret lateri lethalis arundo.*"* True was this sombre superscription in his time, when even Withering's immortal revelation of the curative uses of digitalis, of a decade or two earlier, did not appear to have passed into current professional knowledge. But such was the advance of medicine that Walshe, soon after the middle of the century, was able to declare that the gloomy meters of Corvisart's Virgilian quotation had lost much of their fitness to his subject, and to ask us to rejoice with him, as he did in the last edition of his great book, in 1873, that our knowledge of non-organic affections of the heart had found a wide extension, as to their nature

* A Treatise on the Diseases and Organic Lesions of the Heart and Great Vessels. By J. N. Corvisart, M.D. Translated from the French by C. H. Hebb, M.R.C.S. London. 1813.

and as to their successful treatment, while he was able to declare too, as he did in his precise and cautious way, that medical means of controlling the progress of structural diseases of the heart had continued to improve, and that their hygienic management had made marked advancement.* Another distinguished Fellow of the College, Peter Mere Latham, told us that, when he came up to St. Bartholomew's from Oxford, in 1810, the treatise of Corvisart was in the hands of all the students, and that it deserved to be, for in it there was full knowledge of the best kind given in the best way; and he pointed out that Corvisart was the first to bring the whole subject of the pathology and diagnosis of diseases of the heart out of obscurity, that it seemed impossible that the diagnosis of these diseases could have been carried further than Corvisart brought it by anything less than some new discovery in clinical observation, and such discovery was made by Laennec in his momentous invention of mediate auscultation.† Since Walshe's time the progress he helped so much has been kept up. Our diagnosis has gained in precision, our therapeutics has grown in range

* A Practical Treatise on Diseases of the Heart, &c. By W. H. Walshe, M.D., F.R.C.P., &c. London. 1873.

† Collected Works of Dr. P. M. Latham. Vol. I. New Sydenham Society. 1876.

and in exactness, in the use of new drugs and in the estimation of older ones, while what Walshe called the hygienic management of cardiac maladies has been helped by knowledge of how to live in physiological obedience, and by the reasoned use of physical exercises, such exercises being selected upon a skilled appreciation of the possibilities of each patient. In ailments of the heart it has been as true as it ever is in our practice, that the proportions of our power take measure from the extent and precision of our knowledge. During the later three-quarters of the nineteenth century, and until to-day, the clinical study of maladies of the heart has been carried forward with untiring industry and with much success. In no other part of the science and practice of medicine has more brilliant advancement been won, in practical knowledge and especially in remedial opportunities. It is beyond question that this great progress has been due in a large part to the use of various methods of physical examination, in the investigation and treatment of these affections. These methods have been multiplied, their applications refined; and the results of their employment have been differentiated more and more. Especially has the discrimination of cardiac maladies by the objective signs yielded by percussion and by auscultation been ad-

vanced to much precision, and all this by continued and by multiplied toil, by the bright contrivings and long researches of many minds and by the patient labours of many hands. The older physical methods of inspection and of palpation have not been superseded; rather have our later elaborations of auricular methods, in auscultation and in percussion, strengthened the indications and pointed the value of those signs which the watchful eye can see and the erudite hand can feel.

Still limiting this brief retrospect to the hundred years last past, one may note two other important details in which our notions as to maladies of the heart have found significant development. One of these points concerns the frequency of these affections; the other springs in part from a recognition of that frequency, and is that wider view of cardiac diseases and disorders which is giving us a more efficient grasp of their treatment, of their treatment not by drugs alone, but also by hygienics, and by every agency we can bring into use for the help of their therapeutics. The frequency of heart affections, relatively to that of other human maladies, does not appear to have increased of later times. The forces which make up the stress and strain of the later civilization do not seem to have caused increase in the relative

number of cardiopaths amongst us, if, perhaps, we may except those heart ailments which go with certain neuroses, of which neuroses a marked phase is what may be called an exaggerated consciousness as to the heart. As to the more serious cases, it is likely that a more general temperance in the taking of victuals and of drinks, non-alcoholic as well as alcoholic, together with the cultivation of personal hygiene, has lessened the frequency of those cases of serious heart disease which arise from chronic alcoholism, from chronic renal disease, from rheumatism, from gout, and from syphilis. It would seem that these conclusions are what long experience in practice suggests. But maladies of the heart have been shewn by modern clinical methods to be more frequent than they used to be thought to be. Since physical diagnosis has found its modern developments as to the heart the affections of that organ have been found to be amongst the commonest of illnesses, in every country and at every time of life. Upon this point a former president of the College, Sir Thomas Watson, said he could remember "the time when disease of the heart was thought to be a very rare thing"; but that such disease became to be regarded as one of the commonest of disorders, and as connected with a variety of other affections with which

it was formerly supposed to have no relation.* This change of view, this finding of the truth, was in part a sudden revelation due to mediate auscultation, and in part a gradual growth from the use of that and of other physical methods of clinical research. It was one of the products of modern methods of exploration in diagnosis, when the systematic use of those methods was blended with the teachings of an advanced physiology, and with the discoveries of a wider and minuter pathological science.

From this recognition of the abiding frequency of organic diseases and of functional disorders of the heart, and from a truer appreciation of the causes of that frequency, has arisen a great and far-reaching qualification in our view of how far the structural and functional changes which form the maladies of the heart may be dealt with as things somewhat apart, of how far such changes should be regarded as portentous matters with an impress and intrinsic characters of their own, as matters which have a peculiar clinical and vital detachment, as it were, of their own kind. Modern physiology, modern pathology, and physical diagnosis have each widened our view. Our later physiological knowledge has given us

* Lectures on the Principles and Practice of Physic. Third edition. London. 1848.

proofs to demonstration of how manifold, how intricate, and how widely spread throughout the human body are the influences which govern and affect the circulation of the blood. Physiology has shown us that, at the centre of the human circulatory system, of heart, arteries, capillaries, and veins, there lies and works the cardiac musculature, and near the periphery the musculature of the minuter arteries, and that on these two instruments of power many influences are constantly acting and reacting, according to the needs of the body. More and more have morbid cardiac changes become to be seen as what they are, as incidents, though prominent and often vital ones, in many pathological abnormalities. It is seen that the heart, in its complex functions in health and in their manifold derangements in disease, is the main-spring and active centre, the "prince in the commonwealth," as Harvey called it,* in a vascular system which comprises, besides itself, and the arteries, capillaries, and veins of the systemic and pulmonary circuits, the lymphatic vessels and the lymphatic glands, together with certain ductless glands, and the blood also, and the various fluids which may be its tributaries. We remember how inseparable are the lymphatic

* The Anatomical Exercises of Dr. William Harvey, &c. London. 1653. Harvey was the Lumleian Lecturer in 1615.

and the sanguineous circulations, how intimate is their connection in structure and in function. The circulating lymph is slowly moving, from the blood and into the blood, exuding from the blood through the walls of the capillaries, and flowing back to the blood, with what it may bring with it, through the lymphatic vessels, which vessels come from all parts of the body, and at last form the greater and smaller thoracic ducts, which are always pouring their contents into the blood in the left and in the right sub-clavian veins. We know how important is this lymphatic circulation, to the blood and to the heart. We know how large is the whole amount of lymph in the healthy living body; it is measured at twenty-five to thirty per cent. of the body-weight, that is, at three or four times the amount of the blood.* As to the place of certain ductless glands in the scheme of the vascular system, we may recall that the fruits of some recent researches shew the relationship of the functions of those glands with the beats of the heart. Cyon, who is distinguished as one of the discoverers of the accelerator nerve of the heart, has recently developed his hypothesis that the thyroid, adrenals, and pituitary are glands which have the especial function of regu-

* Human Physiology. By Augustus D. Waller, M.D., F.R.S. London. 1893.

lating the nerves of the heart, and even that the proper action of the pneumogastrics is maintained by a secretion of the thyroid.*

But our wider view in every case of disease or of disturbance of the heart must be far wider still. Extended and complex as is the vascular system, it is only one of many so-called systems of the human body which are in living co-operation with it. Not one of such systems is there but what is "in touch," so to speak, more or less directly, with each function and with every derangement of the heart, through nervous impulses of excitation, of depression, of inhibition, and these sometimes of thought, of volition, or of feeling, through the conveyance of secretion or of excretion, through rest or unrest, through warmth or cold. We know, with knowledge which is especially particular, how manifold and how close are the connections of the heart, through its innervation, with the brain, with the spinal cord, with the sympathetic system of nerves and ganglia, and, through these, with all the parts which they animate and govern. In our view of each case of cardiac affection the complete grasp of the whole case must go with the narrow observation of the disturbed part.

* Review in *The British Medical Journal* of *Die Nerven des Herzen, ihre Anatomie und Physiologie*, by Dr. E. von Cyon, August 10th, 1907.

While each distinct change in cardiac structure or in cardiac function must be observed separately, must be separately recognized and described, and sometimes traced separately to its pathological origin, while our progress in practice in maladies of the heart cannot add to our knowledge of them without such minute and distinct consideration, yet the whole of each case must be grasped, in its living combinations and in its working relations, if the therapeutics and all other management of the case are to be understood, if they are to be conducted aright. For no detail must the whole be neglected.

In this greater grasp our therapeutics has its own place, and this not only for its own usual, direct, and essential usefulness, but also because of its reflex illumination of our diagnosis, and of our prognosis. The very treatment of diseases, rightly considered, is, as we all know, and as Latham wrote when there loomed largely in his mind the treatment of the very maladies we are now regarding,—the very treatment of diseases is truly a part of their pathology. “What diseases need,” as he put it, “and what they can bear, the kind and strength of the remedy, and the changes which follow its application, are amongst the surest tests of their nature and tendency.”* We know that this

* Collected Works of Dr. P. M. Latham. New Sydenham Society. Vol. I. 1876.

dictum of a great physician is very true as to cardiac affections. The treatment of diseases of the heart is among the tests of the nature and tendencies of those maladies. In any particular instance of disease the therapeutic response to a remedy is a basis of judgment as to the nature of the case, both in diagnosis and in prognosis.

And further, a heart case is never only a heart case. A heart case is never only a heart case, be it either a functional one or be it an organic one, as so a case may be called. If some neurosis or if some temperamental neurotisms be causes in a heart case, then the whole of such neurosis or all of such neurotism, even to their remotest causation, is in question. If structural change in the heart be the proximate basis of the case, putting aside for the moment the general and local changes of metabolism, or of infection from without, or of degenerative metamorphosis, or of these variously combined, which may be the remoter bases of it,—if structural change in the heart be the basis of the case, that change has either begun in the heart and is extending to the arteries, or it has begun in the arteries and is extending to the heart, or it has begun coincidently both in the heart and in the arteries, of which last case we have instances in the more fatty forms of degeneration. For the understanding of a heart malady all its accompaniments must be appreciated.

It is, perhaps, not to say too much to say, that he best understands heart maladies who knows how so to elaborate his perception of their pathological, symptomatic and circumstantial accompaniments, by the light of experience in practice and by the illuminating light of a tempered clinical imagination,—he best understands who can so elaborate his perception of their accompaniments in a particular case as to accentuate his perception of their essence. There must be, then, in this greater grasp, the practice of our old rule of a close observation of the disordered organ and also a close observation of the whole of the suffering body. So we may take in the whole clinical image at once, with its lights and shades in due array. Such a way, a just and proportioned estimation of all the circumstances of a case of disease is the way of us all, in these affections and in others. Its wisdom is to be seen especially in all points of practice in cardiac cases. In this view, in such cases, there is nothing in the science of life which may not aid us, there is nothing in our knowledge of humanity which may not help us, there is nothing of what is human which we may think alien to our work. Surely of such is the higher philosophy of medicine. Perhaps this ampler view as to ailments of the heart, this wider reach of what is practicable in their

successful treatment, is only possible to the full to those who long have known the details of the pathological processes and of the clinical manifestations of these disorders. It comes surely to such, as their working years lengthen on, till,

“Old experience doth attain
To something of prophetic strain.”

In the last few years many advances have been won in the histology and physiology of the heart and of the blood-vessels. Especially has our knowledge grown as to the government of the heart and of the arteries through their nervous supply. Through this supply it is that the force and the frequency of the heart's beats are ruled, that the tone of the arteries is kept up, so far as it depends upon arterial muscularity, and the peripheral resistance is controlled, so far as that complex factor in the blood-flow depends upon the tightening or upon the slackening of the muscularity of the lesser arteries. The paths of innervation through which the heart's beats are roused and hastened; through which they are checked and slowed; through which the arteries, and especially the smaller and smallest ones, are braced or unbraced; the efferent depressor path from the heart, through which, by exact mutual adjustment, the force and rate of the heart's beats and the tone and

bore of the arteries are balanced; and, lastly, "the band of His," a singular fibro-muscular fillet, found, with its knot-like thickening, with its branches in the ventricular walls, and forming a union between auricle and ventricle through which systolic impulses spread from the one to the other,—all these paths of power have been found. A working scheme of cardiac and cardio-vascular innervation has been made out, and this, in the main, from proven and evident facts, and with small mixture of hypothesis, so that much in cardiac pathology has found explanation therein, and so that our understanding of maladies of the heart has grown, to the advancement of our practice in diagnosis, in prognosis, and in treatment. We all know how an intimate knowledge of this innervation interprets to us in practice many points in the courses of certain affections of the heart.

It is sometimes said that we have long relied upon an explanation of the action of the heart which may be called the neurogenic theory. But the heart's innervation and musculature are inseparable in the action of the organ. Our theory of yesterday was a neuro-myogenic theory, with an allowance for contractile spontaneity in the heart's musculature, resting on metabolism. Recent researches give fuller knowledge of the play of this musculature, of a kind

suggestive of therapeutic consequences. The functioning of the heart seems to depend upon several separable qualities in the cardiac muscular tissue. Amongst these are the power of originating its own stimulus to contraction and of distributing it from part to part of the heart, its excitability or sensitiveness to such stimulus, its contractility and its tone. It appears, further, that the function of tone, which is a characteristic of every living muscular fibre of the heart, is most marked in the fibres which encircle the valved orifices and the openings of the veins into the auricles, that the contraction and the tone of the fibres in these situations help in closing the valved apertures, and are wholly effectual in closing the non-valvular orifices when such orifices need to be closed in particular parts of each cardiac cycle. All this later knowledge is full of suggestion in our practice, diagnostic and therapeutic. Such a statement of the action of the heart may be called a myogenic theory. It is, in truth, a myo-neurogenic one. It gives prominence and lead to the functioning of the heart's musculature, in the combined results of the action and interaction of that musculature and the cardiac innervation. Clinically, this later teaching increases the significance of changes in the myocardium. From this recent knowledge we may

draw a new and a momentous conclusion. It is this. Now that we know that the initiation of the heart's beating is inherent in the musculature of the organ, we see in such a fact a remarkable safeguard for the continuance of the beating of the heart, and for the recovery of that beating after a momentary suspension, in the presence of the paralysing effect of some shock to the heart, of such a cardio-inhibitory shock as may arise from a great somatic muscular effort or struggle, or from violent and profound emotion, or from some traumatism, or from some anæsthetic inhalation. That the cardiac musculature, of its own intrinsic spontaneity, leads, leads under nervous sustenance and regulation, it is true, but that the musculature does lead in the heart's action, can save the beating of the heart from final stoppage, under stresses which, but for this defence, might close its career for ever.

While the discoveries of physiologists have led us to more exact and larger notions of many details in the intimate structure of the heart and of the blood-vessels, and in the dynamics of the several parts of the cardio-vascular system, and whilst such discoveries have prompted some refinements in our diagnosis of cardiac maladies, and have suggested further precision and resources in our therapeutics, while the revela-

tions of truths due to the labours of our physiologists have given us much for which we had devoutly wished, yet practical medicine has not always waited for such discoveries. In that field of our practice which we are now considering, as in other fields of our practice, the working hypotheses of clinical medicine have sometimes anticipated the later demonstrations of exact physiological investigation. Sometimes has physiology proved to be true that which clinical medicine had believed before to be true, if our action be the test of what we believe, and belief has no other test. Of this physicians may recall for their encouragement a striking instance. In that subject of much import and of much and long controversy, the causes of the sounds of the heart, while the causes of those sounds have been made clearer and nearly settled, and that, perhaps, finally, by the experimental researches of our physiologists, we may yet claim that this question has been fairly worked out by clinicians, with their own materials, by clinical observation of physical signs and by post-mortem examination, and from the standpoints of practice,—of our practice in diagnosis, in treatment, and in prognosis. In this particular of the causation of the heart's sounds, and of their deviations, the experimental work of the physiologist and the findings of the physician in

practice have confirmed each other. A reasoned recapitulation of our knowledge of the physiology of the circulation of the blood would offer to an audience skilled in practice many points of suggestiveness as to maladies of the heart. Such a recapitulation is unnecessary before my hearers. Our Harvey, the Lumleian lecturer of this College in 1615, shewed in his discovery of the circulation of the blood that physiology is an integral and inseparable part of the science of medicine. True to his lead, our more recent progress in practice as to maladies of the heart has been won as the natural effect of physiological discovery; at the least, a large part of it has been so accomplished. Our daily practice of medicine in cardiac diseases and disorders is depending more and more upon our physiology, and notably so as to our interpretation of so-called functional derangements of the heart, as to our comprehension of the natural means of relief in abnormalities of arterial tension, as to the therapeutic actions of many drugs, and as to the remedial value, the selection in particular cases, and the methods of employment of physical exercises, and of certain activities allied to them. Our physiology gives clue upon clue to our diagnosis, to our predictions, and to our invention and choice of remedies. As in every range of practical medicine, but in salient illus-

tration as to the heart, there is no intelligible basis of treatment which is not physiologically sound. As new truths emerge, physicians know how to find their application, and to translate the advances and resources of science into utilities in practice. Perhaps a closer walk with physiology would dispose of many cases of so-called increased peripheral resistance. Physiology shews us how complete are the natural means for the adjustment of arterial tension and tone to the needs of the due circulation of the blood, of the circulation of the blood in each of its circuits.

As, then, to the heart in disease, in disorder, and in health, the indebtedness of medicine to her own physiology is enormous indeed. Recent physiology has discovered much concerning the circulation of the blood in our species, and all that it has discovered in that regard bears, or will bear, upon our practice. Our understanding of affections of that circulation in the sick, whether their seat be in the heart, or in the blood-vessels, or in the blood, wherever elsewhere, or in these in ever varying combinations,—our understanding of these maladies has been cleared, if not finally illuminated, and to the illustration of our practice in every cardiac malady. With regard to the systemic circulation, we now know that, in the midst and

at the core of the currency of the blood lies the musculature of the heart, with the muscular arterioles near the periphery of that currency. Upon these two living, contractile, and expansile elements the central nervous system, directed and governed by this or that impulse reaching it along afferent nerve fibres, or affected by this or that influence, is continually playing; is playing in balanced, in harmonized, in reciprocal, and in compensatory actions, now in augmentation of contraction, now in inhibition of it, and so, by help of the elasticity of the arteries and the mechanism of the valves of the heart and of the veins, directing the blood flow according to the needs of the body.* From this newer knowledge, not a little of it the produce of our own time, we may be sure that our future progress as to the care and cure of maladies of the heart will depend largely upon whatever further help physiology may be able to furnish. After the manner of Harvey, and of others of the old time before him, physiology, as a part of medicine, and medicine in her pathology and in her practice, have gone forwards in interdependence; and so it will be, while clinicians make our science more practical, and physiologists our practice more scientific.

* The abridged account of the circulation of the blood given in this sentence has been expanded and amended from Sir Michael Foster's summary, as given in his "Text Book of Physiology."

XXVII.

LECTURE II.*

POINTS OF PRACTICE IN MALADIES OF THE HEART.

Inspection in maladies of the heart.—Impulse beat.—Instances of the value of inspection.—Inspection in cases of pericardial effusion.—Post-systolic tug.—Inspection from above and from below.—Physiognomy of disease.—Cheyne-Stokes respiration.—New sign of failing heart.—Physiognomy of extreme cardiac distress.—Palpation in maladies of the heart.—Indications furnished by palpation.—Valvular cardiac thrill.—Cardiac thrill as a neurotism.—Palpation in adherent pericardium.—Abiding usefulness of palpation in maladies of the heart.—Great value of mediate auscultation in maladies of the heart.—Improved stethoscope for auscultation of the heart.—Reasons for preferring a solid stethoscope to a tubular one in auscultation of the heart.

Mr. President, Fellows, and Gentlemen :—

Maladies of the heart illustrate the truth that nothing in nature is presented to us in an abstract form. In our study of those maladies, when we have formed a correct view of their elementary qualities, the more concrete instances

* Delivered before the Royal College of Physicians on March 31st, 1908, the President, Sir Richard Douglas Powell, K.C.V.O., Physician in Ordinary to the King, in the chair.

attract our attention and excite our thought the more rapid and complete our progress in understanding their character. While each of the four chief and well-known methods of physical examination, namely, inspection, palpation, percussion, and auscultation, is commonly employed by us in our examinations of the heart in practice, it would seem that those methods, in the hands of most of us, stand usually in order as to the time of their use as, firstly, inspection, then palpation, then auscultation, lastly, percussion. In proportion as an observer ripens in his experience, it is usual that inspection, as one of the cardinals of physical diagnosis, enhances for him its value. In time, at the least, inspection usefully may precede palpation, auscultation, and percussion in cases of the systematic exploration of affections of the heart. Our diagnostic inspection is a narrow search, a close and careful scrutiny by sight, in which, as in every use of a sense, our minds supply more than the sense receives, in which, in this skilled use of sight, our trained minds supply the additions and corrections of our experience, in interpretation of our sensual impression. Besides the more direct advantages of inspection, we know its value in the avoidance of certain errors. Inspection is a method by which errors of mal-observation are minimized, and errors of

non - observation practically excluded. In a heart case, after the use of all or of any of the other ways of physical examination, inspection may be used, or used again, to confirm the evidences of other methods, or to correct, or to amplify them. The principles and practice of diagnostic inspection in general, and of its use in maladies of the heart in particular, are well known. Some salient points as to the particular use before us may be cited in a few words. For the full use of inspection in these affections, a good light, as always, is needed, and the surfaces to be examined must be quite bared. Partial inspections cannot give the full results of the method, and are fertile in pitfalls. Inspection of the cardiac area may be made properly when the patient is in the erect, the sitting, or the recumbent postures. Either the erect or the recumbent posture is the best. Sometimes examination in two of these postures or in each of the three may be made with great advantage. In systematic inspection of the front of the chest, comparing the front surfaces of the two sides by sight, point by point, from every aspect, as to their size, shape, and outline, it is found that the two sides are always identically proportional in every part, in chests perfectly normal. As Walshe found, it is found that, "in perfectly normal chests the part of the

walls lying to the left of the middle line, and corresponding to the heart, does not differ perceptibly in form from that placed to its right; these two divisions of the thorax are symmetrical.”* In some circumstances, though very rarely, this complete bilateral symmetry may be deviated from, either as a slight precordial excess of convexity, or even of depression, without there being proof of past or present disease of the heart. In by far the most of persons who are sound and healthy as to the heart, the impulse of the organ in its natural position is to be seen. “This spot, where the impulse is greatest, is,” as Dr. Augustus Waller has reminded us, “often termed the ‘apex-beat’—a misleading expression, for the true apex of the heart lies much deeper; a needle plunged through the spot of maximum impulse would pierce the left ventricle at the junction of the middle with the lower third. The cardiac impulse is not produced by the heart’s tilting itself so as to strike the chest-wall; it is due to the sudden hardening and tension of the contracting ventricles, and the spot of impulse, or so-called ‘apex-beat,’ is simply the spot where the convex ventricular mass comes in contact with the

* A Practical Treatise on Diseases of the Heart and Great Vessels. By W. H. Walshe, M.D., F.R.C.P., &c. London. 1873.

chest-wall.”* It would be more exact, in our present knowledge, to speak of impulse beat and impulse point than of apex beat, and some such better diction is taking the place of the older words. Undoubtedly the systolic bulging of the ventricles is most manifest a little higher than the true apex of the heart. This bulging, in its pressure towards the anterior wall of the chest, is the main part of the impulse. But we appreciate that the mechanism of the apex beat is a complex one. So Walshe thought and taught. He found that, besides the systolic bulging of the ventricles, a swinging movement from the right side towards the left accompanies each systole, that this can be seen and felt in some spare people, and that its occurrence was substantiated by Bamberger. He found also that there is yet another systolic movement, that of the whole heart from above downwards, which is part of the heart’s impulse as palpable outside the chest, and which is likely to be due to a systolic lengthening of the great vessels, such lengthening being more than enough to make up for the shortening of the ventricles when they contract.† This systolic elongation

* Human Physiology. By Augustus Waller, M.D., F.R.S. London. 1893.

† A Practical Treatise on Diseases of the Heart and Great Vessels. By W. H. Walshe, M.D., F.R.C.P., &c. London. 1873.

of the great vessels, causing a little falling downwards of the heart, seems to be the mechanical effect of a raised tension in the contents of bent and yielding tubes. So, then, the impulse beat is made up much of a push, somewhat of a screw, or swinging with a "side" on, and somewhat of a drop.

It may be permitted to cite a few well-known examples of the great value of inspection as to the examination of the heart as they have appeared to me in practice, and of which value I have found an abundant confirmation in my own experience of a large number of cases in many years of clinical work. The absence of a visible impulse beat is by no means to be taken, by itself, as an evidence of any abnormality. The chest wall and its coverings may be too thick for the beat to be seen. The visible cardiac impulse varies somewhat in extent and in site in health, in certain circumstances. It is more extensive usually in males than in females, and in persons of the nervous temperament rather than in others. In disease, the place, force, extent, quality and rhythm of the visible impulse of the heart may be variously altered, and such changes may be in various combinations. When the heart is enlarged, the impulse beat is lowered in position. In such enlargement the visible impulse is also displaced, most fre-

quently, to the left: if both sides of the heart be enlarged equally, this displacement is to the left; if only the left side be enlarged, or it mainly, the displacement is still to the left; if the right side of the organ be the part which is chiefly enlarged, then the visible impulse is displaced to the right, and is seen to be behind and below the sternum. In some cases of disease the displacement of the impulse point to the left is to the extent of three inches or more to the left of the left nipple; this extreme displacement usually marks an old case of aortic regurgitation with great hypertrophy and dilatation of the left ventricle. Some bulging over the heart may arise from cardiac hypertrophy; but much cardiac hypertrophy may exist without any such bulging at all. Such bulging suggests the duration of the disease from early life, when the chest wall was more yielding than of later years. It appears that observers agree that the greatest precordial bulging marks certain cases of pericardial effusion, when the effusion is large and the patient a child or a young adolescent; in such a case, the precordial region and the parts of the front of the chest adjacent to it may be bulged markedly, with the intercostal spaces widened and raised to the level of the ribs, and even bulging beyond them. Walshe even found elevation of the left edge of the

sternum. Dr. Octavius Sturges, in his Lumleian Lectures, pointed out that, when pericardial effusion is in large quantity, in children, there is, "what the eye measures—namely, widening of the left intercostal spaces from the second rib downwards, with accompanying elevation of these spaces," and with "an appearance of raised flatness . . . contrasting strongly with the natural contour of the ribs and spaces of the right chest."* Our distinguished Fellow, Dr. Frederick Roberts, in his monumental essay on diseases of the pericardium, gives a graphic account of the local bulging and of the other physical signs which inspection may furnish in the proof of great pericardial effusion, and he points out the very important clinical fact that such bulging, "easily produced in children and in growing subjects, on account of the yielding condition of the chest walls," may be prevented entirely in older patients, in the presence of a large accumulation of fluid, by reason of the rigidity of those walls, such rigidity adding seriously to internal embarrassments arising from the bulk of the effusion.† Inspection reveals, too, the permanent

* Heart Inflammation in Children. Lumleian Lectures. London. 1895.

† Diseases of the Pericardium. By Frederick T. Roberts, M.D., F.R.C.P. In Professor Clifford Allbutt's System of Medicine, Vol. V. 1898.

precordial depression which follows sometimes the absorption of inflammatory pericardial effusion, and which we may attribute reasonably to effects of adhesions. Furthermore, in what is probably a large proportion of cases of pericardial adhesions, inspection reveals a striking physical sign of pericardial agglutination, namely, what Walshe calls a "dimpling inwards . . . with the systole, at the apex." For many years it has been my habit to look for this sign in physical examinations, and I have found it often. I have found it both without concurrent proofs of eccentric hypertrophy of the left ventricle and in the presence of such evidences, but the more often in cases in which no signs of increase in the heart's size could be found. What I have found is a circumscribed and slight tug inwards of the chest wall, at the heart's impulse point; this tug following immediately the visible systolic impulse, occurring at once upon the subsidence of that impulse, and appearing to be a circumscribed accentuation of that natural post-systolic fall of the chest wall which occurs at the impulse beat, and looking like a pulling in of the chest wall at that part by a little tug from within, at the time when the surface of the left ventricle slips away from the chest wall in the post-systolic pause. This little tug is invisible

in ordinary inspection from the front. To see it, our scrutiny must be close, we looking at the part in a sufficient light, with the patient standing up, and inspecting the surface in question from what may be called an easy reading distance, from the left side of the patient, with the part of the chest wall which is to be watched brought exactly into profile, and silhouetted against a background,—a background of a wall, or other perpendicularly flat object, of a good contrasting colour. In such observation of the part in profile this post-systolic tug can be seen to occur just at the end of the natural subsidence of the impulse, and can be recognized as a tug from within, added to the mere ending of the natural beat. In the discovery of this sign I have found an explanation of some obscure cardiac cases, and a suggestion for appropriate treatment in respiratory exercises.

Valuable diagnostic information as to the heart may be found by inspection of the front of the chest from above, with the patient in a sitting posture, and also by inspection from below, from below the patient's feet, when he is lying down upon his back. Visual examinations of the chest from these points of view afford us two useful developments of inspection in the diagnosis and observation of affections of the heart, of service in practice, and of especial

strikingness in bringing out objective signs in clinical teaching. Inspection of the front of the chest from above is useful in shewing changes in shape and movement in the precordial region. The patient should be seated in a chair, the front of the chest bared, with his head bent a little forwards and downwards. The observer stands closely behind the patient's chair, and explores with his eyes the outlines of the patient's chest as they are seen from above, comparing in turn the outlines on each side with their correspondents on the other side. Inspection from below of the precordial area, and of the adjacent parts of the surface of the body, brings out strikingly many varieties of shape and of manner of moving. The patient lies on the broad of his back with chest uncovered. The observer stands a yard beyond the patient's feet, and "takes a sight" along the front middle line of the patient's trunk. Lateral deviations from symmetry are more salient in inspection from this aspect than from other points of view. The observer, by moving his head a little, may watch the shape and the play of a variety of profiles. Outside the examination of the chest, this variant of inspection finds also excellent clinical application below the diaphragm in the abdominal complications of certain cardiac maladies.

Besides this systematic local inspection, which is one of the classical methods of physical diagnosis, there would be always, too, in the examination of a case of heart affection, the usual further visual observation of the patient beyond the cardiac area, and which sight, general as to his whole appearance and local beyond the heart in certain important particulars, is known to us as of indispensable value, in revealing many points of symptomatic import, and of prognostics, and in therapeutic suggestiveness. The old art or science of physiognomy, as Bacon or as Lavater would have it, was held to be that of discerning the characters of the mind from the features of the face, or of discovering the ruling temper or passion, or other characteristic mental qualities, by regarding the form and actions of the body, and especially the cast, lineaments, and play of the face. Our inspection, in an extended sense of the word and in one especial to medicine, regards the physiognomy of disease. It regards the characteristic appearance of the patient in particular maladies, which appearance is made up of various combinations of many constituent factors, such as size, shape, colour, and movement of parts, attitude, aspect, gestures, and so on. In many heart maladies this physiognomy is characteristic. Cardiac distress has its own form of orthopnœa, recog-

nizable at sight, and also its Cheyne-Stokes respiration. The latter, previously noted by Cheyne, was described vividly by Stokes, with the pencil of a master, in a couple of sentences. "It consists," wrote he, "in the occurrence of a series of inspirations, increasing to a maximum, and then declining in force and length, until a state of apparent apnœa is established. In this condition the patient may remain for such a length of time as to make his attendants believe that he is dead, when a low inspiration, followed by one more decided, marks the commencement of a new ascending and then descending series of inspirations."* This striking and serious disturbance of the respiratory rhythm is found in the later stages of various forms of organic disease of the heart. It is not pathognomonic of any of these forms; certainly not of fatty degeneration, of which it was at one time held to be characteristic. It is found, too, in some cases of renal disease, sometimes in cases of uræmic intoxication, sometimes in cerebral disease, and sometimes in tubercular meningitis. The central characteristic of Cheyne-Stokes breathing is a period of apnœa. Serious, as to the duration of life, as is the prognostic import of the appearance of this kind of dis-

* The Diseases of the Heart and the Aorta. By William Stokes, &c. Dublin. 1854. p. 324.

turbance of respiration, there is even an aspect of a compensatory and quasi-conservative kind in the long respiratory pause, in this waiting, as it were, of the breathing, until the feeble beats of a labouring heart can overtake it. The exact pathology of Cheyne-Stokes respiration has not been made out. Whatever may be the pathological explanation of this ominous perversion of breathing in cases other than those of failing hearts, when this respiratory trouble occurs in heart disease it may have an especial pathological basis. Perhaps it may not be too fanciful to think that, in this and in other morbidities of the heart, and in its health too, the cardiac ganglia, with their "grey matter," may be the local centres of a kind of sub-conscious intelligence, by which some nerve transmitted power is distributed, by the quasi-intelligent action of these little local brains, according to the circulatory needs of the moment. Perhaps we may think it likely, reasoning by physiological analogy, that, just as the depressor nerve bears from the heart an influence which passes through the medulla oblongata, and causes reflex inhibition of vaso-constriction, so that blood pressure falls to suit the action of the left ventricle, so we may surmise that there may be a like communication between the heart and the respiratory centre, through which the breathing

may be slowed down upon occasion, in correspondence with failing systoles; and so the apnœa becomes the physiological consequence of a syncopal stasis of the pulmonary circuit.

From a study of Cheyne-Stokes breathing I devised, some years ago, a clinical test which has been useful in practice. If we place a watch upon the front of the chest, over the middle of the sternum, of a healthy adult, who is lying upon his back, and tell him to hold his breath as long as he can easily do so, and if we time the breathing pause he makes by our watch lying upon his chest, we find that he will hold his breath for a quarter, or, perhaps, for a third of a minute. Sometimes in the case of a sufferer from a chronic disease of the heart in which there is a feebleness of ventricular contraction, and in which the patient is resting in bed, it will be found that the patient can hold his breath for a much longer time than a healthy person can, and that he will hold it for half a minute, a minute, or longer, and this even if his breathing be hurried by cardiac dyspnœa. This clinical fact seems explicable in the same way as was the respiratory pause in Cheyne-Stokes respiration. It appears that weak systoles of the right ventricle lengthen the time during which the breath can be held, because they permit such longer arrest when the blood tension

in the pulmonary circuit is subnormal; such tension as compels inspiration is longer in being reached than when the heart is healthy. In cases of degenerative mural disease this test is useful; its use from time to time gives a valuable prognostic. This sign is not discoverable in every case of cardiac dyspnœa; but it is found from case to case, especially in cases of fatty heart, and also, perhaps, in chronic valvular disease, when compensation is failing. It seems to be a change which is allied to Cheyne-Stokes respiration, to be a lesser degree of that abnormality, evoked by a voluntary stoppage of breathing. I think it will be found upon further examination of this test in practice that, in those cases in which the breath can be held longer than in health there is no blocking, or but little, of the pulmonary circuit.

We recognize a physiognomy of general cardiac suffering, apart from dyspnœa and apart from local pain, as the mark of a late stage of several forms of failure of the heart, when the malady nears a fatal ending. It is a peculiar unrest and distress, of regard, of face, of attitude, and of manner, with painful and frequent shiftings of posture. It is a physiognomy which mutely shews the obsession of a mighty dread, of a cardiac consciousness heaped up to the anguish of

“Impendent horrors threatening hideous fall,”

in which there is added to the wakefulness of restlessness an imminent fear of death and even a sense of dying, with a determination to keep awake because going to sleep appears so like going to die. There is the torture of trying to keep awake to keep alive. This is a characteristic pervigilium, always of mortal purport.

By palpation we appreciate palpitation, cardiac thrills, and pericardial rubs, and examine the position, character, and extent of the heart's impulse. The push, the screwing swing, and the drop, which make up the recurring stroke of the impulse beat, are factors of that beat which our *tactus eruditus* may be unable to separate, for they happen together, in the same part, at the same time. But they are movements which the skilled touch appreciates, without differentiating them, in their various morbid combinations, in the differences of this impulse in disease. They are movements which make up the well known characteristics of the healthy beat as felt by the hand, its mixed impulsive and gliding qualities, smooth, rather waving, decisive, unhasty, brief. It is impossible to describe the "feel" of the normal impulse beat; that is an experience which can only be learned in medical practice. We accept the systolic synchronism of the impulse; there is no question about it now. Synchronously with the

beginning of the first sound of the heart, and synchronously with the systoles of the ventricles, the shock of the heart strikes the side of the chest. In most healthy people the impulse can be felt by palpation in the same place where is seen the visible impulse. In stout, broad-chested people no impulse may be palpable; in such the absence of it is not of itself a morbid sign. Some passions of the mind, chiefly fear, exaggerate the force of the impulse beat and widen the space over which it can be felt, and even give it somewhat of a heaving quality; what is called nervousness does the same, to less degrees. In few words the more usual of the teachings of cardiac palpation may be summed up. In adynamic diseases the impulse is weakened, and it is also weakened or not palpable at all, when a pad of emphysematous lung covers it. The force and area of the impulse are increased when the heart is hypertrophied, and then the impulse point is variously displaced. Dilatation of one or of both ventricles, fatty change of the heart's walls or fatty loading of them, and pericardial effusions, may each lessen the force of the impulse beat, even to impalpability. Valvular thrill, the *frémissement cataire* of Corvisart and of Laennec, at first thought to mark mitral disease, is now known to be an occasional sign in any of the four valvular dis-

eases of the left side of the heart. It seems to need for its origin a rippling current of blood, in forcible motion. In such conditions, perhaps some degree of spanæmia favours its production; a slighter thrill, but one distinguishable easily from the true valvular thrill, is observable in some cases of spanæmia alone. True valvular thrill always shews forth structural valvular disease. There are no statistics published as to the proportions of the frequency of valvular thrill with any of the valvular defects which it may accompany; but my own experience regards it as occurring oftenest with mitral stenosis, next with aortic obstruction, next with mitral insufficiency, and least often in aortic incompetence. Valvular thrills marks valvular disease of old standing. It is one of the signs by which we discover the effects of an endocarditis of some time ago. My experience agrees with that of Walshe, who never found acute endocarditis to be attended with valvular thrill, when there was certainty of the absence of old valvular disease. Later experience does not support his conclusion that "it has never been shewn that nervous excitement of the heart, pure and uncomplicated, will produce thrill in people whose blood is healthy."* It is true

* A Practical Treatise on Diseases of the Heart, &c. 1873.

that valvular thrill never arises as a neurotism, and that it is always a mark of valvular deformity; but there is a thrill of a softer kind which is certainly only a neurotism. A gentle, systolic, thrill, somewhat tickling in quality, is palpable in some cases sometimes, when a palm is pressed over the impulse beat in nervous palpitation. Such palpitation has sometimes its own bellows sound, the *bruit de consultation* of some later French writers. One might call this lesser thrill the *frémissement de consultation*. I think it comes and goes with the bruit, and the bruit comes and goes in half a dozen beats, perhaps in fewer: no bruit; no *frémissement*.

Touch adds to that of sight a physical sign of its own of frontal pericardial adhesions. In some cases of that morbid condition, the impulse beat is borne forwards and upwards during a deep inspiration, borne with and by the chest wall, in its advance and rise. This can be felt best by a palm applied flatly. Palpation is an old way of physical diagnosis as to the heart. It has continued in usefulness, and to-day it has not been displaced by any other method. It is never omissible in a complete examination. In the eighteenth century it was one of the fruits of Harvey's epoch-making discovery of the circulation of the blood. It was practised by Albertini and by Senac before Avenbrugger in-

vented immediate percussion. Then Corvisart adopted this percussion as an addition to palpation. Then, early in the next century, Laennec added his own mediate auscultation.* Palpation has an abiding place in practice, and we know its manifold applications in maladies of the heart. Palpation is so reliable that it has become one of the methods which seniors amongst us perhaps develop unconsciously, in furtherance of our characteristic progress towards simplicity of methods, and our reduction of omissible instrumental accessories.

The College is fully aware of all the developments and refinements of cardiac auscultation which have been evolved, by the labours of many workers, since the time, now ninety years ago, when Laennec announced his discovery of mediate auscultation to the Académie des Sciences, in Paris, in the year 1818. As to diseases of the heart, Laennec declared, and, as we know, rightly, that he had discovered a "set of new signs," which were, as he called them, "certain, simple, and prominent," and such as would render the diagnosis of those diseases, to quote his words, "as decided and circumstantial

* See Historical Sketch to Diseases of the Endocardium. By Prof. Rosenstein, of Leyden. Von Ziemssen's Cyclopædia of the Practice of Medicine. English translation. Vol. VI. 1876.

as the indications furnished to the surgeon by the introduction of the finger or sound in the complaints wherein these are used.”* Since that time many physicians, amongst the chief of whom have been not a few of this ancient foundation, have worked in medical practice with the stethoscope, and have traced, distinguished, and named every acoustic quality and characteristic, of the various audibilities which the play of the heart can yield in health or in disorder, of every sound which the human ear can appreciate of those which make manifest the origin, onset, and course of every variety of cardiac malady. Every sound of all these which our hearing can distinguish has been recognized, and has been traced to its pathological origin, to its diagnostic significance, and to its remedial indications. No other area of work within the science and art of medicine can shew a progress more decisive, or knowledge more complete in its fulness, more illuminating in its clearness, in its import in our practice more significant or more helpful. This great mass of achievement, begun by Laennec, and developed by him wonderfully far from the immediate auscultation which was practised before his time,

* A Treatise on the Diseases of the Chest and on Mediate Auscultation. By R. T. H. Laennec, M.D., &c. Translated by John Forbes, M.D., &c. Third edition. London. 1829.

has grown and grows still, by slow experience and by the labours of many workers. Our hearing and our sight may truly be declared to be our chief senses of inquisition. To our ear the examination of the heart has been opened fully.

We know the numerous modifications of Laennec's stethoscope which have been brought into use since his day, and which have been regarded often as steps in the evolution of his instrument towards perfection. In several particulars, real advances in the structure, shape, and form of the stethoscope have been made. Of course, the stethoscope does not magnify cardiac sounds; it only brings them within our ken. It elongates, so to speak, our ears, gives them a medium of distant contact, and circumscribes and concentrates our hearing. For several years last past I have worked with a solid wooden stethoscope, modified in several particulars after many experiments, and I find such an one the best for auscultation, at the least, for cardiac auscultation. Acoustics, as well as practice, supports such a preference. I venture, in a very few words, to recall to my learned auditory the principles of the science of sounds which support my conclusion. The "points" of this stethoscope are:—it is made of wood, of cedar wood; it is in one piece; it is so

long as about fifteen inches in length; it has an aural end of the usual shape and size; the chest end is accurately rounded to a hemisphere, with the base of the hemisphere three-quarters of an inch in diameter; the stem is tapered evenly from the chest end, to a diameter of three-eighths an inch, where it passes into the flat aural end; it is smooth but unpolished, so that it is relatively soft and warm to touch.* As to the comparative advantages, as a medium of transmission of sonorous vibrations to the ear, of a stethoscope in which the shaft is a hollow tube and of one in which the shaft is solid, it may be concluded with certainty that the teachings derivable from the principles of acoustics would lead to preference of the solid instrument. Although it has become customary to use a hollow tube in all auscultation, this subject of the comparative values of solid and tubular instruments was one of friendly scientific controversy early in the history of stethoscopy. The merits of this dispute were summed up ably by Peyton Blakiston, of Birmingham, a Fellow of this College, in 1848, who found

* Messrs. Cuxson, Gerrard & Co., medical instrument makers, of Corporation Street, Birmingham, have followed with much care my directions as to the making of a stethoscope of this description, and have produced one which is satisfactory in its use, and which I find yields improved auscultatory results in auscultation of the heart.

theory and trial alike in favour of a quite solid stethoscope. He described a simple form of such instrument, of his own arrangement, and he was able to state, as he did in the remarkable chapter on the practice of auscultation in his book on diseases of the chest, that Dr. Watson, afterwards Sir Thomas Watson, whom some of us are so happy as to remember in the College, "one of the most accomplished and skilful physicians of the age," had "made use of this kind of instrument," namely, the solid stethoscope "in preference to any other, for some years past."* Again, to take in testimony the words of a master, C. J. B. Williams, a pupil of Laennec, and himself the greatest in his time and earliest authority on auscultation in England, and an ornament of this College, writing in 1835, in the classic *Cyclopædia* of Forbes, Tweedie, and Conolly, pronounced that, "it might be well for the attainment of greater accuracy in physical diagnosis . . . if auscultators would use," instead of one stethoscope for every use of the instrument, "a solid cylinder of wood for the auscultation of the heart." The science of acoustics teaches that audible vibrations are conducted farthest and with least

* *Practical Observations on Certain Diseases of the Chest and on the Principles of Auscultation.* By Peyton Blakiston, M.D., F.R.S., F.R.C.P. London. 1848.

loss of intensity, firstly, through solids, next, through liquids, and least well through a gas, or through a mixture of gases. As a distinguished Fellow of this College and eminent physicist, Golding Bird, once put this point:—“The facility of the transmission of sounds is, like their velocity, greater in fluids than in gases, and still greater in elastic solids.”* Of the certainties of acoustics which relate to stethoscopy, we know that, when an elastic body becomes the subject of vibratory motions of sufficient frequency a sound is produced, that if no material substance intervene between the vibrating body and the ear no sound is heard, that the transmissibility of sound is increased if the vibrations be at all confined in a tube, (but it is obvious that cardiac sounds cannot be confined in a tube,)—and further that sound travels through wood from eleven to seventeen times as fast as through air. When a sound is carried along a long tube the sound is doubled, one transmission of the sound being conducted by the walls of the tube, and a second transmission being made by the air inside the tube.† Instead of being discarded, it may be found that

* Natural Philosophy, &c. By Golding Bird, M.D., F.R.S., &c., and Charles Brooke, M.B., F.R.S. London. Fourth edition. 1854.

† Golding Bird and Brooke.

the solid wooden stethoscope of Laennec and of Williams may be improved and made the best of stethoscopes for cardiac use. It seems that the column of air in a tubular stethoscope is a practically negligible quantity, and that the walls of such an instrument are its chief conducting medium. Yet the simultaneous conduction of a sound through two media placed in parallel juxta-position, as through the air within the tube of a tubular stethoscope and through the elastically solid walls of that tube, —yet such dual conduction tends to doubling the sound, and would double it if the tube were long enough. The tube of a stethoscope is not long enough for such doubling. But may it not be long enough for two not quite synchronous transmissions to give to the ear a compound impression, to give to the ear two overlapping sensations, which yield a blurred sound to our sense? Such blurring may be an important disadvantage in cardiac auscultation, especially in that finer distinction of cardiac murmurs which concerns the differentiation of organic and dynamic murmurs in some cases, and in that acuter appreciation of the heart's sounds which concerns the earlier diagnosis of valvular degenerations, and which only can be acquired by long practice, and comes in time to all who pursue car-

diac auscultation faithfully. The early diagnosis of valvular changes may depend upon the recognition of changes in the quality of valvular sounds, as when they become, as it were, thick, or stringy or wooden. If we compare a solid with a tubular stethoscope in practice, we can hear sounds in auscultation well with the tubular one, there being enough of solidity in its walls for a fairly good conduction of the sounds; but the pitch of the sound is higher, and so more striking to the ear, when heard through the solid one. The solid stethoscope brings out well the soft, short, low-pitched puffs of the systolic bellows sounds which mark one of the kinds of neurotic disturbance of the heart. The chest end of such a stethoscope cleanses well. A long and rigid stethoscope, fifteen inches in length, has some administrative advantages in practice; one of that length is not too long for auscultatory percussion, and it is long enough to facilitate the use of that good aid to diagnosis. As to the shape of the chest end, it is best rounded to the form of half a sphere. A smooth hemisphere, and one not too small, made of a kind of wood which is not too hard, as cedar, gives the shape and the material which allow of comparatively greater pressure upon the part to which the smaller end of the instrument is applied in

its use, without the least discomfort to the patient, and so, one would think, of the transmission to our ear of the sonorous vibrations we seek with the least loss of them in their convection. When a stethoscope is in use, comfort should be found at each end of it. There is another advantage in this half-ball-shaped end. I have wished long for a stethoscope which could be slid over the surface to which I was listening; could be slid without any breach of contact, like a ball castor, so that cardiac sounds could be the more easily traced as to the directions of their propagation. In some degree, a solid chest end of a stethoscope of hemispherical shape can give such sliding, and the noise of rubbing between the end of the instrument and the patient's skin can be ended by a little smearing with oil. A solid stethoscope then, of suitable size and shape, offers some preferabilities. To be too attentive to small things, to be meticulous, is, indeed, sometimes a fault, even in auscultation. But even genius may be equalled by the art of taking pains, and in cardiac stethoscopy a small acoustic advantage may give a finer ear and a swifter skill.

XXVIII.

LECTURE III.*

POINTS OF PRACTICE IN MALADIES OF THE HEART.

Descriptive divisions of cardiac maladies.—Dynamic and organic affections of the heart.—Increasing remedial control of the heart's functions and of its nutrition.—Summary of organic changes in the heart.—Certainty of physical diagnosis, and the value of experience in its interpretations.—Organic disease complicated by functional disturbances.—Five groups of maladies of the heart.—Failure of the heart's musculature.—Importance of extrinsic disturbances.—The nervous temperament and maladies of the heart.—Signs of the nervous temperament. — Lingual physallization.—Temperaments and handwriting. — Worry and functional disorders of the heart. — Treatment of worry.—Description of souffles de consultation, and their production.—Dangers of adherent pericardium.—Mitral insufficiency.—Accentuation of the pulmonary second sound.—The therapeutic action of digitalis in diseases of the heart.—Baillie's pill.—Value of venesection in diseases of the heart.—Physical exercises, respiratory exercises; local plasters, rubefacient embrocations; alcohol, generally, and usquebagh and ipocrasse, in particular, in maladies of the heart.

* Delivered before the Royal College of Physicians on April 2nd, 1908, the President, Sir Richard Douglas Powell, K.C.V.O., Physician in Ordinary to the King, in the chair.

Mr. President, Fellows, and Gentlemen:—

Clinical observation and description have distinguished many diseases and disorders of the heart. Our increasing knowledge goes on to differentiate them still further; and this partly by a process of further subdivision, and partly by a more salient definition of distinctions before made out. We are accustomed, with a conventional brevity and with a fair working accuracy, to divide these maladies into two great classes, namely, diseases of the heart, and disorders of the heart. In this way of speaking all maladies of the heart are disorders of it, but all of them are not diseases. In this regard, the word disease appears to be reserved in practice, and so reserved not, perhaps, with the strictest etymological accuracy, but with a signification which is well understood,—the word *disease* of the heart, is reserved by us conventionally, from the pathological standpoint, for naming those cases of cardiac malady which are characterized by particular changes in any part of the heart's structure, by changes therein of what is known as a "coarse" kind. I find it a good rule in practice in a cardiac malady, to speak of the organ as *disordered* when there is no lesion, as *affected* when there is a lesion but no objective complication, and as *diseased* when there is both a lesion and some objective conse-

quence of it. The word disorder, as to a group of maladies of the heart which is a large one, is used in the designation of those cases of cardiac affection in which no such "coarse" change is discoverable. The same division of cases may be stated in other ways. Diseases of every organ of the human body are separable, for the purposes of verbal description, into two classes. In one class no local changes of structure and of tissue are apparent, and it may be said that the dynamics or that the metabolism of the organ alone are at fault. In the other class, structural and histological changes are found, and disorders of function appear to follow from such changes, as causal sequences. So, then, affections of the heart may be said to be either dynamic or organic. This was Walshe's way of putting the matter. Or we may make the same division and speak of inorganic disorders and of organic diseases. The division of maladies of the heart into those of them which are dynamic and those which are organic is, at the best, a rough one. But these words, or their synonyms, express a division which is well understood in medical practice, and, if we are to divide these maladies at all, appears to be the best partition that can be made. We physicians well know the limitations of meaning within which such a division can be used with accuracy.

In the beating heart, we have to do with a living organ, upon the action of which life and many other functions depend, and the work of which organ depends upon the integrity of its structure, and upon much else besides. The details of all this much else besides, are being distinguished and unravelled more and more. These details are being brought under our remedial control more and more, *de die in diem*, and this in several particulars. At the least, our remedial control as to the heart is advancing, in several distinct particulars, that is to say,—in the promotion of a normal metabolism, of a normal innervation, of a normal vascularity, of a normal sanguification, of a normal nutrition. We recognize the effects of drugs, of dietaries, of ingesta, of “surroundings,” of respiratory and of muscular exercises, and of many other influences, upon the nutrition of the cardiac tissues, and upon the circulations in them, sanguineous and lymphatic. We recognize a great group of cardiac disorders in which functional disturbance is the only characteristic. We know, too, a great group of those cardiac diseases which depend upon certain well known material changes, upon organic changes, as they may be called properly, in the heart’s form, in its structure and tissues, as in the elements of its walls, in the size of its cavities, in the

fabric of its valves, or in the size and boundaries of its orifices. These changes may arise in decay of tissue; in fatty degeneration, or in calcareous degeneration, or in a mixture of these. Or these changes may take their rise in inflammatory processes, and such may be acute, or subacute, or chronic in their course, and they may be either diathetic or microbic in their nature. There are many functional disorders of the heart in which no evidence whatever of organic disease can be found during life, which do not appear to shorten life, and in which no traces of organic change in the heart can be found after death. If in any such case organic disease should occur, should supervene, such change scarcely could exist without revealing itself to complete clinical examination by its appropriate physical signs. Organic cardiac diseases depend upon "coarse" changes in the heart, which are declared in practice by physical proofs which admit very rarely of any interpretation but an unequivocal one. While such physical evidence may be discerned readily, that is to say, while the power of discerning it may be learnt in its rougher and elementary outlines, after a few months of clinical study upon adequate materials, the recognition of its finer shades can be acquired only after some years of work upon it, and such longer

experience may be advanced far by the fineness and distinctions of perception, by the quickness of pathological interpretation, by the alertness against error, which longer experience in practice alone can give.

In a large proportion of cases of cardiac affection the diagnostic distinctions between metabolic and dynamic disorders, on the one hand, and organic disease, on the other, can be found satisfactorily, and the case can be assigned accurately to one or to the other of these great groups. In some cases a hard and fast line of distinction cannot be drawn. Nor is this all. In some cases the heart is sound organically, but its functioning is disturbed because its innervation is organically changed. And further: an innervation which is changed organically may disturb a heart which is unsound itself. And again: while merely functional disturbance may affect a heart which is organically sound, it may also affect a heart which is unsound. Indeed, it is likely to be true that functional disturbance is more likely to affect an unsound heart than to affect a sound one. Walshe taught that, "the different perversions of the dynamics of the heart which are known clinically may exist in association with structural disease, as well as independently of

this.”* He found, as have we all, that the distinction in a case of dynamic disturbance of the heart as to the presence or absence of associated structural disease of that organ, while often not a simple one, is occasionally a decision of intricate difficulty in practice. Our President has found that, “functional disturbance is as frequently observed in association with diseased as in healthy hearts, and that many of the troubles and some of the catastrophes of cardiac disease are attributable to functional derangement.”† This very important conclusion is full of prognostic and of therapeutic suggestiveness. Professor Sir Clifford Allbutt, too, rightly has insisted upon the importance of our recognition of the frequency with which neurotic elements of disturbance are found in practice in association with organic disease of the heart. “We are too ready to assume,” he wrote, “that the diseased heart fails by means of its sheer mechanical inability.”‡ It was with this con-

* A Practical Treatise on Diseases of the Heart, &c. By W. H. Walshe, M.D., F.R.C.P., &c. London. 1873.

† On the Principles which govern Treatment in Diseases and Disorders of the Heart. By Sir Richard Douglas Powell, Bart., M.D., F.R.C.P., &c. London. 1899. The Lumleian Lectures for 1898.

‡ Functional Disorders of the Heart. A chapter by the editor in A System of Medicine by many writers, edited by Thomas Clifford Allbutt, M.D., F.R.C.P., F.R.S., &c. Vol. V. London. 1898.

ception in his mind that he was led, as he was in 1869, to recommend the subcutaneous injection of morphia in certain phases of heart disease. That functional disturbance may affect an unsound heart, and that an unsound heart is more prone to such disturbance than is a sound one, are considerations in practice of striking therapeutic indication and of much prognostic importance. We know that many a case of heart trouble, in which obviously the heart is diseased, is best relieved by leaving the heart alone, so to speak, and by directing our treatment to the removal of extrinsic causes of functional disturbance, and to their control and cure.

In the frequent admixture in practice of functional disorder and of organic disease of the heart, in some cases the one of these, in others the other, is to the fore. So, in the true view of them, we have four great clinical groups of cardiac maladies. We have simply organic diseases; we have simply functional disorders; we have organic diseases complicated by functional disorders; and we have functional disorders complicated by organic disease. To these four groups, by the light of recent researches, we must add another, namely, one in which intrinsic functional disturbances of the heart's musculature are to be found. In practice, this is not always a distinct and separate group, be-

cause disorders of the cardiac musculature may complicate any of the four cases just distinguished. The healthy functioning of the heart depends upon several qualities in its muscular tissue. We have a myo-neurogenic explanation of the heart's working, in advance of the neuro-myogenic theory of the times just ago. In wasting diseases, in convalescence from acute diseases, especially from those of a pyrexial character, under the effects of various toxins, of auto-genetic origin or of microbic infection, the vital qualities of the heart's musculature become impaired. In such impairment of those vital qualities we find the explanation of many cases of cardiac enfeeblement, of temporary valvular incompetence, and of temporary dilations of cardiac cavities.

In this wider conception of cardiac maladies, the observations and experience of the clinician enable him to distinguish unerringly to which group any particular case may belong, and this in most cases at once, or soon, in the others after longer watching. This complexity of cardiac maladies is what we find in practice. It would, indeed, be strange if disease of an organ so vital as the heart is in a patient's consciousness were not complicated by functional disturbance, of the kinds of such disturbance which are of emotional or of neurotic origin. Such disturb-

ance is natural in the circumstances. And it is natural that the heart, linked as it is to many other organs by circulatory and by nervous connections, should be disturbed by extrinsic irregularities. Our therapeutics confirms this view. How often in practice do we omit the use of cardiac sedatives, of cardiac excitants, of cardiac tonics, of vaso - constrictors, of vaso - dilators, which so easily beset us, and all very useful when applied appropriately, to find such omission good, the heart's disturbance abated, and then to find the patient's comfort consummated under Gregory's powder, or under soda and calumba with an effervescent!

The nervous temperament, or nervous diathesis, as some prefer to call it, is the background, and, to change the metaphor, also the groundwork or basic principle, of most of the dynamic disorders of the heart. It is the basis of all the dynamic disorders of the organ, if there be excluded toxic causes, as the excessive use of tea or of tobacco, auto-toxic causes, as goutiness, and as what may be called copræmia from excessive fæcal retention, and also if there be excluded spanæmia, and also, what is little accounted of in these days, plethora, and also if there be excluded those disturbances of the myocardium which are marked by impairment of tonicity and of contractility in any part of that

highly specialized musculature, and also if there be excluded certain rare cases of bradycardia, and of tachycardia, with or without exophthalmia. With these exceptions, the nervous temperament is the basis of the inorganic maladies of the heart. The recognition of that temperament is the clue to their successful management. In these affections, the signs of the patient's disposition interpret the symptoms of his indisposition. A temperament is an individual peculiarity, a type of idiosyncrasy, of the physical organization of a sentient and intelligent being, by which the manner of acting, feeling, thinking, and suffering is affected permanently. Our definition of a temperament may include other beings besides human ones. For an instance: the manifestations of temperaments can be well studied in horses, and they may be studied in them, especially from on their backs, with advantage to our understanding of those manifestations in our own kind. A temperament is a variant within certain limits of the natural organization of living individuals. That there are temperaments in human beings is an ancient doctrine in medicine. Yet, that there is a nervous temperament is a notion which does not seem to have been uttered until fifty years ago. It might be regarded as a product of our later civilization. But it seems to be a very old

human characteristic, the differentiation of which has been recognized only in our own time. It was not until modern physiology had unravelled many of the mysteries of the nervous system, that the marks of this emphasis of that part of our being could be distinguished. The wide diffusion of incomplete information is a note of our time; except for it, there appears not to be more nervousness now than of old. Dr. Pritchard, in his great essay on temperaments, published in 1835, described four temperaments, namely, the sanguine, the phlegmatic, the choleric, and the melancholic.* Dr. Laycock, lecturing in 1862, described six temperaments: the nervous, the sanguine, the phlegmatic, the bilious, the lymphatic, and the melancholic. He found that, "persons nervously active from predominant innervation are of the nervous temperament."† Such persons might be said to have a nervous system which is "highly strung." They have been said to be especially liable to nervous diseases. The truth would seem to be that they are no more liable to nervous diseases with "coarse" lesions than any bodies else; but that all other nervous disorders

* The Cyclopædia of Practical Medicine. Edited by Drs. Forbes, Tweedie, and Conolly. Vol. IV. London. 1835.

† The Medical Times and Gazette. 1862.

are peculiarly their own. The phrase a person of nervous temperament and the words a neurotic are not of identical connotation. A neurotic person is one of this temperament in an extreme degree of it, or one in whom a nervous temperament of lesser degree is not under control. A neurotic is a person with one or more nervous symptoms. Such symptoms may be subjective, or they may be objective, or they may be both. These symptoms of the neurotic may be called neurotisms. All the dynamic maladies of the heart, other than those excepted just now, are marked by neurotisms, and have their essence in them. There are, too, the mixed cases, which are relatively numerous, and in which functional disturbances blend, variously, with the signs and effects of organic disease.

Some persons of this temperament may be known by their eyes, with sclerotics unduly exposed, their eyes shewing a breadth of sclerotic between the cornea and the upper lids,—a sure sign, but one often absent. Temperaments appear oftenest in men. Few women shew them decidedly. But when a woman is of the nervous temperament in her it is well marked. Various temperaments may appear to be mixed in one person. A man of nervous temperament is quick in manner, if he have not a slowness which is obviously a calculated one;

he may talk volubly and eat fast; he is apt to "overdo" everything into which his feelings enter, and they enter into most of his doings; he is apt for hobbies, and is often a collector of curiosities. If a good man, he is likely to make a worry of his goodness; if bad, he is apt for treasons and stratagems. The surest of the signs of this temperament is to be found on the surface of the tongue.

Lingual physallization is a name I suggest for a constant mark of this neuropathic type. When a patient of this temperament shews his tongue in the usual way, two broken rows of small air-bubbles are seen in the moisture upon its dorsal surface. Each row skirts the lateral edge of the tongue, and lies about a seventh of the width of the organ from this edge, a row of bubbles on each side. I have found this appearance in hundreds of cases. Its pathognomy is unerring. How does it arise? The Newtonian rule is safe, that we are to admit no more causes of a natural phenomenon than such as are true and enough. A little emotional increase in the viscosity of the mouth's moisture, as in fear, and a little emotional increase in the mouth's movements, as of swallowing, which is a physical accompaniment of what is called tenderness, and lingual physallization results. There are other signs of this temperament. Laycock

knew that temperamental signs could be made out from handwriting. A little study of the subject, accordingly to the modern French school of graphology, yields points of medical suggestiveness.

We recognize with one consent that each case of functional disorder of the heart needs its own particular treatment, in medicines, in dietetics, in education, and in self discipline. If we can cure worry, that undue solicitude which Shakespeare called,

“A hell-hound that doth hunt us all to death,”—
if we can cure worry, we are far towards the cure of many cardiac neurotisms. Worry is curable in a large proportion of instances, and that permanently. Often worry is only a continued form of impatience. The line of impatience in each case must be found, and the patient taught to develope resistance thereunto. He can develope such resistance in most instances. Worry usually is wearing and destructive. For the most part patients are to be helped against it. At the same time, experience in practice reveals that there are some worriers to whom worry appears to be a vital necessity, and in whom it is not to be resisted with advantage. How great, how curative, how durable in neurotic affections is the power of a patient to overcome harmful worry, under sympathetic and

judicious medical guidance, is not recognized sufficiently. Each of us will prepare for such patients his own simple, comprehensive, and assimilable forms of an optimistic philosophy. Many such patients can be set aright, if we establish in them the pursuit of a sound ground work for daily happiness, for example, as in Chalmers's formula, by their pursuit of "something to do, something to love, and something to hope for." As in most nervous ills, the physician should be an adroit inspirer of hope, and of the patient's desire of cure, and belief he will get it.

It has long been known that strong and excited action of the heart, especially in a woman of nervous temperament, may cause murmurishness of the heart's first sound, as that sound is heard at the apex of the organ, and even develope there a systolic murmur. In a case purely of this kind the signs of organic cardiac disease are wanting. The abnormal sound disappears as the excitement subsides, this change often occurring during auscultation, if the murmur be observed for a few moments. More recent work in practice has elucidated this dynamic endocardial murmur. Such a murmur has been called by Potain a "*souffle de consultation*." He noted it:—as arising with an acceleration of the beats of the heart, without any

modification of the respiratory rhythm; as accompanying emotional disturbance, with the heart of normal size, and the pulse although rapid, never irregular. Such is Piatot's account of the matter.* This is the murmur which might lead an incautious observer to a diagnosis of mitral insufficiency where no such organic inadequacy exists. In my own experience this *souffle de consultation* is always systolic; it is to be found usually only in the mitral area, at and about the impulse point; it comes and goes under auscultation, that is, it alternates under observation, with a pure first sound. Sometimes it is heard in the aortic area, too, and there, too, it is intermittent; very rarely, it is aortic in site alone. Further, it is to be heard that, this murmur, when it occurs in the anterior mitral area, goes with, accompanies, and is synchronous with, the first sound; it does not take the place of that sound there, as the true murmur of mitral regurgitation does. The *souffle de consultation* is recognizable as a mere addition to a weakened first sound. The murmur of real mitral regurgitation replaces the valvular part of the first sound and masks the muscular portion of that sound. We know that the mur-

* *Traitement des Maladies du Cœur par l'hygiène et les agents physiques.* Par M. le Docteur A. Piatot. Paris, Steinheil. 1898.

mur of mitral regurgitation is audible usually in the left vertebral groove; in rare instances, however, it may be inaudible there. But the mitral soufflé de consultation is limited, almost always, to the impulse point; it may also be audible at the inferior angle of the left scapula, but only with the extremist rarity. One may think that this bellows' puff of emotion, when it is mitral in place, arises from some perversion of the muscular part of the heart's first sound, or from insufficiency of that part of mitral closure which is ruled by the papillary muscles, or from both, under an emotional disturbance of cardiac innervation. When this puff is aortic in area, the fine edges of the aortic valves may give for the moment a sonorous vibration to the blood passing the aortic orifice; one may opine that such an error of the lunulæ "getting in the way" would arise from arterial spasm.

Some cases of what may be called cardiac consciousness are explained in practice by the discovery of the post-systolic tug I have described, as a sign of pericardial adhesion. Such adhesion explains some cases of palpitation, and some cases of dyspnœa upon muscular exertion, in the absence of anæmia; also it explains some cases of cardiac failure under stress of sudden muscular effort, or of prolonged exhaustion of

strength, or of both, or in some acute disease, especially in such acute diseases, (as bronchitis or pneumonia,) as bring danger to the blood flow in the pulmonary circuit. A condition so hampering to the heart's actions, as pericardial agglutination is, may make the difference between life and death at any time of cardiac stress.

Mitral insufficiency is the most frequent of all the chronic valvular affections of the heart. It is more frequent in practice than all the other valvular diseases of the heart put together. Mitral regurgitation, dependent upon organic mitral insufficiency, is marked by well known physical signs. With some exceptions, such insufficiency is the mark of a lesion which had its local beginning in an acute rheumatismal endocarditis, usually, or in a mild form of other microbic endocarditis, rarely. Such endocarditis is exudative and proliferative in its processes, with the organization of new products. The valves become thickened, hardened, and bound by adhesions, and a chronic endocarditis, leading to sclerotic changes, sometimes follows the acute process. Sometimes, but in my experience very rarely, the endocarditis appears to be in a chronic form from its outset. Whenever the characteristic murmur of a mitral insufficiency, marking endocarditis, may appear,

it has come to stay. Instances of its disappearance are almost unknown. I have never known one. It must be admitted, however, that complete recovery without any valvular damage is possible, especially in young subjects, and especially after prolonged rest and quiet in bed. Potain gives the good name *holosystolic*, wholly systolic, to the murmur of mitral regurgitation, so clearly and cleanly does it go with the ventricular contraction. The murmur is strong, often rough, often like the noise of a jet of steam, of equal course, with no maximum. Its tone may be high from the first, especially in young subjects, and its pitch lowers progressively, accordingly as the insufficiency increases or the myocardium fails. As Piatot puts it, with Gallic neatness, of this murmur: "Sa tonalité, élevée dès le début, surtout chez l'enfant, s'abaisse progressivement à mesure que l'insuffisance s'exagère ou que le myocarde faiblit."* Sometimes, though rarely, mitral regurgitation, as it is declared by its murmur, exists for many years without any other consequent abnormality whatsoever. A lady is still under my observation who has enjoyed this very exceptional immunity for about forty years. If with the murmur there be any other of its associated abnormalities, say, in pulse, size of heart or of

* *Op cit.*

liver, other complications are sure to follow. Usually the period of complete compensation is brief. We notice how much longer this time is in the well to do, with sobriety and light work, than in our experience of hospital patients. This malady is a typical disease of the heart. Sooner or later the valvular lesion causes hyposystole, arterial hypotension in the greater circuit, arterial hypertension in the lesser circuit, with cardiac dilatations, venous stases, hepatic, renal and other congestions, œdemas and dropsies.

Accentuation of the part of the heart's second sound which arises at the mouth of the pulmonary artery and is best heard in the "pulmonary" area, found and taught by Skoda in early stethoscopy, is an expressive sign of organic disturbance in the heart's dynamics. Its interpretation is significant in practice, in diagnosis, in therapeusis, and in prognosis. This accentuation is an unfailing token of rise of tension in the pulmonary artery, of a threatening change in a vital circuit of the blood, which is beyond those tactile and metric tests which try variations of tension in systemic arteries. In health, the second sound is louder in the "aortic" area than in the "pulmonary." A louder pulmonary second sound marks some obstruction in the pulmonary circuit. It is like the banging of a door which before was closed

with little sound. This sign is united with lesions of the mitral valves and of the mitral opening. Either insufficiency of the mitral valves or narrowing of the mitral opening, or both, add a new hinderance to the blood stream in the lesser circulation. In so far as such a hinderance elicits increased systolic force in the right ventricle, by so much does it raise tension in the pulmonary artery, and so accentuate the pulmonary second sound. Old mitral regurgitation or old mitral stenosis, or both, may be without this accentuation, or even with a pulmonary second sound less loud and clear than in health. This may arise from failure of the right ventricle, or from tricuspid regurgitation, or from both. In mitral disease, when the right ventricle at last fails to countervail the obstacle in the left side of the heart, the tension in the pulmonary artery falls, and with it the loudness of the pulmonary sound. When, too, in mitral disease, the tricuspid valves fail in their office, tension in the pulmonary artery falls. It would seem that this quasi-compensatory tricuspid regurgitation arises from widening of the ring of insertion of the valve, in the course of dilatation of the right ventricle, so that the valve cannot close the enlarged opening. In mitral disease, in the comparison of the pulmonary second sound with its aortic concurrent,

we note that the aortic second sound is weakened relatively by the lowered systemic tension which results from mitral defects. Thus there is a pseudo - accentuation of the pulmonary sound. Such sound of normal loudness is not to be judged accentuated because its coexists with a weak aortic sound. Hence a difficulty in practice which only long experience can solve; but it solves it quickly and surely. My observations lead me to conclude that the presence or the absence of accentuation of the pulmonary second sound, or a high degree or a low of such accentuation, are valueless in a diagnosis between mitral stenosis and mitral insufficiency. Each of these variants of mitral disease, whether singly or howsoever blended, adds an obstacle in the lesser circuit, and tends to increased tension in the pulmonary artery. So long as this obstacle is countervailed by the right ventricle, so long is the pulmonary second sound louder than in health. When this saving force fails, as by dilatation of the right ventricle or by degeneration of its walls, or by both of them, then the pulmonary sound fails too, and may be almost lost, or quite. When mitral disease first arises, the pulmonary second sound accents, but slightly only. During the usual period of quasi-health, from the time of convalescence from the usual initial acute endocarditis until the time

of other complications, the sound remains but slightly reinforced; during this period, which may vary from a few weeks or months to a few or to many years, it is usually as loud as the aortic sound, or a little louder, but not so markedly. Towards the end of this time, when tension in the pulmonary artery is nearing the point of prevailing over the compensatory force of the right ventricle, accentuation becomes very distinct, and reaches its loudest range. Then this sign is a grave one. It marks a height of tension not likely to be borne long. Then, as a straw upon the back of a labouring camel, some little effort or difficulty breaks down compensation. A little bronchial catarrh, and compensation fails, accentuation falls, viscera and surface congest, anasarca comes, and dropsies. Then by rest, by suitable evacnants, by indispensable digitalis, patients are likely to lose these later sequels of their mitral disease. As such an one improves, the pulmonary second sound swells again, as the right ventricle recovers its countervailing. With a rising sound comes recovery. But the complications of this later stage of mitral disease cannot always be removed even once; and if removed once, or oftener, at last treatment gains little or nothing. Then compensating powers are finally overcome; the pulmonary second sound strengthens no more.

In the removal of the congestive and dropsical complications of advanced mitral disease, my experience confirms the therapeutic efficacy of the well known combination of powdered leaves of digitalis, with squill and blue pill. I have found that, one pill, containing a grain each of the powder of digitalis leaf, of powdered squill, and of the officinal blue pill, given thrice daily, suffices usually. In some cases, a larger proportion of digitalis in the pill is necessary for the good effects of the remedy; in such, the dosage of the drug should be increased, under skilful guidance and observation. This pill is often quoted as Baillie's pill, of the great Matthew Baillie, of this College. His pill, however, contained, in his own words, "five grains of the pilula hydrargyri, combined with one grain of the dried powder of squills and half a grain of the dried powder of digitalis," and he prescribed it in hydrothorax, when, as he wrote, "dropsy of the chest does not depend upon any diseased structure of the heart." After some search, I found these interesting data in a rare book, "Lectures and Observations in Medicine. By the late Matthew Baillie, M.D." This volume was printed in London in 1825. Baillie ordered in his will that 150 copies of this book be printed, "but not published."

The powder of the foxglove leaf, in pill, and the infusion of the pharmacopœia, have proved, in my practice, to be the best forms of administration of digitalis. Therapeutics, so far as it concerns the treatment of patients by drugs, in organic diseases of the heart, and especially in that condition of those diseases in which what we know as compensation is at fault, turns very largely upon the questions, in what case to exhibit digitalis, how to do so, and in what case to withhold it. Some sterling rules of practice in these particulars were reached by Withering, of Birmingham, and laid down by him in his classical book upon the foxglove.* These rules have been refined since, notably in the distinctions between renal and cardiac diseases and dropsies, and generations of physicians of long practice have come to much clearness in the indications for the use of this great remedy. Digitalis is by far the best of the remedies of its kind. What it can do some other remedies can do in part; but none even that part so well. Digitalis has no succedaneum. As to when to give it or not, my own practice is, never to give it unless the indications for its use are complete, never to give it merely because the heart is affected;

* *An Account of the Foxglove and some of its medical uses, &c.* By William Withering, M.D., &c., 1785.

but to give it always, and then in efficient doses, when the veins and the arteries at the same time point to its use, namely, when the veins are too full and when the arteries are not full enough, and the pulse is soft.

Phlebotomy is necessary in danger of death from distension of the right cavities of the heart. In such a case I have seen the moribund saved by venesection. In such cases our old proud claim has been realized, "*multos mortis e faucibus eripimus.*" The more sudden the distension the greater the need for blood-letting. As the blood flows from the opened vein, the engorgement of the systemic veins, and consequently the paralysing distension of the right side of the heart, are diminished effectually; the right ventricle becomes able to propel its contents through the lungs, and so a fair supply of oxygenated blood is given to the brain and to the cardiac musculature. A cardiac cavity is a hollow muscle like the urinary bladder; hyperdistension of either results in its paralysis, with full retention of its contents. It is in cases of chronic bronchitis and pulmonary emphysema, complicated by dilatation of the dextral cardiac cavities, that mortal danger most frequently arises from engorgement of the right side of the heart. In hospital practice I saw a woman, a chronic bronchitic, aged fifty years. Upon be-

coming an in-patient her lips were bluish, with distended veins of neck, with orthopnœa, small and feeble pulse, lower extremities and hands œdematous, cardiac dulness increased transversely, with diffused impulse, hepatic dulness increased, sibilant and sonorous rhonchi all over chest, with large crepitations at bases of lung, and with scanty urine, one-fourthly albuminous. In four days she appeared to be moribund, labouring, with tracheal râles, for her breath, with lips and tongue now purple, face deeply congested, veins of neck greatly distended, continued orthopnœa, and radial pulse irregular and almost imperceptible. The right median basilic vein was opened, and six ounces of very darkly coloured blood taken. The relief was at once; the pulse became regular and of fair volume, the dyspnœa lessened much, and also the venous distension, and the lips and face resumed an almost normal hue. In a fortnight she left the hospital—her œdema gone, and her urine free from albumen.

Within the thirty years last past, therapeutics in cardiac maladies has evolved two peculiar remedial procedures of importance, in certain varieties of physical training, and in certain respiratory exercises. Before that time rest usually was pressed in chronic heart cases, with no idea that any form of movement could

be salutary. As to forms of physical exercises, Oertel, in 1875, following ideas which Stokes had expressed, advised muscular exercises; these he arranged in the form of walking up slopes, in progressively augmented ascensions, and to these he added a dietary restricted as to fluids. Other physicians have since advised other exercises. As to the restriction of beverages, there is something to be said for it, both in the etiology and in the treatment of some chronic cardiac diseases. It appears that the use of physical exercises and of massage by cardiopaths dates back to a high antiquity; Piatot points out that Aretæus advised them in heart cases, and Galen for œdemas. In many cases of enfeeblement of the cardiac musculature I have found the exercise of running, especially in the open air, to be beneficial. The distance which can be run at first, even gently, without breathlessness may be only a few yards; in many cases the course can be lengthened a little daily, with advantage. A physiological appreciation of the various forces concerned in the circulation of the blood makes clear the physical foundations of the remedial employments of respiratory exercises. The use of these exercises is indicated strikingly in many cardiac maladies, in organic diseases of the heart, and in neurotic disorders of the organ. In the latter, I have found them

aidful in assuaging cardiac consciousness. Such exercises for cardiopaths appear to be of our own times. They are usually helpful in any form of hyposystole, and especially are they adjuvants to the blood flow in the pulmonary and hepatic circuits, and through the kidneys.

If we watch a cardiopath who is suffering some of the less severe forms of cardiac pain, as the neuralgic, or as such as attends local hyperæsthesias, or painful dilatations of the heart's cavities, he will be seen usually to press the cardiac area with a flat hand, or to rub the part horizontally with palmar friction. Herein are instinctive movements which point to the remedial use of local plasters and liniments. The use of each, with their support and frictions, can be based upon anatomical and physiological grounds. I have found much benefit in practice from the twice daily use of frictions, prolonged for a few minutes, of rubefacient embrocations to the skin over the heart.

The remedial uses of alcoholic stimulants, under medical and judicious guidance, in many heart cases are well known. The power of alcohol, when suitably exhibited, to evoke and to sustain the action of the heart's musculature is well established. I have found alcoholic remedies especially useful in practice in cardiac maladies when combined with spicy aromatics

and anti-spasmodics, and I think we might revive the use of two good old cordials—of two old and good hearteners, usquebagh, which was officinal in the pharmacopœia of the College in 1677, and ipocrasse, which is a tincture of ginger and other spices in red Burgundy.

Now I must close my discourse, now that I have related some points of diagnosis, of treatment, and of prognosis, in maladies of the heart, as I have found them in practice. Some subjects have been left untouched, because they have been less salient in my experience. Mr. President, I express to you, Sir, and to all this audience, my deep gratitude for the kind attention with which you have honoured me.

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