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Begbie, James, 1798-1869.

Publication/Creation

Edinburgh : A. & C. Black, 1862.

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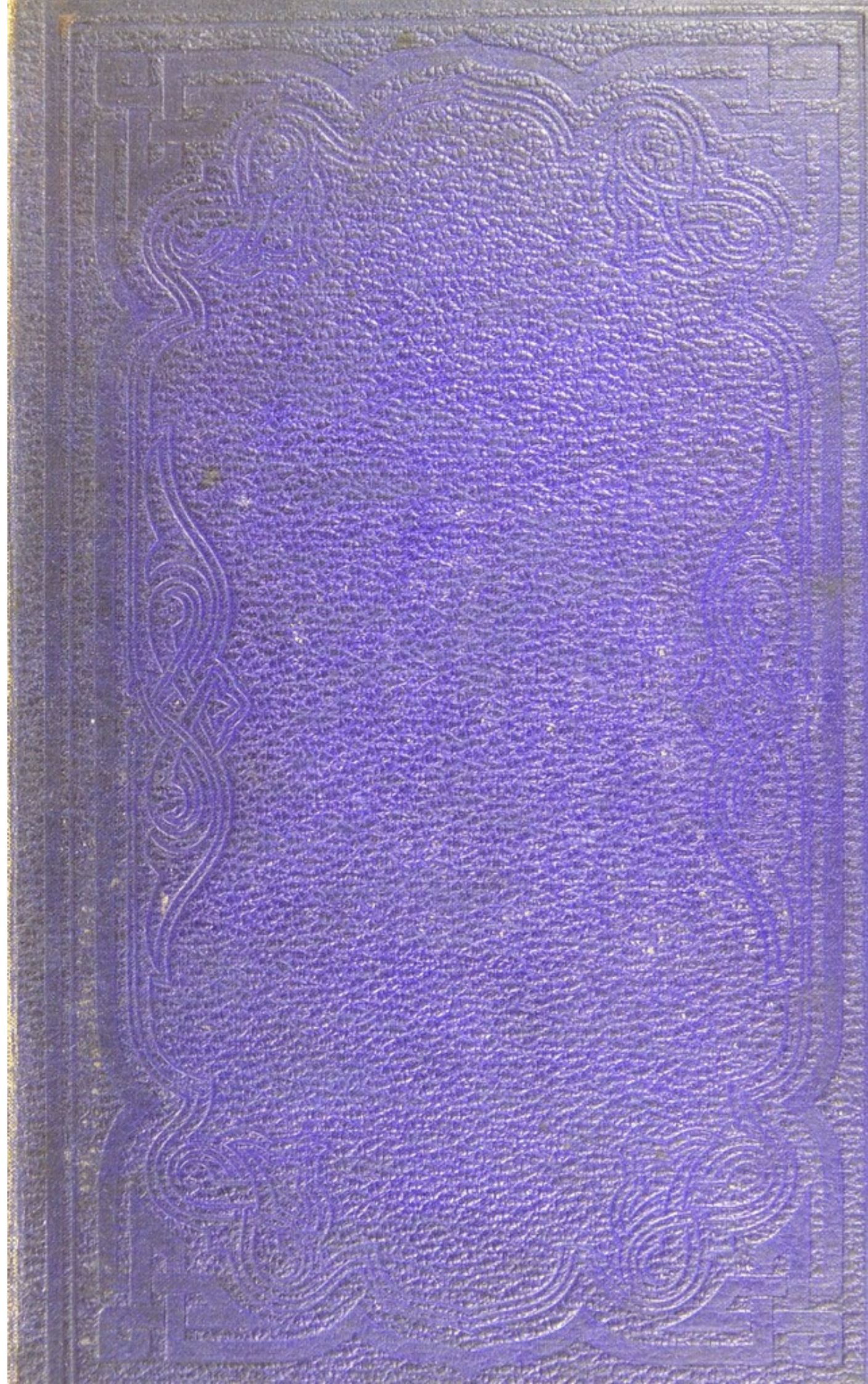
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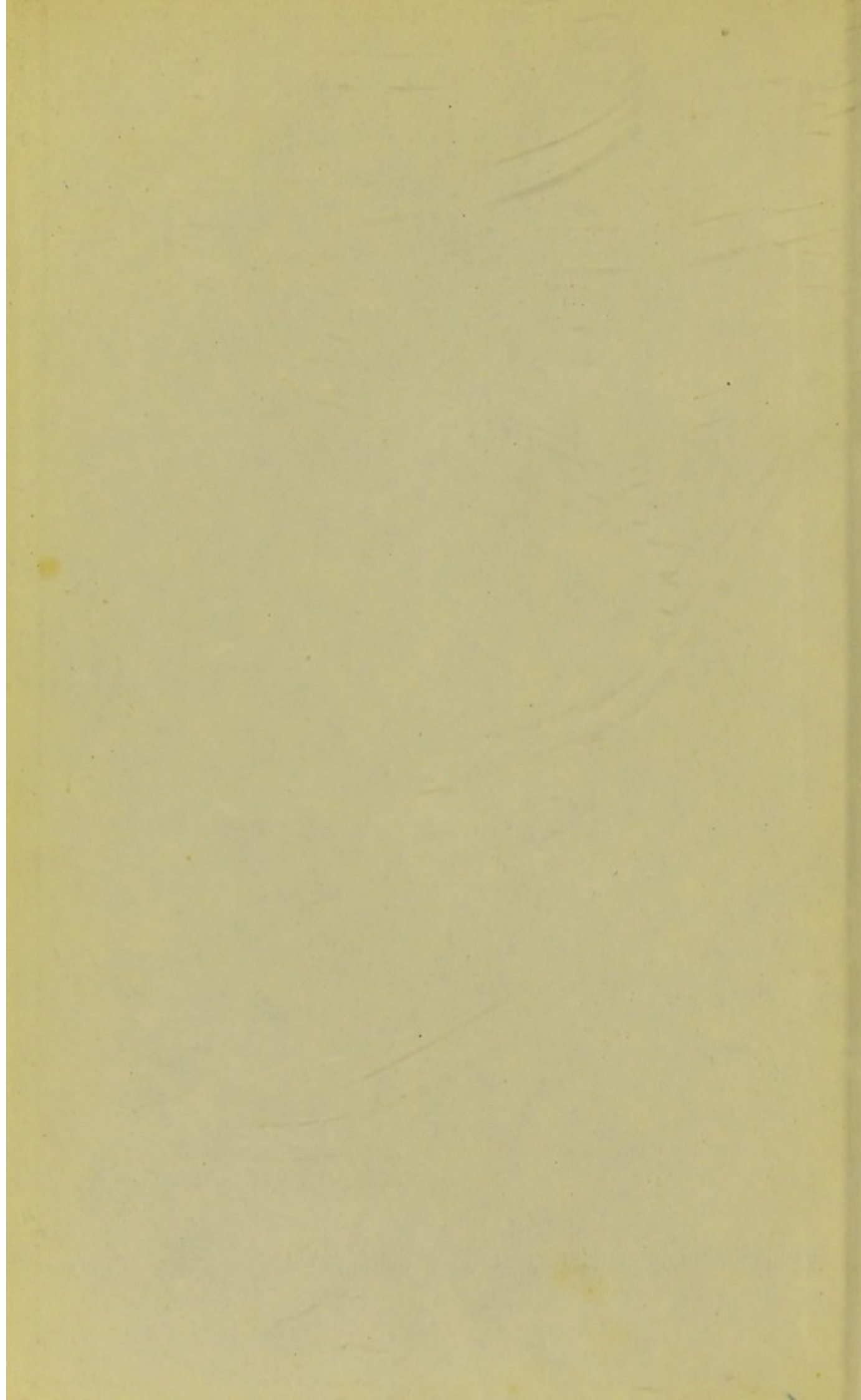
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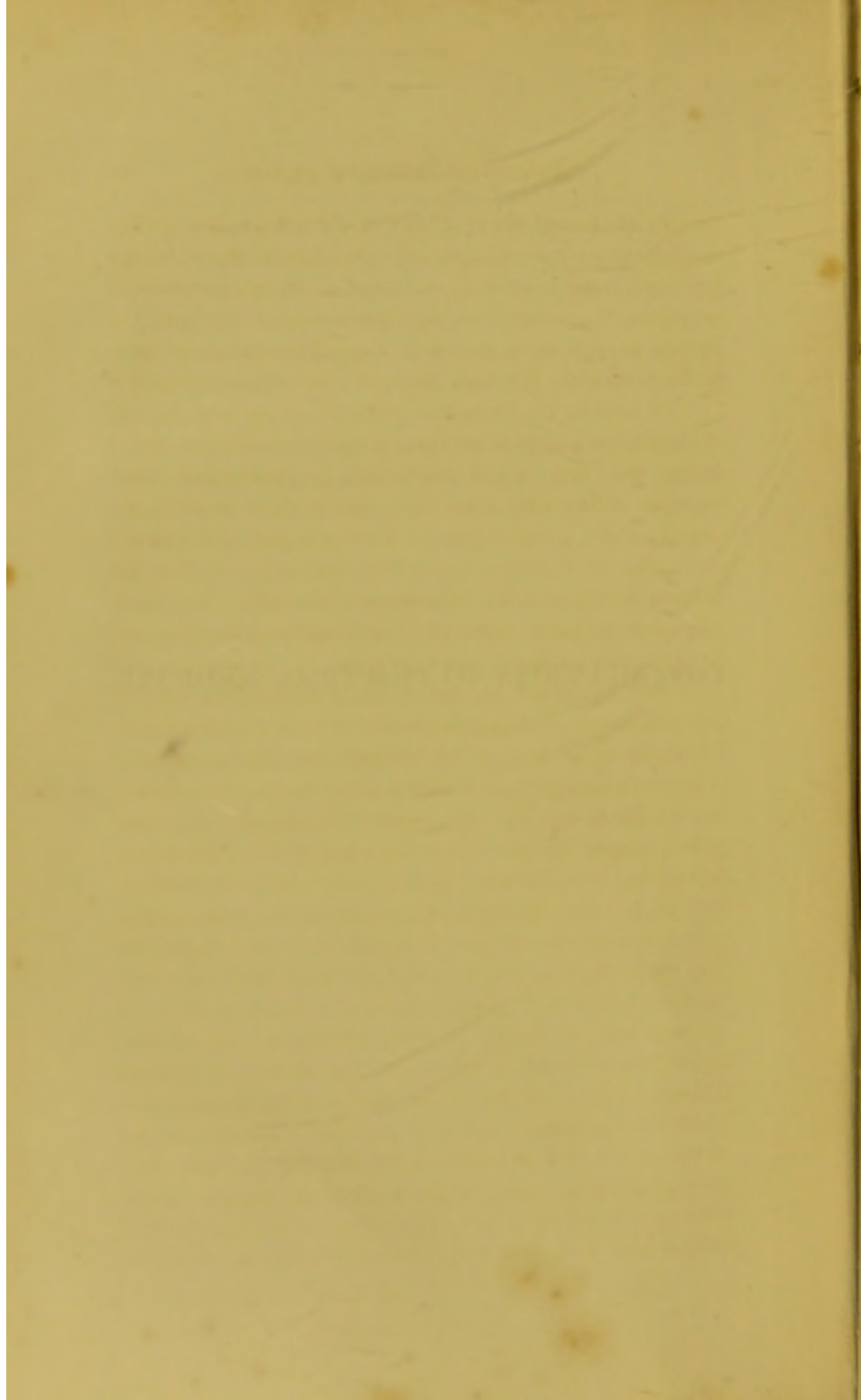


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CONTRIBUTIONS TO PRACTICAL MEDICINE.



CONTRIBUTIONS
TO
PRACTICAL MEDICINE

BY

JAMES BEGBIE, M.D., F.R.S.E.

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PHYSICIAN IN ORDINARY TO THE QUEEN IN SCOTLAND,
ETC. ETC.

"That practice, and that alone, will do good which elicits the indications
of cure out of the phenomena of the disease itself."

SYDENHAM, EPIST. I.

EDINBURGH:
ADAM AND CHARLES BLACK.

1862.

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P R E F A C E.

THE following Papers, with the exception of the first, have been read at intervals before the Medico-Chirurgical Society of Edinburgh, and they have all appeared in the periodical journals of the time. Their republication, in the present form, is called for in order to afford facility of reference to some subjects of a kindred nature, and to do justice to the favourable reception which, in their separate form, the Essays have already met with from the Profession.

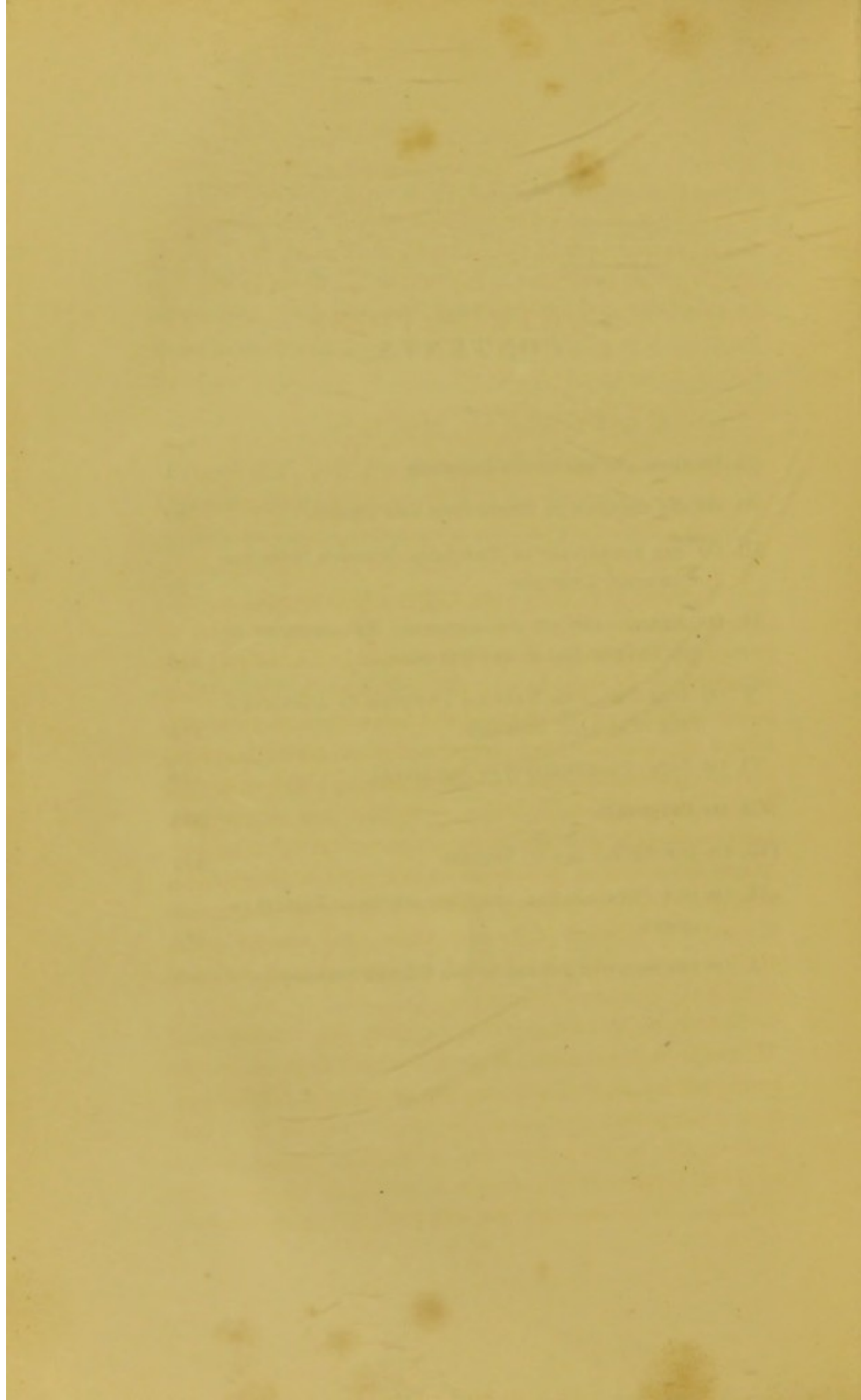
The Author has not scrupled to make verbal corrections on the original papers, and to add to the histories and reflections such new matter as extended experience had placed in his power. Considerable additions have been made to the fourth Essay—that on Anæmic Palpitation, with Enlarged Thyroid Gland and Protruding Eyeballs—in order to embrace a somewhat fuller history of an affection which is still very imperfectly recognized by the Profession, and in regard to which medical authorities are by no means agreed.

The Author regrets that he is unable to suggest a name for the disease founded on its triple characteristics. Regarding the whole phenomena which constitute the leading features of the affection as dependent on an impoverished condition of the blood, he first adopted the well-known term *Anæmia* as descriptive of the disease ; he still retains it, and he sees no objection to the terms *Anæmic Palpitation*, *Anæmic Exophthalmos*, *Anæmic Bronchocele*, as designating the individual symptoms of the complex disorder.

EDINBURGH, OCTOBER 1, 1862.

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CONTRIBUTIONS

TO

PRACTICAL MEDICINE.

I.

ON GOUT AND THE GOUTY DIATHESIS.

SYDENHAM has painted gout with the hand of a master; and all who have followed him in the task—and there have been many of the highest class—have, more or less faithfully, copied the picture. But the portrait thus drawn has been that of regular gout, and we still desiderate a fellow in that of the gouty diathesis. While Sydenham and others have made us familiar with the leading features and the more prominent characters of the disease, so that what is designated a fit of gout hardly requires a diagnostic mark, we are, nevertheless, still ignorant of its real nature, and another artist must arise to draw the lines of its more obscure recesses, and portray its curious essence.

Sydenham, writing in 1683, has said that “either men will think that the nature of gout is wholly mysterious and incomprehensible, or that a man like myself, who has suffered from it thirty-four years, must be of slow and sluggish disposition not to have discovered something respecting the nature and treatment of a disease so peculiarly his own.” It will be an enlightened age that will bring the charge of slow

the more formidable affections of the chest. We detect it in many instances in pneumonia, and particularly in pleurisy, and still oftener in bronchitis, and it is the source of many cases of hydrothorax. Gout is the cause of great embarrassment to the heart and blood-vessels, and, perhaps more than any other agent, lays the foundation of irreparable mischief in these vital parts. It is the immediate cause of some acute attacks of endocarditis and pericarditis, and the proximate cause of numerous chronic affections of the heart and arteries. Gout has frequently its seat in the organs of digestion, complicating their functional derangements, hurrying on their structural diseases, and terminating their organic lesions: witness its frequent connection with disorders of the liver, and its influence on their progress to visceral obstruction and incurable disease. It is intimately connected with the disorders of the urinary organs; it is frequently the origin of renal disorder, of granular degeneration of the kidney, and of puriform discharge from the urethra in the form of genuine gonorrhœa; and it is often the well-known source of stone in the bladder.* Gout lurks in many of the functional derangements of the uterus, and discovers itself in some of its organic diseases. It is the fountain of many hemorrhages and many fluxes. It is the origin and essence of many cutaneous eruptions, and in the joints the fruitful source of

* It has been remarked that the gouty parent often transmits the nephritic affection without the gout to his offspring, and that this frequently happens on the *female* side. It has also been remarked that the urinary concretions of the gouty belong to the lithic acid diathesis. It has not been sufficiently, if at all, noticed that they often belong to the oxalic. I have two gouty patients now under my care, who derive their disease from hereditary descent. The eldest son of the one, before his thirtieth year, has had frequent attacks of nephralgia, and lately voided a urinary concretion which was found to consist of the oxalate of lime. The eldest daughter of the other, while still a girl of twenty, has had frequent severe attacks of a nephritic kind, accompanied by hæmaturia, and in her case the urine is persistently loaded with large crystals of the same earthy matter.

crippling, lameness, and deformity. Everywhere its ravages are discernible by those who have carefully studied its course—a course, however, which is too often run unperceived and unsuspected.

It is of the first consequence to attend to what are called the premonitory signs of gout, for it is chiefly at that season that we can employ with advantage remedial means, while if neglected, they never fail to be followed by symptoms which are characteristic of progressive constitutional disorder. The improvement in the general health which has long been remarked to follow the earlier attacks of gout, and the notion too generally entertained that a fit of the disease relieves the system of other disorders, have led to supineness at one time, and to dangerous and fatal experiment at another. Some, trusting too much to what is believed to be the salutary nature of gout, have been content to look on expectingly during the course of symptoms which are acknowledged to be precursory of the coming fit; while others, more daring, have too often attempted, perhaps successfully, to force it on by prescribing continued indulgence in the vicious habit which has engendered the disorder, forgetting that in gout there is a morbid poison which may at any time seize on a vital part, and which cannot continue to accumulate in the blood without imminent hazard to life, or sure and certain deterioration of health.

In correspondence with usually received opinion, though contrary to the observation of a late writer, my own experience leads me to the conclusion that dyspeptic symptoms invariably precede even the first invasion of gout, and that these occur with even greater regularity at this than at any subsequent attack of the confirmed disease. Indigestion and mal-assimilation are the first steps in the great constitutional disorder which, aided by hereditary predisposition, is developed in the gouty diathesis. It is true, no doubt, that the first

attack of the disease often comes on suddenly and unexpectedly in the midst of apparently perfect health, and in the full play of vigorous exertion; yet, I have never known one so seized who did not acknowledge that at a period not very distant, and for a time not very limited, he had been affected with precursors which to a less unsuspecting and more experienced eye foretold the coming invasion. He may at the moment have forgotten, but his memory can readily recall, the sufferings he lately endured in connection with stomach and nervous derangement, and he will be able to speak of the pain, and the acidity and flatulence of a recent indisposition, and descant on the fluttering and irregularity of the heart's action, and on the disturbance of sleep, and irritability of temper which accompanied them; nor will he have failed to remark the state of the bowels, and the lateritious sediment of the urine, on the occasion referred to,—symptoms which, in all probability, are about to be renewed, if not already existing in connection with his present attack.

The gouty diathesis being once developed, the attentive observer will discover many indications of constitutional disorder which are referable to it. Besides the dyspeptic symptoms usually recognized, there is often observed remarkable irregularity in the heart's action, accompanied by painful uneasiness over the left side of the chest, and pangs shooting occasionally to the shoulder and arm, simulating very closely those of angina pectoris, and rendering it difficult or impossible for the patient to lie on the affected side. There is also in most cases much mental uneasiness and hypochondriacal depression, the patient manifesting undue anxiety as to the nature and issue of his ailments, and much peevishness and fretfulness to all concerned in the treatment of them. Along with these dyspeptic and nervous symptoms there is often remarked a peculiar *aura* or rapid twittering motion under the skin, as it were, chiefly in the back and limbs. I have

frequently known this sensation occurring at intervals, for many weeks or months, as a precursory sign of a fit of gout. The skin is early affected in the gouty diathesis. It becomes dry and harsh, and in some places hot and itching ; the soles of the feet and palms of the hands are particularly obnoxious to these conditions. Urticaria, erythema, eczema, and psoriasis are ordinary attendants on the gouty habit.* At this stage I have frequently remarked the deposit of the oxalates and oxalurates in the urine, and have found them afterwards displaced by, or alternating with, the lithates and lithic acid. The kidney begins to labour, and the function of the liver is impeded. Fulness and deep-seated uneasiness of the right hypochondrium are observed ; the bowels are found torpid and irregular, and the secretions morbid ; and hemorrhoidal affections begin, for the first time, to manifest themselves. It is a curious fact in the history of gout, that its local manifestation in the foot or hand is often impeded, interrupted, or altogether prevented, by the occurrence of a hemorrhage, especially from the bowels ; and, on the other hand, that gout is often successful in displaying itself in a regular form, and in so doing, bringing to a close a long-continued hemorrhagic discharge. Hæmoptysis, hæmatemesis, and hæmorrhoids, have thus been found to yield and disappear only on the occurrence of an attack of gout. Examples of these vicarious discharges, and anomalous conversions, will be found in the sequel, and as it is not my present purpose to describe the fit of regular gout, or delineate the gouty diathesis, I shall proceed at once to the illustration of the disease as it has occurred to me in practice, noting chiefly those signs or features which may be considered characteristic of its natural history, and avoiding

* The offspring of gouty parents are often found affected with these skin disorders, without any other indication of the gouty diathesis ; and it is worthy of remark, that in them the disorders are found amenable to a plan of treatment suitable to gout.

any detail of its more ordinary form of manifestation in the foot or hand.

Dr. Graves has justly remarked that there is no proposition in pathology better established than that there exist several constitutional affections capable of generating and modifying local inflammatory action ; and that local inflammations depending on a constitutional cause, are subject to very different laws from those which regulate the phenomena of common inflammation. The cases which follow illustrate this in the case of gout as the constitutional origin of some local inflammations.

I.—At the age of thirty-five, and at the close of autumn, some twenty years ago, Dr. B. had his first attack of gout. He had hereditary claims to the disease, and had long been familiar with the dyspeptic and nervous derangements which usually precede or accompany its development. More particularly, he had often suffered from cardiac pain and uneasiness, from flatulent distention and acidity, from broken rest and depressed spirits. But with these exceptional ailments, he enjoyed good health, and continued in the discharge of professional duty. At the period referred to, he was undergoing more than usual fatigue, and on returning from a long walk in the country was seized, suddenly and unexpectedly, with acute pain in the inner part of the left knee-joint, immediately in the line of articulation. He was instantly brought to a halt, and a minute or two elapsed before he was able to resume locomotion, which was now conducted homewards with considerable difficulty, in consequence of a painful sense of heat, swelling, and stiffness of the parts. In the course of a few hours the synovial capsule was distended with fluid, and motion was painful and restricted. The effusion increased still more, and early next morning, after a restless night, the knee-joint was greatly swollen and painful, without discoloration, however, of the surface, except what arose from

the turgid veins around. Considerable constitutional disturbance was lighted up, the skin became hot, the pulse quick and irritable, the tongue loaded, the bowels confined, and the urine scanty and high-coloured, depositing freely the brick-dust sediment; much restlessness of mind, and irritability of temper accompanied these symptoms. Professional friends were in attendance; but the nature of the illness was not recognized, and the latent poison was not then discovered. In conformity with the practice of the day, the strict antiphlogistic treatment was adopted,—repeated leeching, brisk purging, and severe starvation were prescribed, but little or no relief followed. The constitutional derangement continued day after day, and weeks and months elapsed before the local pain and swelling yielded to nature what had been refused to counter-irritants and other resources of art. Five years elapsed, with occasional attacks of dyspeptic derangement, when at the same season of the year, and under similar circumstances, Dr. B. had a renewal of the former attack, but in the opposite knee-joint. Depletion in this instance was avoided, and under rest, the employment of warm applications, and the internal use of colchicum, the pain, swelling, and other symptoms rapidly declined, leaving the joint for a time weak and crippled. A few more years intervened, and early in the winter months, when suffering from severe domestic affliction, he was again subjected to a return of pain, stiffness, and rapid effusion into the knee-joint first affected. The constitutional disturbance was as formerly, and under fomentations, and the diuretic effect of colchicum, both it and the local symptoms rapidly disappeared. The subsidence of the pain and swelling were simultaneous with the physiological effects of the remedy. Years have now gone by, and no severe fit of gout has occurred, but the deranged digestion, and the shooting pains in the heel, in the instep, and in the joints of the fingers, particularly after any departure from the

rules of temperance, indicate too clearly that a diathesis prevails which requires watchful care and caution to mortify and overcome.

II.—For a long period of time I have been consulted by Mrs. F., a lady approaching the age of seventy, for yearly or half-yearly attacks of gout in the foot, and for dyspeptic derangement, connected with a marked gouty habit transmitted by hereditary descent. By great prudence and circumspection in the matters of diet and regimen, these attacks have been limited both in duration and severity, and though the fingers demonstrate the chalky formations, and the heart has experienced the prejudicial effects of the circulating poison, and though valvular disease and its consequences indicate very clearly the progress of events, there is still much to render life useful and desirable. The ball of the great toe, or instep of one foot, seldom both together, have hitherto been the chief seats of the disease; but on the last two occasions it has manifested itself in the synovial capsule of the knee, attacking it during the night with severe pain, and completely disabling the joint by the rapid effusion, and consequent painful attempts at motion. On both occasions the affection has been successfully treated and speedily removed by the application of warmth and moisture by means of the spongio-piline, and the administration of such doses of the wine of colchicum, as experience had proved to be beneficial when the toe or instep was the seat of gout. These attacks of gouty inflammation, and effusion into the knee-joint, have always been accompanied by the constitutional disorder which attends a fit of gout.

III.—A pampered English maid, about the age of forty-five, with indications of the cessation of the catamenia, of full habit and florid complexion, long accustomed in her master's house to generous living both in meat and malt, applied to me for relief from the premonitory symptoms of an ailment which

her habits had long invited, and which indicated its approach by various painful affections of the stomach, and pangs in the chest. She had a speedy relief from them all after a night of severe pain in the right knee-joint, followed by copious effusion into its capsule in the course of the next morning. An active purge, continued warm applications, and the use of colchicum and alkaline salts, speedily relieved the joint and the system together, for a time at least, of the material cause of the malady in both, and she quickly resumed her occupation.

The eye is often the seat of inflammation, deriving its character from constitutional taint,—such as the rheumatic, gonorrhœal, or syphilitic, and the gouty diathesis is well known to excite its specific inflammation also in the different tunics. Of these gouty affections none is more serious or alarming than iritis.

IV.—Many years ago I attended, along with an eminent oculist in Edinburgh, a young lady of twenty-five, belonging to a family highly predisposed to gout, but who had never suffered from any of its external manifestations in her own person, though her sisters, to the exclusion of her brothers, had suffered largely from its local effects. These facts of family history were unknown to us at the time of our attendance, which was required in consequence of a sudden and violent attack of iritis coming on in the course of the night, and without any assignable cause. Regarding the affection as one of pure iritis, the most prompt and energetic measures were had recourse to, cupping and leeching, calomel and opium, darkness, belladonna, and other available sedatives, were all put in force; but the inflammation was not controlled, and effusion into the anterior chamber, adhesion of the iris, and contraction and obliteration of the pupil were the consequences. Melancholy to relate, the other eye, during the progress of these events, was attacked with the same form

of disease, which, resisting all our remedies—among which, however, colchicum was not included—renewed the painful history of the first invasion, and closed its course in destruction of the eye, and in total blindness.

I know in Edinburgh, where gout is said to be an extremely rare disease, at least one other case a parallel to the above. A gentleman, now fifty years of age, belonging to a family who have had sad experience of the damaging power of gout, has for many years been deprived of sight, and can trace to iritis, originating in the prevailing diathesis of his family, the privation he now so patiently endures. In these cases of gouty iritis we learn from our best writers on the eye, that the disease neither requires nor admits that free use of mercury which is so advantageous in other forms of the complaint. Mr. Lawrence mentions that he has seen cases in which mercury, carried to salivation, has been injurious rather than beneficial. He is favourable to the use of colchicum. Bloodletting requires to be employed with caution, and the treatment generally to be regulated by the prevailing diathesis.

Gout is acknowledged to be the origin occasionally of tonsillitis, of laryngitis, of bronchitis, of pleurisy, and pneumonia, and the writings of the many authors, who have treated of gout, abound with examples of these affections in intimate relation with it. It is singular that it is so little suspected of being the cause of inflammation of the membranes of the heart. Dr. Latham, in his admirable work on "Diseases of the Heart," has made this remarkable admission: "My own experience of pericarditis is mainly derived from what it is as an accompaniment of acute rheumatism. I have seen the disease, indeed, under other circumstances; but it has been very seldom, so seldom, indeed, that I have little acquaintance with other conditions, external or internal, conducing to it, I can neither tell whence to look for it, nor when to expect it, except when it occurs as a part of acute rheumatism." The

late Dr. John Taylor, however, was at the very time engaged in conducting an inquiry into the causes of pericarditis, the result of which has since been published, and been the means of throwing much additional light on this still obscure subject. And to the very valuable observations of Dr. Taylor on albuminuria as a frequent cause of pericarditis, we have to add those of Dr. Scott Alison and others on scarlatina as productive of similar effects. Other blood diseases have been noticed as the occasional source of inflammation of the membranes of the heart, and more particularly typhus and small-pox; but I am not aware that gout has been referred to as the cause of such affection.* This is the more remarkable, as the close resemblance between gout and rheumatism as blood disorders, and their known tendencies to excite inflammatory action in certain tissues, might have led us from analogy to conclude that the heart, which is so often the seat of rheumatic inflammation, should be also that of the inflammation in connexion with gout.† Dr. Watson, however, tells us that “in gout, though many functions suffer, there is no tendency to carditis.” Notwithstanding, we have still much to learn of the history of pericarditis, and of endocarditis, independent of rheumatism and renal disease, and have a wide field of discovery open to us in the investigation of the etiology of the milk-patches or white spots on the surface of the heart, which have engaged the attention and perplexed the minds of pathologists (and which Mr. Paget has now demonstrated to be the products of inflammation), as well as of the various pathologi-

* Corvisart has remarked that rheumatic and *gouty* affections are frequent causes of adhesion of the pericardium.

† The material of gout appears certainly to have a greater affinity for the synovial and mucous surfaces; that of rheumatism for the fibrous and serous membranes. Hence we find in the former, besides the affection of the joints, an intimate connection with tonsillitis, bronchitis, gonorrhœa, and other inflammatory affections of the mucous membranes; while in the latter the most frequent connection is with pleurisy, pericarditis, and peritonitis.

cal conditions of the inner lining of the different cavities, and of the vegetations and wrinkled induration of the valves, which still baffle the speculations of the anatomist. Lobstein traces most of these morbid conditions of the endocardium to gout as their real source, and Hasse has acknowledged that the evidence he adduces is, in many instances, most convincing.

I have long entertained the notion that the extreme frequency of pericarditis and of endocarditis, as demonstrated in these morbid alterations of the heart's structure found after death, is to be traced to the prevalence of the gouty diathesis. We know how slight and transient is the pain in the small joints of the fingers, which is occasioned by the gouty inflammation and the gouty deposit there, and how many are the years that elapse before these indications of diseased action reveal themselves to our senses by thickening and stiffness, and swelling. May not the transient pangs in the cardiac region which so constantly affect the victims of the gouty habit, originate in the specific inflammation when it is in the act of depositing lymph which is, by slow yet sure degrees, to form the milky patches and the small adhesions, and the puckered valves and slender vegetations which we find so often after death, and which teach the lesson that there is no structure of the body more liable to inflammation than the investing and lining membranes of the heart, though the evidence of diseased action has neither been detected nor perhaps been detectable during life?

There are few, or perhaps none, of the subjects of gout we have seen, who have not sooner or later given evidence of organic disease of the heart or arteries, progressive in its nature, yet often so slow and insidious that its existence has only been discovered when some accidental illness or other circumstance has called for an examination; and all must acknowledge that the fatal diseases of the gouty are those con-

sequent on alteration of the heart's structure, originating in valvular imperfection, followed by hypertrophy and dilatation, and terminating in palsy or apoplexy, or serous effusion in the brain at one time, or in asthma or hydrothorax at another, or in disease of the liver and general dropsy, or in some of the recognized affections connected with vascular congestion and obstruction.

But we are not left to conjecture in regard to the influence of gout in the production of inflammation of the membranes of the heart. I have seen at least two instances in which pericarditis has been allied with gout by ties as intimate and indubitable as I have ever known it to be connected with acute rheumatism, and feel satisfied that, when there is a more distinct recognition of the gouty diathesis, and a clearer diagnosis of its characters, it will be acknowledged to play a most important part in many of the cardiac inflammations which we are called to treat ; and be recognised as the foundation of many of the morbid appearances which we discover after death.

V.—I had for many years an opportunity of watching the development of the gouty diathesis in a young lady whose family history afforded more than one proof of the prevalence of the disorder. Her father had died of heart affection, which there is reason to believe was associated with gout. Her sister immediately senior to herself had for many years been affected with frequently recurring attacks of gouty psoriasis, accompanied with gastric and hepatic derangement, which yielded only to remedies of an anti-arthritic character ; and a maternal uncle had been for many years the victim of gout in its purest and most undisguised form, and to such excess, that the fits, in frequency and severity, baffled all attempts to control them. With so much of her predisposition known, Miss T. came under my care about two years previous to her death, at the age of twenty-five, with symptoms of obscure heart affection,

alternating with those of gout in the small joints of the fingers, and the usual derangement of the stomach and disorder of the renal and biliary secretions. At this time there existed a slight endocardial murmur with the first sound, which after repeated examination I satisfied myself was not anemic; and it was persistent through life. She frequently complained of pain in the region of the heart, and of preternatural impulse, and these were always aggravated by exertion in walking, or by ascending a stair. Her general health was otherwise good, and remained undisturbed save by the occasional returns of the gouty pain, and swelling of one or more of the metacarpal or finger-joints, and of cardiac uneasiness and palpitation. The attacks yielded to the alkaline salts, with small doses of colchicum, and, in the interval, benefit appeared to be derived from cod-liver oil. Two years had passed, with frequent recurring fits of illness, when at the close of January 1849, Miss T. was seized with severe pain in the præcordial region, with hurried breathing, and more than usual pulsation. The pain and swelling of the fingers were at the time of moderate character, and quickly disappeared. When seen on the second day of her illness—for long acquaintance with symptoms of a mitigated kind had made her too regardless of her present state—she was found lying on her back, with her shoulders raised in bed, her countenance pale and anxious, her breathing hurried, and performed with pain, her pulse rapid and small, her skin hot and moist. There was pain over the region of the heart, increased by pressure between the ribs, and on the epigastric region. There was extended præcordial dulness, and distinct rubbing sound, in which was lost the ordinary endocardial murmur. The rubbing sound by and by gave way. The mind continued unclouded. Repeated leeching, the rapid introduction of calomel and opium, together with colchicum and other adjuvants, appeared to produce no sensible effect on the still more rapid effusion; and with feeble and uncountable pulse,

and tumultuous, trembling, action of the heart, she sank on the third day. She died, I doubt not, of pericarditis with extensive effusion, caused by the specific poison of gout in the blood, but no *post-mortem* examination was permitted to reveal the full amount of the damage thus sustained.

In the fourth volume of the *Transactions of the College of Physicians of London*, Dr. Haygarth details the case of Governor B., a gouty old gentleman of seventy-five, who had for six weeks been affected with pain in the wrists and knees, accompanied with swelling. These symptoms had considerably abated, when he was seized with violent pain in the left side of the chest, exactly in the region of the heart, with great irregularity and rapidity of pulse, and such extreme anguish that it occasioned profuse sweats. After bleeding and blistering had been ineffectually employed, the application of sinapisms to the wrists produced speedy relief. The wrists became very painful and much swelled, and the disorder of the heart was soon and considerably relieved. Dr. Haygarth and Dr. Stewart regarded the case as one of carditis arthritica. In the absence of all record of the physical signs, many may be disposed to doubt the propriety of placing the symptoms under that name, and may regard them only as indications of functional disorder of the heart, in connection with what is called retrocedent gout.

The history of enteritis has sometimes been written in connection with gout, though the writer may not have perceived the intimate relation of the one to the other.

VI.—Many years ago I attended, along with the late Dr. Abercrombie, one of the clergymen of the city, a gentleman of sixty years of age, of spare habit of body, and abstemious in food and drink, but, notwithstanding, a great sufferer from gout, which had descended to him by hereditary transmission, and visited him in the pure and regular form twice or thrice a year. The usual times of attack, he had remarked for many

years, were on the occasion of more than ordinary exertion, particularly at the communion seasons.* After an absence of the fit longer than he had been accustomed to experience, he was seized one afternoon with pain in the abdomen, augmenting in severity, with sickness, vomiting, and obstinate constipation. These symptoms increased in urgency, and were attended by fever, quick small pulse, great thirst, and tenderness over the belly increased on pressure. We entertained no doubt of the existence of acute inflammation of the covering of the bowels. The usual remedies were had recourse to, but the symptoms did not yield. I suggested that the attack might be regarded as a form of gout, and might possibly be found to be influenced by the operation of colchicum, from which our patient had always obtained marked and speedy relief, when the malady centred in the foot. In this view Dr. A. readily acquiesced; and full doses of the wine were accordingly administered at short intervals. Copious diuresis resulted; the obstruction of the bowels gave way; and speedy relief to all the symptoms followed.

The alliance of gout with nephritis has often been noticed; and with nephralgia and stone the connection is close and frequent. Gout, moreover, is so intimately related to renal degeneration, as to justify the employment of the term *gouty kidney* by the late Dr. Todd and others, in reference to a form of structural change in the organ which, though by no means peculiar to the gouty, very frequently occurs in those who have suffered from the blood-poison of gout.

VII.—I was requested by Mr. Craig of Ratho, to visit with him a gentleman aged sixty, a member of a gouty family,

* An eminent cabinet minister, a martyr to gout, informs me that the most severe fits of his malady usually follow his more laborious duties on the floor of the House of Commons, at a time when he is obliged to be particularly temperate in matters of diet.

who had been for years suffering from dyspeptic symptoms, which required great prudence in diet to mitigate and overcome. At the same time there were frequent attacks of pain and uneasiness in the feet, and neuralgia in the lower extremities, but a fit of gout had not developed itself. The urine at this time gave no trace of albumen, but was of acid reaction, and deposited the lithates. He then began to be affected with headache, and indistinct vision, and on examining the urine it was found slightly albuminous. The renal disorder advanced, the cerebral symptoms keeping pace with its development, œdema of the feet and limbs came on, and in the course of three months he died comatose.

VIII.—Some months ago I was requested by Mr. Tait of Dunse to see a noble lord, aged forty-five, suffering under a protracted attack of gout, which had affected the ankle and knee-joint, as well as the tunics of the eyeball. Obscure indications of the disease had previously manifested themselves, and it was hereditary in the family. Mr. Tait had found, on an early examination of the urine, that the oxalates and oxalates existed together with the lithates, but, as the disease of the joints declined, these disappeared, and were replaced by traces of albumen gradually becoming more and more distinct. The albuminuria had now been persistent for many months; the general health had, notwithstanding, improved, chiefly under the use of cod-liver oil, and there had been no return of gout. He died, however, at a distance from home some time afterwards of an attack of acute pericarditis—a termination of albuminuria by no means unfrequent.

The gouty diathesis plays a most important part in some of the functional and organic diseases of the uterine system. Its connection with menorrhagia, leucorrhœa, and dysmenorrhœa is well known. The following case illustrates its operation in a manner to which I have not hitherto seen any reference.

IX.—Mrs. M. married early in life, and became the mother of a large family. She enjoyed excellent health, with the exception of such deviations as arose from hysteria at one time, and frequent returns of hæmoptysis at another. The former affection, often severe and protracted, distressed her chiefly during the earlier years of her married life, and subsequently gave way to the hæmoptysis as a vicarious discharge. They alternated for years, and ultimately the nervous symptoms declined, and the attacks of spitting of blood became more frequent and more severe. The quantity of expectoration was never alarming; it was always florid, and mixed with thin mucous or serous fluid. Its appearance was not influenced by the state of the catamenia or by pregnancy. Its approach was always indicated by a sense of tightness and oppression, sometimes of pain, in the upper part of the right side of the chest. There was seldom any ferbile disturbance. The blood was expectorated by an effort or slight cough, but no other symptom of pulmonary irritation was discovered, beyond a mucous rale confined to the part indicated by the sense of tightness. The attacks of hæmoptysis recurred at uncertain periods, sometimes six or seven times a year, and lasted from three to seven or eight days at a time. They had recurred in this manner over a period of twenty years and upwards, when about the disappearance of the catamenia they also ceased, and were succeeded by symptoms which Dr. Simpson, who now saw the case, regarded as those of spurious pregnancy. After a fruitless gestation, indications of irritation in the right ovarium presented themselves. Constitutional disturbance arose, and on examination pelvic cellulitis was discovered. While this newly-developed affection was under treatment, to which, however, it was not amenable, indications of gout presented themselves in the middle joints of the fingers, and the urine was found greatly loaded with lithates. Under a plan of treatment adapted to the prevailing constitu-

tional derangement, including the alkaline salts and colchicum, the general and the local symptoms gradually declined, and after four or five weeks spent at Buxton, renewed health was acquired, and the long pent-up disorder of the system disappeared, along with the catamenia, in a fit of the gout,—a disease, in part, acquired by generous living, and in part, inherited from a parent, who had long manifested its possession in numerous nodosities of the fingers and hands—deformities which he has transmitted to his offspring.

In reference to this class of cases Dr. Simpson has favoured me with the following communication :—"I have seen several cases of inflammation of the uterus, or rather of the uterine region, of the nature of simple gout, or rheumatic gout ; or, at all events I believed these inflammatory attacks to be of this special pathological nature, in consequence of their coexisting with, or following immediately upon, the presence of undoubted gout in other parts of the system. In one instance which I had the pleasure of seeing repeatedly along with you last summer, the attack of uterine gout came on during the existence of a marked prolonged fit of the same disease in the fingers, etc. The principal organic effect, as ascertained by vaginal examination, was effusion into the cellular tissue of the broad ligaments—pelvic cellulitis—giving rise to tumefactions of considerable size around the sides of the uterus. This pelvic effusion was gradually absorbed under some local antiphlogistic means, and the use internally of colchicum and other medicines.

"About the same period I visited repeatedly, at some distance from town, a lady, hereditarily predisposed to gout, who, after some prolonged constitutional derangement, was seized with excruciating pain, followed by redness and swelling in and around the right ankle. The agony attendant on this attack was so great that she could not move the limb in the least for two or three weeks. There were large quantities of

oxalates in the urine. When recovery, however, did begin, convalescence was very rapid for two or three weeks ; when she travelled home to her own residence, a journey of nearly a hundred miles. Shortly after arriving, she was seized with severe pelvic pain ; and two days subsequently there was a large inflammatory swelling in the right broad ligament, and at the same time much effusion of serum into the cellular tissue of the upper portion of the posterior wall of the vagina. This last formed a tumor like an orange, or larger, projecting backwards into the rectum. Under leeches and mercury these swellings subsided, but with a rapidity seldom or never seen in common cases of similar inflammatory swellings attendant upon common pelvic cellulitis.

“ In the first case of uterine gout which I ever saw (now some years ago), the lady suffered repeatedly and metastatically in the uterus, simultaneously with, and sometimes after, the appearance of the disease in the extremities. The uterus was very large—was fixed as if there had been perimetritis ; and in the attacks which I watched, it appeared to me that the wall of the organ and the peritoneal surface were usually the seats of the morbid action. In her there was no effusion into the neighbouring cellular tissue. In none of the instances of gout of the uterus which I have watched, have I seen the inflammatory action attack the neck of the uterus, or the mucous membrane of the organ. Rheumatic inflammation seems to do so.”

These examples of diseases of a congestive or inflammatory nature sufficiently illustrate the influence of the specific poison of gout in generating or modifying the form of morbid action : and it is of great moment to keep in view the effects produced by such contamination, for though the lesions resulting in such cases may not differ pathologically from those of idiopathic origin, yet the specific character of the disorder being established, it will be found that the maladies originating in it

are amenable to certain remedies, which otherwise might have been overlooked.

The gouty diathesis is frequently the origin of many painful affections of the nerves, and is known to give a character to their history, which being recognized, a mode of treatment is suggested which is often successful after other means had failed.

X.—I was called to see Capt. G. labouring under a severe attack of sciatica which had resisted many applications, and a great variety of internal remedies. I ascertained that he had a hereditary claim to gout, and had manifested some indications of its early visit. Accordingly the case was treated as one of gout, and colchicum and alkaline salts were prescribed. Complete relief from suffering was quickly obtained, and similar results followed, on a subsequent occasion, the administration of the same remedies at the onset of the attack.

In cases where the neuralgia partakes more of the asthenic than the sthenic form, the combination of quinine or iron with colchicum has often a happy effect.

XI.—I was requested by Dr. Pagan to visit with him a gentleman, aged sixty, who had been for many days suffering a severe and intractable attack of sciatica. A great variety of treatment had been previously employed, but the result had not realized expectation. The gouty diathesis was more suspected than proved or acknowledged; and as the symptoms indicated neither active congestion nor inflammation, but on the contrary an atonic condition of the system, quinine with colchicum were recommended, and after a steady trial were found beneficial, the disease yielding to their united influence what had been refused to their action singly and unassisted.

XII.—Some years ago I was consulted by a gentleman, aged sixty, for a severe and lasting neuralgia, which had resisted varied and long-continued treatment. He was of gouty habit, but of regular and temperate mode of life. Under the use of colchicum in combination with iron and quinine, he speedily

got rid of his malady. It never returned, and he died lately of chronic heart disease.

That gout may affect the brain in a variety of ways has long been recognized ; that it may also affect the spinal marrow is a truth which, though well established, is yet comparatively little known. We are chiefly indebted to Dr. Graves for the information we possess on this interesting point ; and though his views in regard to the manner in which the spinal marrow or its investments become the subject of degeneration and softening may be open to controversy, there cannot, I apprehend, be a doubt that gout or the gouty diathesis may influence these structures, and produce a state of complete paraplegia. Dr. Graves has attempted to prove that gouty inflammation of the nerves and their neurilemma may, in process of time, extend to the spinal marrow and its investments, and give rise to the derangements of the latter, terminating in ramollissement and structural degeneration. The cases he has adduced in support of this are interesting and instructive, and tend to shew that disease commencing in the nerves of some particular part or organ, may be gradually propagated to the spine, producing all the symptoms which are referable to an original affection of the nervous centres. Whether the disease originates in the periphery of the nervous system, and passing along the trunk of the affected nerve with a retrograde movement, finally reaches the nervous centre ; or whether, originating in the latter, its first manifestations are perceived at the extremities of the nerves, there cannot be a question that a peculiar form of palsy of the lower limbs is intimately associated with the gouty diathesis.

XIII.—Some years ago I attended a member of a gouty family, a gentleman of the age of forty-five, who had long laboured under the dyspeptic derangements which usually occur in the fit of gout. He had suffered much from the mental depression and hypochondriacal anxieties of the pre-

monitory stage, and been familiar with the cardiac distress, and fugitive pains and twitches which foretold the more severe and lasting indications of his family inheritance. He had, moreover, indulged, though not to great excess, in the luxuries of the table. After exhibiting symptoms of latent gout in the extremities, he began to manifest an unsteadiness of gait, and want of command or power over his legs. Sensation was somewhat depraved, but not in proportion to the loss of power of motion. Considerable irritability of bladder accompanied this condition, and by and by the power of retention became affected. The urine was loaded with the lithates, and numerous crystals of the oxalate of lime were found from day to day. The usual symptoms of gout had disappeared, but those affecting the nervous system had continued for upwards of a month. He was placed on a simple, rather spare diet, and took the nitro-muriatic acid, with alterative doses of arsenic, and subsequently cod-liver oil, under which he gradually recovered. After enjoying good health for many years, he was again seized with similar symptoms, but in an aggravated degree. Under the same treatment he again recovered, but there are now obscure indications of cerebral disease of grave character.

XIV.—I have lately been in attendance, along with Mr. Smith of Lasswade, on a gentleman, aged fifty, inheriting a well-marked predisposition to gout, and who has for many years manifested its possession in the purest form, developed in frequent attacks in the toe, instep, and ankle, as well as in the knee, elbow, and small joints of the fingers. For many months before I saw him he had complained of weakness of the back and loins, and betrayed an unsteadiness in walking, and loss of power over the lower limbs. To these symptoms succeeded an irritability of bladder, and difficulty in commanding a steady flow of urine. The mind was dejected. All his symptoms became aggravated immediately before an

attack of gout in the extremities. The urine was found to contain the oxalate of lime crystals in considerable numbers, along with the lithates and bladder epithelium in small quantity. During the earlier part of his illness a variety of treatment had been adopted, but without apparent benefit. Latterly he derived advantage from the nitro-muriatic acid, and from small doses of arsenic continued over a long period as an alterative, and improved in walking, and in general health. The fits of gout, however, again became more severe, and recurred more frequently; and it had been observed that the nervous symptoms on such occasions were of a graver character—that articulation became affected, and confusion of thought and other symptoms of an apoplectic tendency shewed themselves, always subsiding, however, on the manifestation of gout in the extremities. This gentleman died some years afterwards with well-marked symptoms of brain disease.

XV.—A gentleman, aged fifty, inheriting the gouty diathesis from both sides of his house, began, about the age of forty-five, to manifest in his own person the symptoms of the disease. The usual precursory signs were not clearly developed; but after suffering from dyspeptic derangement and cardiac uneasiness for some time, he began to complain of heat and tenderness in the soles of the feet, which were followed by a slight attack of gout in the ball of the great toe. He now suffered from hemorrhoids, and for many months the discharge was so copious as to weaken and blanch him. During this time the symptoms of gout were slight and evanescent; but he began to complain of loss of sensation in the feet, and of numbness gradually ascending the limbs. His gait became unsteady and insecure, and he felt the discomfort of not knowing that his feet reached the ground, or on what he was treading. Sensation gradually became impaired over both limbs, and upwards over the hips and

loins to the height of the lower dorsal vertebræ. The hemorrhoidal discharge was arrested by the application of ligature; and after the employment of means directed to the removal of his anemic condition, it was hoped that the paralysed limbs might recover sensation and motion. No improvement, however, in this respect has taken place. The bladder has lost power. The urine, which at one time contained the oxalate of lime is now persistently phosphatic, and walking is performed with difficulty, and at the expense of numerous falls. On different parts of the body there are patches of psoriasis. Under the impression that it belongs to that class described by Dr. Graves, and has gout for its origin, the patient has been subjected to an anti-arthritic treatment, including the cod-liver oil, but as yet with no better result.

There is reason to fear that in this last case some organic change may have taken place in the spinal cord or its sheath, the result of gouty inflammation there; though the favourable termination of one of the cases immediately preceding may encourage the hope that, under the persistent employment of remedies directed to the removal of the gouty diathesis, the paraplegic condition may still be overcome.

I shall now proceed to illustrate by examples the influence of the gouty diathesis in some forms of functional disorder and organic disease.

Heberden begins and ends one of his admired commentaries as follows:—"What are those little hard knobs, about the size of a small pea, which are frequently seen upon the fingers, particularly a little below the top, near the joint? They have no connection with the gout, being found in persons who never had it; they continue for life; and being hardly ever attended with pain, or disposed to become sores, are rather unsightly than inconvenient, though they must be some little hindrance to the free use of the fingers."

Many years have passed since Heberden suggested and answered the question thus proposed, and few, I apprehend, of those who have since perused his writings have felt themselves disposed to differ with him in opinion, and give a different answer. Nevertheless, the question, if I mistake not, admits of a distinct reply; and those little knobs, which physicians in all ages must have noticed and considered, are in reality intimately connected with gout, though they are often found in those who have never experienced a fit of the disease. They are the product of the gouty diathesis; they are the deposits of the gouty blood; and are not less certain indications of that habit, than the enlarged cervical glands, and irregular cicatrices, which mark the deposit and progress of tubercle, are of the strumous constitution. Both are guides and landmarks to the inquiring and observing physician; both are eminently suggestive as points of diagnosis, and as indications of treatment, not only as regards the individuals themselves in whom these manifestations appear, but as respects the many who may be related to them by ties of kindred blood.

I have again and again traced the rise and progress of these little knobs to their full development; I have seen that progress slow and almost imperceptible from year to year; and have seen it equally rapid and observable during the course of as many months. They are occasionally the result of an inflammatory affection of the fingers, more or less acute in its character, and attended by the same constitutional disturbance which marks the fit of gout; but more commonly they are the consequences of a slow and chronic disorder, in which dyspeptic derangement has been chiefly noticed, while occasional twitches of pain in the fingers, and a sense of fullness and stiffness there, have been the only forerunners of those morbid products which are destined to last through life. They are found chiefly among the upper classes, or among

the luxurious and well-fed of their dependents, and are seldom or never found disfiguring the hands of the industrious labourer, or of the hard-working mechanic. I have never seen these knobs but in connection with gout or the gouty diathesis ; and their presence in the fingers of a patient, or of a blood relation, has often led me to a right diagnosis of some obscure affection, or been the means of throwing light on the nature of some anomalous symptoms which had baffled all attempts to unravel.*

XVI.—A lady aged thirty-five, the eldest daughter of a numerous and healthy family, where death had not yet entered, had for many years suffered from severe and lasting headache, which had resisted the skill of more than one physician, and defied the power of many and diverse remedies. She was of full habit of body, and florid complexion ; active in household affairs, which chiefly devolved upon her, and accustomed to regular exercise in the open air. Her appearance was continuously that of health, and all the functions were said to be discharged in correspondence therewith. Nevertheless her long-continued headache was of a severe and intractable character ; and it required all the efforts of a vigorous and well-regulated mind to sustain her under her sufferings. Among the varieties of headache which have been observed and described by authors, it was difficult to fix on one which bore the characters of that which she presented. It was not nervous or hysteric ; it was not inflammatory or congestive ; it was not anemic ; it was not dyspeptic. It could not be traced to cerebral disease ; it was not of neural-

* Dr. Garrod takes a different view of these *digitorum nodi* of Heberden, believing that they have no connection with genuine gout, and considering them a form of what he calls rheumatoid arthritis. I apprehend that there is a manifest distinction between "those little hard knobs about the size of a pea, which are frequently seen upon the *fingers*, particularly a little below the top, near the joint," and the nodules and distortions of the hand as represented in Fig. 24 of the interesting and scientific work of Dr. Garrod.

gic or rheumatic character. It was not periostitic ; it was not periodic. It was not, according to observation, sympathetic of uterine derangement or renal disorder : though a careful scrutiny of the urinary secretion time after time detected the oxalate of lime alternating with the lithates, often to great excess ; and the menstrual period, though regular, was often accompanied by the sufferings of dysmenorrhœa. Thus an approach was made towards ascertaining the character of the headache under which the patient laboured. Her father displayed his hands, and his fingers presented the little knobs of Heberden ; and farther inquiry led to the confession that he had long suffered from the cardiac uneasiness, and flatulent distention, and acid eructation of the gouty. The paternal grandfather had been the victim of gout, and died suddenly of heart disease. Has any light arisen amid the obscurity which has so long concealed the true nature of this perplexing headache ? And can we hope that after bloodletting in different forms, and purging by various drugs, and alteratives of every kind, and counter-irritants, and vaunted specifics have all miserably failed, there remains anything to be accomplished by remedies suited for the cure of gout ? If there was one remedy less unavailing than another in the long catalogue which had been exhausted, that remedy was arsenic. Under its persistent employment for weeks and months relief to some extent was certainly obtained ; but the most effectual means were at length secured by the steady employment of saline diuretics combined with the preparations of colchicum. Arsenic appears to possess but a limited influence over chronic affections originating in the gouty diathesis, while over those of a kindred nature connected with the rheumatic constitution its powers are most remarkable. Colchicum, on the other hand, appears to obtain a doubtful effect over the purely rheumatic habit, while over that of gout it exercises a striking control. Under the persistent employ-

ment of a combination of colchicum with the nitrate and carbonate of potash, aided by those regulations of diet and exercise which are suitable to the gouty habit, the severe headaches were relieved and ultimately removed ; but, unhappily, by discontinuing the remedies too soon, and neglecting hygienic rules, in consequence of the pressure of severe family affliction, they have again returned, but in a less severe form, and are, there is reason to believe, again to yield by resuming the mode of treatment formerly adopted.

Let us look a little farther into the workings of the gouty diathesis in other members of the family to which the lady whose history has now been briefly related belongs. Her father, we have seen, inherited gout, and had long been familiar with the dyspeptic and cardiac derangements which manifest its presence. He was often anxious and dejected, and required to be assured, and reassured, that the palpitations he so frequently suffered, and the cardiac pangs he so often endured, were not symptomatic of organic disease. The irregularity of the heart's action was at times very great, and it continued so for days together, but an interval succeeded, in which in force and rhythm it was perfectly normal. The digestive functions were liable to frequent disorder, particularly after an indiscretion in regard to diet. Flatulence and acidity were the chief symptoms, and along with these appeared the more copious deposit in the urine of the lithates, alternating or co-existing with the oxalate of lime. The salts of potash and the preparations of colchicum were the remedies from which he always derived benefit, during the gastric and cardiac disorder, and in the interval the preparations of iron and the nitro-muriatic acid appeared to be beneficial.

After several years passed in this condition he began to manifest the more decided symptoms of gout in the extremities ; and on the occasion of a visit to England when unusually excited, was seized with arterial obstruction, resulting in

gangrene and loss of the foot. From this very serious illness he recovered, and continued for two years to enjoy a fair share of health. Subsequently he had several transient apoplectic seizures, and two attacks of hemiplegia, by which he was greatly disabled both in body and mind, and he died soon afterwards with marked symptoms of cardiac disease, obstructed circulation, and gangrene of the stump of the foot previously affected.

During the course of my attendance on this gentleman, while suffering from one of his attacks, I was consulted in the case of his eldest son, of the age of thirty-five, who had been suddenly seized with violent pain in the region of the kidney, with sickness and vomiting, and frequent desire to pass urine. This nephralgic attack yielded to anodynes and warm applications, and was followed on the morrow by the passage of a small calculus, which was found to consist of oxalate of lime. The urine in his case was generally loaded with the lithates, and he presented other features of the gouty diathesis, to the full development of which his habits and mode of life were not unfavourable. On another occasion my attention was directed to the case of a younger daughter of the family, a girl of fifteen, who had been greatly annoyed by a plentiful eruption of an eczematous character over the face and neck, with considerable constitutional disorder. In her the disease yielded, when acute, to the alkaline treatment in connection with colchicum; and in its more chronic form, to small doses of arsenic.*

Again, and all within the course of a few years, I was consulted in the case of an elder sister, who, after a chill caught in attending church, when her clothing had been wet by a passing shower of rain, was seized with acute pain in the

* This young lady has also recently suffered from a very severe attack of nephralgia, accompanied by hæmaturia, and followed by the passage of a small mulberry calculus.

right side, with difficulty of breathing, and all the general and physical signs of acute pleurisy. Here, too, after topical bleeding, the alkaline carbonates, with the wine of colchicum, were found effectual in removing the effused fluid, and in rapidly restoring the patient to health. Lastly, in order to estimate aright the influence of the maternal constitution on the health of the offspring, we are called to remark that the mother of this family, consisting of ten children, had early in life suffered from two severe attacks of rheumatic fever, in which the endocardium was involved, as demonstrated by a distinct systolic murmur over the aortic valves,—a damage, however, which never impaired her health, or was productive of suffering, or danger, till many years had elapsed, when, in addition to the diseased left ventricle, now greatly hypertrophied, there existed the signs and symptoms of dilatation of the right chambers, to which might be traced an attack of an apoplectic character, followed by palsy of one side, and soon after by enlargement of the liver and cedema of the extremities. Latterly, when at the age of sixty, a helpless paralytic, with progressive damage of the circulating and respiratory organs, she made a wonderful rally from acute gangrene of the toes; and died in twelve months afterwards from an attack of pulmonary apoplexy.

In reviewing the events of this family history, so far as they have come under my own immediate notice, and much must have been overlooked and concealed, I am led to conclude that the prevailing diathesis of the family, and the proneness to diseases connected therewith, were inherited chiefly from the father's—the gouty side of the house; the mother, though the subject of the rheumatic constitution, appearing, so far as we have seen, to have given no predisposition to her offspring, to any of the ailments under which we have seen them labour, if we except the pleurisy of the daughter—a disease, however, which is intimately

connected with gout, though its more ordinary source is rheumatism.

XVII.—Mrs. N. is now seventy-five years of age. She is descended from a long line of gouty ancestors, and carries with her the marks and indications of the slow, progressive, and silent poison which by inheritance has been transmitted to herself and family. It is now more than twenty years since I first saw her on a sick-bed, suffering from gastric, hepatic, and cardiac derangement; the latter gave her the greatest distress; and, as usual with such sufferers, raised the dread and apprehension of fatal heart-disease. She has outlived her fears; and now that functional disorder has given place to organic change, she is less concerned about the state and condition of the great organ of life, than the neuralgic pains, and crippling nodosities, which embitter and embarrass her declining years. She has had no regular fit of gout; but the little knobs upon the fingers, the flying pains in the hands and feet, the irritable stomach, the tumid liver, the over-charged kidney, the fluttering, palpitating heart, and other symptoms, have told for many years past that she has not escaped the fate of her progenitors. She labours now under valvular disease; she has occasional threatenings of an apoplectic character; and she has frequently suffered from the distress and anguish occasioned by the impeded transit or impaction of biliary calculi, and the jaundice which accompanies this condition. She has experienced in many of her attacks benefit from the salts of potash, and the preparations of colchicum, in combination with iron or quinine; and she has profited largely, especially in regard to her crippling and nodosities, by one of the best remedial agents in chronic gout—cod-liver oil. Mrs. N. is the mother of a large family, whose history in regard to health and disease, as influenced by their parent, it would be interesting to trace; but the pursuits of life exercised, in more instances than one, in dis-

tant lands, precludes the full investigation. Four sons and four daughters have grown up to manhood. Of the eldest of the males it is known that after foreign service he returned home the victim of liver disease, and sank under it, in combination with pneumonia of the right lung. Of the eldest daughter I might record the history of a long train of illnesses originating in marked gouty habit, demonstrated by the little knobs of Heberden, and manifested by the regular fit in the great toe and instep, in the inflammatory affections of many synovial membranes, in the frequent occurrence of more than one variety of cutaneous eruption, and especially in congestion of the liver and functional disorder of the heart; and latterly in constant returns of jaundice in connection with the passage of biliary calculi, during one attack of which, or rather during her convalescence from it, she was seized with epidemic typhus, and died on the tenth day, presenting the true picture of yellow fever. Examination of the body discovered an enlarged and waxy liver, and a distended gall-bladder, in the duct of which was found a biliary calculus of considerable size, while three or four more occupied, along with dark viscid bile, the gall-bladder itself. The heart was pale, and its cavities dilated; and the coats of the aorta, also dilated, presented here and there thin scales of atheromatous degeneration.

A younger daughter of this family, who is the subject of a short narrative in a former part of this paper, and whose attacks of iritis and subsequent blindness I have ascribed to the gouty diathesis, has since experienced in no unequivocal manner other manifestations of the arthritic poison, frequently, however, set aside by a vicarious discharge in the form of hemorrhage from the bowels. The pallid and cachectic appearance of this lady has long been remarked to be influenced by no remedy so much as by that which has proved so useful to her mother—the cod-liver oil in conjunc-

tion with iron. In this family history it is worthy of remark that the females, contrary to what is generally noted, inherit more strongly than the males the predisposition to gout, both in its regular and irregular forms.

XVIII.—A wealthy citizen, long a member of the civic corporation, and a frequent guest at the banquets which thirty years ago gave a charm to the possession of office, was the victim of gout, if not by inheritance, at least by conquest; and after exhibiting for many years its acquisition in various forms of gastric, hepatic, and cardiac disorder, followed by indications of interrupted portal circulation, of dilatation of the chambers of the heart, and of serous effusion into the sac of the pleura, died soon after his great climacteric of these not unwonted complications of visceral disease, the common termination of the gouty. The mother of his children survived him for several years, but died ere she reached the age of seventy, with long-standing but obscure indications of gout, with signs of mitral-valve disease, with enlarged liver, obstructed gall-bladder, incurable jaundice, and general dropsy. What legacy have they left to their offspring? We know not the amount bequeathed to each; but the eldest son, long ere he reached the prime of life, gave unequivocal tokens of the possession of a large share of family honours and misfortune. He had frequent fits of pure, undisguised gout,—the true podagra,—and by and by of gout affecting various functions, and implicating many organs, and terminating not life, but hope, in cerebral disease and mental alienation. Another son partakes richly in the same inheritance; he is early the votary of sensual indulgence, and cannot escape the fate on which he has rushed. He has fit upon fit; but still he pursues his course, till having reached his fiftieth year, he is struck down by an apoplectic seizure, and recovers only partially, in order to drag out the remainder of life, a broken and palsied cripple. A sister at the age of

thirty has seen many physicians. She is considered dyspeptic by one, and hysterical by another ; and after a long routine of unavailing practice, she is forced to forsake legitimate treatment, and to seek abroad in hydropathy and other resources the relief she had sought in vain from the regular physician. She is only the victim, however, of disappointed expectation, and returns home to test once more the efficacy or the worthlessness of physic. She had become pale ; she complained of oppression of the chest, and of frequent faintness ; she had much dyspnoea, and great flatulent distension of the stomach, to allay which she had sought the too frequent use of stimulants,—of lavender, and sal-volatile, and brandy. Her pulse was small and weak ; the impulse of the heart was feeble, but there was no abnormal sound. The liver was tumid ; the alvine excretions were pale ; the urine was dark and loaded ; and the skin assumed a jaundiced hue. She lost all relish for food ; she had a craving desire for wine and brandy. She began to wander in her talk ; she moaned from headache ; she manifested great confusion of thought ; she became highly delirious ; she sunk into coma, and died ; her death apparently caused by the non-elimination of bile or urea. Many months before these last fatal symptoms revealed themselves, she had presented the signs of gout in the tender and swollen finger-joints, and had more than once obtained a partial mitigation of her symptoms by a copious menorrhagia, and a more permanent relief after the depletory means employed to overcome an attack of peritonitis, in connection with a fibrous tumour of the uterus, under which she had long laboured. Dissection disclosed a small and fatty heart ; a greatly enlarged and greasy liver, and kidneys whose structure was fast degenerating into the same morbid condition. The uterus was small and shrunk ; and in its muscular substance was found imbedded the remains of a fibrous tumour of the size of a nutmeg.

Lastly, in connection with this family history we may record in passing, that a cousin by the mother's side, a gentleman of fifty years of age, had long laboured under gout in its severest form, and manifested in his distorted fingers and crippled toes the miseries of his sad inheritance. His son, too, while a youth of twenty, was the victim of an intractable dyspepsia which was intimately associated with the gouty habit, and which admitted of no alleviation save that which was obtained from remedies suitable to that disease. The father had tested perseveringly, during the fit, the efficacy of all gout remedies ; but like many others refused to submit to any restriction, during the interval, on the pleasures of the table, and had thus joined the outcry against colchicum—of which he had acquired a great tolerance—and all rational treatment of the disease, during the season in which the aid of the physician is most valuable.

XIX.—A gentleman, aged sixty-three, long resident in India, returned to his native country several years ago, having suffered little from disease of any kind during his absence. He had hereditary claims to gout, and though never affected by its ordinary local manifestation, had perceived indications of its presence in various functional derangements, and in vernal and autumnal attacks of congestion of the liver, accompanied by copious secretion of ropy mucus from the lining membrane of the pharynx and œsophagus, and by great gastric tenderness, depressing sickness and vomiting, and a torpid, inactive state of bowels. These illnesses were generally of fourteen days' duration, and were accompanied by severe neuralgic pains over the limbs, by burning pains in the feet and hands, and by a copious efflorescence of erythema. The hands were stiff and painful, and some of the joints presented the little knobs we have so often referred to. Since his return to this country it has been remarked that two sisters, one of whom resides at a distance from home, and the other along

with himself, are almost invariably affected at same time with himself, with illness, though of different characters to that under which he labours. The sister in the country suffers from a peculiar form of bronchitis, while the other residing in his own house is affected with severe headache, or by dyspeptic derangement, accompanied by distressing flatulence, by tenderness and tumefaction over the liver, with the usual signs of disturbed renal secretion. To these have been added, on the last occasion, the more unequivocal demonstrations of gout in the foot. The coincidence of these illnesses, generally twice a-year, and their progress, *pari passu*, have often been matter of surprise and interest, not only to the patients themselves, but to their medical attendants.

XX.—Mr. C. has not reached sixty years. He has been long a martyr to neuralgia, chiefly affecting the nerves of the lower extremities ; and has patiently submitted to heroic and expectant treatment, but with very partial or doubtful benefit. He is now affected with the paraplegic condition described by Dr. Graves, and to add to his miseries he has suffered from the distressing symptoms of angina pectoris, and from those depressing hypochondriacal feelings which afflict the gouty. His fingers display the little knobs of Heberden, and his urine deposits largely the octohedral crystals of the oxalate of lime. There are no signs of organic disease of the heart. He has benefited greatly, of late, by the persistent use of nitromuriatic acid, and by small doses of the extract of nux-vomica. His cardiac and nervous symptoms have disappeared ; his palsied and crippled limbs are now testing the efficacy of cod-liver oil, in conjunction with the extract of colchicum and the citrate of iron. Mr. C. does not admit that he ever had gout, or that he possesses any right of inheritance.

XXI.—A lady aged fifty-two, inheriting a predisposition to gout derived from her mother, whose family had long manifested its possession, both in external form and by internal dis-

order, having suffered much from severe neuralgia of the limbs, and in various parts of the trunk, and been subject to otitis in a severe form, became gradually dull and desponding, and required the treatment and discipline of a confirmed melancholic in a lunatic asylum. The urine was loaded with the oxalate of lime; and biliary and renal disorder prevailed. No treatment seemed to alleviate her mental condition. She has lately, however, been suffering from pain and swelling of the last joints of the fingers of both hands, which have resulted in the formation of little tender nodosities. The mind is now less dejected; and there has arisen a hope that depurants suited to the gouty diathesis may not be altogether unavailing in promoting the amendment which has lately taken place. This hope has been realised. Under the use of the hydriodate of potash the gouty symptoms have disappeared, the mind has become cheerful and unclouded, and she is restored to health.

The connection of gout with hypochondriasis and melancholia, and their relation to the oxalic diathesis, is a subject worthy of investigation.

XXII.—A gentleman aged fifty-six, descended from gouty ancestors, has during the last twenty years suffered from gout in various forms and modifications. After many years of dyspeptic suffering and nervous depression, he was seized with a fit in the extremities; and for a time the system appeared relieved. After a while the stomach again laboured, the liver became tumid, the feet and hands became swollen and tender, the bowels became irritable, and hemorrhoidal swelling and discharge commenced. A partial and temporary relief was again obtained, and by and by followed by symptoms of congestion and varicosity of the veins of the leg, and by painful sensations referred to the region of the heart. The pulse was found weak and compressible, the præcordial dulness extended, and the impulse of the heart feeble. Sensations of anguish of considerable duration from time to time occurred, and the mind be-

came gloomy and desponding. While in this state, without any exposure to cold, an attack of tonsillitis was ushered in by a smart shivering fit, and followed by bronchial irritation and cough, and by a scanty expectoration of viscid phlegm. The cardiac symptoms were relieved ; and on the subsidence of the bronchial irritation, the middle joints of the fingers of the right hand began to be swollen and painful. There have been in this gentleman's case long intervals of good health, alternating with fits of marked disorder of the liver, and followed at one time by inflammatory affections of the synovial tissues, or by smart febrile attacks, accompanied by irritation of the mucous membrane of the throat, bronchial tubes, or bowels, and generally terminating by profuse perspiration or remarkable diuresis. Temperance and active exercise control and check these seizures, while any approach to excess, or any indulgence in sedentary pursuits, never fails to foster and excite them. We may regard them as indications of the gouty diathesis. The fingers exhibit the little knobs of Heberden, and the urine is generally loaded with the oxalate of lime.

XXIII.—Captain G., long resident in India, returned to Europe in unbroken health, at the age of sixty. He did not acknowledge gout, but his fingers gave evidence of its existence in little knobs and chalky concretions. Soon after reaching his seventieth year he sustained a paralytic seizure, and in five years afterwards suffered an apoplectic stroke which proved fatal. His wife had died, at the age of thirty-seven, of pulmonary disease ; and several of his children died in early youth. Two attained adult age—a son and daughter. The former is strong and healthy, and shews no indication either of the gouty or strumous diathesis. The latter, now at the age of forty-seven, has been delicate during the greater part of her married life, and has suffered from neuralgia and other nervous disorders. She has also had periodical attacks of hæmoptysis alternating or co-existing with func-

tional derangement of the heart. The earlier attacks of hæmoptysis naturally roused the suspicion that there might exist tubercular disease of the lung, inherited from her mother. The blood, however, was not that which we are accustomed to see from such a source. It was pale and thin, and bore the character of an exudation from a mucous surface; while no stethoscopic examination could detect the presence of diseased lung. The functional derangement of the heart, and the spitting of blood, have both yielded to an attack of gout in the fingers and toes, the tenderness and swelling of which have been followed by the deposition of the morbid material, and the formation of "those little knobs about the size of a small pea, which are frequently found upon the fingers, particularly a little below the top, near the joint." She has since been subject to tonsillitis.

It would be easy to extend these illustrations, and adduce additional examples of the gouty diathesis in individuals or in family groups, so as to elucidate its natural history. I shall only record, however, one other case of a character which is very common, but in regard to which physicians are by no means agreed.

XXIV.—On the 5th of September last Mr. C. called to consult me regarding his health, which for upwards of a twelvemonth had been to himself and friends the source of much anxiety. I had been previously acquainted with him, though I had never prescribed for him in any illness; and was much struck with the expression of his countenance, and general appearance of disorder which he manifested. Mr. C. is sixty years of age, tall and well built, and particularly large-chested. He had spent the early part of his life in the army, and had always lived generously, though accustomed latterly to lead an active country life. Some years ago he consulted an eminent physician here regarding symptoms which were attributed to the heart; but was informed that

that organ was quite sound. Subsequently he had seen other medical men in different parts of the country, and lately had returned from a lengthened sojourn at the German spas. The stomach, the liver, the heart, were each in its turn considered the seat of disease, and the source of his sufferings. These sufferings at present consisted in severe and lasting fits of dyspnœa, often to the extent of orthopnœa, with great sense of debility and faintness. The pulse was weak, rapid, and irregular. The impulse of the heart was feeble; and a soft bellows murmur accompanied the first sound, heard over the region of the mitral valve, and not transmitted into the large arteries. There was extended præcordial dulness. The chest anteriorly gave no abnormal sound; but on the posterior and lower part, particularly of the left side, there were indications of œdema. The liver was enlarged and tumid, and could be readily felt a considerable way below the margin of the ribs. The urine was reported scanty, the bowels irregular, though generally relaxed; and the feet and ankles were found slightly œdematous. This group of symptoms forced on my mind the impression of dilatation of the heart, and mitral-valve disease, in connection with impeded circulation through the lungs, and consequent congestion of the liver and kidney. The question remained, Has Mr. C. had gout? It was answered in the affirmative. The last attack occurred a little more than a year ago, and much of the disordered health which the patient has experienced has been consequent on that illness. A somewhat more favourable prognosis is now required; and while the heart is admitted to be the seat both of functional and organic disease, the prospect is held out that life may be prolonged, and all the present sufferings allayed, by careful regimen and judicious treatment. Small doses of mercury to act upon the liver; small doses of colchicum and squill to act upon the kidney; full doses of iron to act upon the weakened heart

and circulation ; and a simple generous diet, with a moderate addition of wine, were prescribed. All active exercise was forbidden ; but recreation in the open air, in a carriage, or on horseback, was allowed.

In the course of ten days I was requested to meet Mr. Otto, Mr. C.'s ordinary attendant, in the country, and found our patient much worse. The dyspnœa was urgent. The right lung had become congested, hæmoptysis to a small extent had taken place ; the liver was more enlarged, and the feet and legs greatly swollen. The diuretics had not begun to act. A slight attack of gout had seized the great toe. No change of treatment was prescribed, beyond the application of a few leeches over the region of the congested part of the lung. In the course of another week the mercury and diuretics acted favourably, the breathing was relieved, the heart beat more forcibly and regularly, the tumefaction of the liver had subsided, and the swelling of the feet had greatly diminished. In ten days more, Mr. C. could lie down in bed ; the action of the heart was tranquil ; the mitral murmur soft and difficult to detect ; and all the symptoms had declined. A bitter infusion, with a saline diuretic, were recommended. The amendment was progressive for several weeks, but about the middle of October, without any assignable cause, there occurred a renewal of the chief part of the former history,—the dyspnœa, at first not urgent, but gradually amounting to orthopnœa, the feeble, rapid, irregular pulse, the tumid liver, the scanty urine, and the dropsical swelling of the limbs. Dr. Alison, at the patient's desire, was conjoined in consultation. The diuretics, to which digitalis was added, were increased, and mercury in the form of the proto-ioduret was given as an alterative. A moderate allowance of wine and animal food was still granted. Two or three weeks elapsed before these remedies had the desired effect, but about that time the symptoms again began to decline simultaneously

with the increase of the renal secretion ; and on the 24th of November, when I last saw Mr. C., he might be pronounced a fair convalescent. The action of the heart was normal in number and rhythm, the impulse feeble, the mitral murmur scarcely perceptible, the breathing free, the decubitus easy, the swelling of the liver had entirely disappeared, and there was not the least trace of œdema. About the beginning of January last there was a recurrence of the same class of symptoms, but they have again yielded to the same plan of treatment, including iron, and now (February 1), Mr. Otto informs me that his patient is again a hopeful convalescent. The physician, however, who has seen much of such cases, will not readily pronounce a too favourable prognosis. He knows that the whole series of phenomena is apt to recur again and again ; and though certainly under the influence of medicine, so long as the kidney does not refuse its office, yet the functional will gradually assume more and more the character of organic disease, and the heart, and lungs, and liver become involved in irreparable injury. The question will arise, which is the first link in this chain of morbid processes ? One will say the lungs, another the liver, and a third the heart. We reply with the last. The heart is first affected, but it is affected only functionally through gout. The muscular power of the left ventricle is weakened, and by and by, its cavity dilated, and its walls thinned, interrupted pulmonary and portal circulation succeed, and dropsy follows in consequence ; all produced by and aggravating the original lesion, which, however, is still capable of repair, so long as the kidney, which is seldom organically affected, is able to carry off the effused fluid, and relieve the circulation of the complicated causes of its interruption. In a subsequent attack of illness, corresponding in character to those just noted, Mr. C., while sitting up in bed, suddenly fell back, and immediately expired. No examination of the body was obtained.

I am quite prepared to find objections taken to these cases, and indeed to many others I have adduced, as illustrations of gout, and to have the following sentiments of a late reviewer quoted in support of such a position:—"In Dr. Forbes' Bibliography we reckon more than 200 works on gout, not one of which has issued from a Scottish press, while London teems with them. This produces a great peculiarity in the views and practice of our southern brethren. They trace gout in almost every complaint to which the human body is liable, not only in its congeners of biliary and urinary complaints, but in a great number of others,—diseases of the heart, liver, hydrothorax, dropsies, etc.,—while we, in our northern sphere, meeting with the same diseases unconnected with gout, which is extremely rare, consider them as separate entities, however allied." Now, I must, in turn, demur to the whole drift of this passage. I cannot persuade myself that gout is less frequent among the luxurious and well-fed of the north than among their fellows of the south, nor am I inclined to believe that hereditary taint, or the exciting causes of the disease, are less in operation in the one quarter than the other. Neither am I prepared to admit that there is any ground whatever for a great peculiarity of view and practice in the English mind. He who has attentively set himself to study the history of gout, and is possessed of opportunities and means of doing so, and can profit by observation and experience, will certainly find that, in the north as well as in the south, it disturbs many functions and originates many diseases, and that "the strumous is not more frequent than the gouty habit." Dr. Gairdner, who ventured this opinion in the first edition of his excellent treatise on Gout, informs us in a second that he has been much struck by the unanimity of assent which it has received. "But I have been still more pleased" (he says) "to find that friends around me, whom the high opinion of the public has placed

in the most conspicuous stations in practice, and whose judgment may therefore be relied upon, have also pointed to it as eminently truthful, and coinciding exactly with their own experience. Sir Benjamin Brodie has taken the trouble, indeed, of writing me—"I entirely agree with what you say as to the very frequent occurrence of the gouty diathesis. A large proportion of the persons that come to me with what are esteemed to be local diseases, are, in reality, suffering, from the influence of the gouty poison in the system, though they may have nothing which would commonly pass for gout."* And to shew that the writer, whose opinion is entitled to the greatest weight, is not one of those who trace gout in almost every complaint to which the human body is liable, let us turn to one of his most esteemed works—that on Diseases of the Joints. I quote from page 57 of the fourth edition. "The following case," says Sir Benjamin, "furnishes an example of a disease which, as far as I know, has not been described by any pathological or surgical writer. A gentleman, forty-five years of age, in the middle of June 1817, became affected with symptoms resembling those of gonorrhœa. There was a purulent discharge from the urethra, with ardor urinæ and chordee. On the 23d of June he first experienced some degree of pain in his feet. On the 24th the pain in the feet was rather increased, but not in a sufficient degree to prevent his walking four miles. There was some appearance of inflammation of his eyes. June 25th, the pain in his feet was more severe; the tunicae conjunctivæ of his eyes were much inflamed, with a profuse discharge of pus. These symptoms increased in violence, the pulse varying from 80 to 90 in a minute, the tongue being furred, and the patient being restless and uncomfortable during the night. The whole of each foot became swollen; there was inflammation of the synovial membranes of the ankles; and

* Gairdner on Gout, 2d Ed., p. 4.

it appeared to me that the affection of the feet themselves arose from inflammation of the synovial membranes belonging to the joints of the tarsus, metatarsus, and toes. He said he could compare the pain which he experienced to nothing else than that which might be supposed to arise from the feet being squeezed in a vice. On the 27th of June the left knee became painful, and on the following day the synovial membrane of this joint was found exceedingly distended with synovia. He was now completely crippled; compelled to keep his bed, and scarcely able to vary his position in the smallest degree without assistance. The inflammation of the eyes and urethra was somewhat abated. June 30, the inflammation of the eyes and urethra had much subsided, and the purulent discharge was diminished. The pains of his joints were less severe; and the feet were less swollen. On the following day the knee was less swollen also. He continued to mend, and on the 10th of July the swelling of the feet was still further diminished, and that of the knee had almost wholly disappeared. His pulse continued to vary from 80 to 90 in a minute, and his tongue was still furred. He had pain in the feet and knee, but less severe than formerly, and he was restless at night. July 13, he complained of pain in the right knee, and on the following day there was pain also of the right elbow and shoulder. The right knee afterwards became swollen from fluid within the cavity of the synovial membrane, but not in the same degree with the other knee, and the swelling soon subsided. There was never any perceptible swelling of the shoulder and elbow. August 1, all his pains were abated. The eye and urethra were nearly free from inflammation, and the purulent discharge was scarcely perceptible. August 5, he was free from pain, except on motion; the joints which had been affected were stiff; but he was able to move about on crutches. From this time he progressively mended. The

stiffness of the joints diminished very slowly ; but he was free from all uneasiness. He was longer in recovering the use of the shoulder than that of the other joints. In the following December he had another attack of the complaint. The symptoms were the same as formerly, taking place in the same order, and pursuing the same course, but with a much less degree of violence. This second attack lasted about six weeks ; and left him again considerably crippled. In March 1818 he became affected with an ophthalmia, but of a different nature from that which he laboured under in the preceding summer. The inflammation was seated in the proper tissues of the eye ; and it appeared probable that it would speedily have terminated in adhesions of the iris, and destruction of the powers of vision, if its progress had not been arrested by repeated bloodlettings, and the use of mercury. He had another attack of ophthalmia of the same kind four years afterwards." The treatment consisted of leeches and blisters to the knee ; liniments rubbed on the knee and shoulders ; and fomentations where there was severe pain. " Of the various medicines which were exhibited (adds Sir Benjamin), none seemed to be productive of benefit, with the exception of the *vinum colchici*. It was under the use of this medicine that not only the pains and swellings of the joints, but that even the purulent inflammation of the eyes and urethra first began to subside ; and I am, on the whole, inclined to believe that my patient was indebted to it for a much more speedy recovery than he would have obtained otherwise."

Those who are conversant with the features of gout, and have perused this history, will, I believe, be convinced that there is no desire in the South to ascribe to gout an undue or exaggerated influence.

These illustrations which I have thrown together, and the study and observation of gout in its more ordinary manifestations, lead to the following conclusions :—

1st, That gout is a constitutional disorder, originating in mal-assimilation, and in the secretion and non-elimination of a morbid product, which by accumulation in the blood, and transmission through the ordinary channels of the circulation, disturbs many functions, and engenders many diseases.

2d, That it is a hereditary disease, chiefly through the contaminated blood transmitted from parent to offspring; but that it may also descend from ancestor to heir, through a peculiarity of the textures prone to be affected by the morbid material.

3d, That it may be acquired by habits of indulgence, calculated to injure and deprave the digestive and assimilative processes, and produce the peculiar contamination of the circulating fluids in which the essence of the disease consists.

4th, That the condition of the system, or diathesis, thus transmitted by hereditary descent, or acquired by mal-assimilation, or both, is intimately connected with the relations of uric acid, and its compounds in the system, as manifested by the presence in the blood, by the deposition in the parts affected, and by the elimination through the several emunctories, of these materials, during the prevalence of the disorder, or on the occurrence of a fit of gout.*

5th, That there are various stages of this diathesis, of longer or shorter duration, of sthenic or asthenic character, according to age, sex, temperament, habit, and mode of life, and other circumstances.

6th, That the primary effects of the gouty diathesis are those of a poison, often slow and insidious, disturbing many functions, chiefly those of the digestive organs, and of the nervous centres; but sometimes more speedy, through its rapid

* Dr. Garrod has demonstrated the presence of urate of soda in the blood of gouty patients; the chalk stones of the gouty are known to be composed of the same material; and Dr. Prout has seen it so copious in the urine, as to impede its passage through the urethra.

accumulation in the system, engendering active disease in various tissues and organs of the body,—the synovial, the mucous, and serous membranes being peculiarly prone to be affected by it; while the heart, the liver, and kidney, participate largely in the general disorder.

7th, That the development of gout in the hand or foot, or in the form of a febrile disorder, or an inflammatory affection of any tissue or organ for which it has an affinity, appears to free the system, for a time, from the symptoms and sufferings of the diathesis, through the elimination of the morbid material by the usual emunctories, during the progress, or at the crisis, of the disease.

8th, That the altered or contaminated condition of the blood, in the gouty habit, has subsequently an injurious effect, either vitally or mechanically, on the muscular structure of the heart and bloodvessels, by weakening their power, and producing dilatation and attenuation of their cavities and trunks, and leading to venous congestion and obstruction, and to their consequences in hemorrhages, dropsical effusions, and similar affections.*

9th, That ultimately the heart and bloodvessels, through the continued prevalence of the diathesis, undergo structural changes by the deposition of earthy matter in their coats; and thus gout is intimately allied with palsy, apoplexy, and other cerebral diseases, and with angina, syncope, and rupture, and other fatal cardiac affections.

These views of the nature and progress of the gouty diathesis will be found available in directing our mode of treat-

* The effect produced by the altered condition of the blood of the gouty may be somewhat analogous to that produced by the impoverished blood of the anemic. In both we find dilatation of the chambers of the heart, and enlargement of the great vessels. The resisting power of the muscular fibre is diminished, and thus the dilatation of the cavities results as a purely mechanical effect of over-distension. The gouty have naturally thin-walled hearts, and thus are more prone than others to dilatation. See Hope on Diseases of the Heart.

ment in the different aspects in which we are called to combat the disease.

It has been wisely remarked that, in the earlier stages, gout is curable, if not through physic, yet through the physician ; and the remark might have been extended so as to include the patient, whose unwillingness to submit to hygienic regulations is too often the great bar to successful treatment. Some who have been happily apprised at an early stage of the nature of their inheritance, or of the pernicious tendency of a life of indulgence, have had the fortitude and perseverance to overcome and resist both the habit and the temptation, and by a life of active exertion, and temperate enjoyment, have reached the confines of extreme old age, without having witnessed more than the precursory symptoms of a disease which, under other circumstances, would have proved inveterate. But the examples of a virtue thus exercised, and a reward thus reaped, are but the exceptions to the rule of vicious indulgence, and painful retribution, which everywhere prevails.

Temperance, strict temperance, in the gratification of every appetite, is demanded of every subject of the gouty diathesis. Exercise systematically pursued in the open air ; attention to the healthy state of the skin, and to the different excretions, in short, the strict observance of all the well-known laws for the preservation of health, may, without the assistance of medicine, ward off a coming fit of gout, or check the progress of the gouty diathesis. But the physician is seldom called to offer advice in such circumstances, and it is only when the gouty poison has accumulated in the blood, and disturbed more or less some of the great functions of life, or lighted on some texture, and raised up inflammatory action and febrile disturbance, that his aid is for the first time sought and obtained. Is it a fit of the gout, as described by Sydenham ? Let the sufferer rest in bed ; let the foot be elevated, and enveloped in a warm-water dressing covered with oiled silk, and let the

strict antiphlogistic regimen be carefully enjoined. The functions of the liver and bowels will be found so disordered, that a full dose of a laxative, such as rhubarb, with the bicarbonate of potash, is required ; and the action of the kidney will be found so impeded, and the secretion so disordered, that saline diuretics, those especially of the salts of potash, are demanded in full and continued doses. Colchicum, in conjunction with these means, will be found highly useful ; without them its operation is uncertain, and its efficacy doubtful. Administered alone, and in large doses, as is too often the case, the remedy may bring a fit of gout rapidly to a close, either by a powerful cathartic or diuretic effect ; but the system is not relieved, though the local affection may appear to be subdued. It is by securing the eliminating property of the drug, along with the depurating effect of the saline diuretic, that we obtain the full benefit of colchicum in gout ; and this is best accomplished by small doses of the remedy. In acute articular gout, or in any of the inflammatory affections which are allied to it, fifteen or twenty drops of the wine prepared from the seeds, in combination with scruple doses of the acetate or nitrate of potash, or still larger of the bicarbonate, administered three times a day, and continued for a week or longer, will be found an eligible mode of prescription ; and when the more urgent symptoms are overcome, the remedy may be continued still longer in the form of the acetous extract in combination with a laxative, a bitter, or a chalybeate once or twice a day, care being taken not to press the drug to the production of its sensible physiological effects. We believe that it is by the known power which colchicum possesses of favouring the elimination of uric acid from the system, that it acts so beneficially in gout, and that this effect is best produced when it acts silently and slowly, without depressing the nervous system, or exciting, in a marked manner, the secreting organs. In cases of gouty inflammation

affecting an organ essential to life, or of a structure so delicate that the slightest lesion proves injurious to its functions, for example, the pericardium, or the iris, it may be necessary to employ bloodletting in some form, and to seek the aid of mercury to prevent the deposition of lymph; but even in those cases colchicum should be steadily employed in the manner we have pointed out, and its beneficial effects will be best secured after these other remedies have told on the system. No time, however, should be lost in seeking its aid, nor should it hastily be abandoned, from disappointment of its promised virtues. The exhibition of colchicum, with such depurants as we have referred to, will be found availing as a means of cure in all the various forms of disease connected with the gouty habit, not only in such inflammatory affections as ophthalmia, otitis, tonsillitis, pleuritis, bronchitis, and the like, but in disorders of the nervous system, as headache, toothache, lumbago, sciatica, etc.; nor will its efficacy be less conspicuous in those cases of rapid effusion into the synovial capsules, and in the gonorrhœa and leucorrhœa dependent on a similar cause. Its power over the affections of the skin connected with the gouty habit is very striking; urticaria, erythema, eczema, and the like, are remarkably subject to its control; indeed, the remark applies more or less to all the disorders which prevail during the earlier stages of the diathesis, and before the heart and bloodvessels, and the liver, kidney, and other viscera have sustained abiding lesion.

Nor even then is colchicum, prudently and judiciously employed, altogether valueless. The combination of colchicum with some of the preparations of iron will be found useful when the heart is found feeble and dilated. The combination of colchicum with mercury will be useful when the liver is enlarged or torpid; and the same preparation, with the addition of digitalis or squill, will be found to act beneficially when dropsy in any of its forms results from organic lesion

of these or other viscera ; and throughout the course of the diathesis, whatever remedy may appear requisite to fulfil some indication of treatment will, in general, receive aid from "the great specific."

In the chronic and asthenic forms of gout, while simple nutriment and a moderate use of wine are requisite, no remedy has appeared to us so useful as the combination of colchicum with quinine, bebeerine, or iron ; but the dose of the colchicum ought to be small, generally in the form of extract, and administered at long intervals, and continued over a long period.

In the Notes and Reflections of Sir Henry Holland, and in the recent works of Drs. Todd and Gairdner, will be found many suggestive and practical remarks on this part of the subject, and to them I must refer ; I cannot close, however, without referring to the singular benefit which may be derived from cod-liver oil, in some of the morbid conditions of the gouty. In the chronic and asthenic forms, generally, and in the more acute, after the severity of the illness is overcome ; in almost all the chronic ailments connected with the gouty habit, and in the cachectic condition of the offspring of gouty parents, I have found it to be possessed of wonderful renovating powers. Nor have I been less agreeably surprised to find how potent, after persistent use, it is, in the least promising of the gouty sequelæ which can be reached by medicine ; I mean the nodosities of the fingers and toes, and the crippling, lameness, and deformity occasioned thereby. The consumptive and the rheumatic have profited largely by the remedy which Dr. Bennett, after it had long been laid aside, has had the merit to restore to the list of our therapeutic agents ; and its reintroduction into this country, there is reason to hope, may yet remove in some measure, both the truth and the reproach of the classic sentiment :—

"Tollere nodosam nescit medicina podagram."—OVID.

In farther illustration of the views advanced in the preceding pages, I append a short notice of the work of Dr. Gairdner on gout, on its reaching the third edition, and of that of Mr. Spencer Wells, contributed to "The Edinburgh Medical and Surgical Journal," Vol. lxxxiv. p. 762.

We welcome the appearance, thus early, of the third edition of Dr. Gairdner's work, and we congratulate our readers on the additions made to its pages. The author, it is true, observes with regret the growth of his book. He had hoped its distinction would have been its conciseness. Yet why should our best writers on gout be desirous to compress its literature within narrow limits? And how is it that its bibliography contains so many of the neat and pocket-fitting duodecimos, and that so few authors have had the ambition to fill a goodly octavo with the history, the nature, the complications, and the cure of gout? Dr. Craigie and Dr. Forbes have each pointed out for our reference a long list of authorship on this curious and interesting disorder; and it cannot fail to strike the least attentive observer how much the aim of being concise appears to have actuated the great bulk of the writers. Sydenham, who wrote so well, has only written too briefly on his favourite subject; and in his desire to be concise, has given his *Tractatus de Podagra et Hydrope*. Lug. Bat., 12mo, as an example to be followed by Lister, and Musgrave, and Cheyne, and Cadogan; while the thoughtful reflections of Sir Henry Holland, comprised within fifty pages octavo, have been followed by the short, but admirable and readable works of Todd, and Gairdner, and Wells. We know that we run no risk of offending, when we say that the history and nature of gout have yet to be written; and though much has been done in the elucidation of the subject, still much remains to be done in order to accomplish the much desired task. When the feat has been achieved, the successful author, we apprehend, will not be able to claim, as

a distinction of his work, that it is short and concise. We desiderate for gout what Mr. Ansell has done for tuberculosis.

It is not our intention to analyse with care the two works at the head of this article. The one has been for some time before the public, and has been favourably noticed in various quarters ; the other, of much more recent date, and still in its first impression, has also received its meed of praise, to which we think it is justly entitled. We agree with much that has been said by both authors ; we disagree with some things that have been said by each ; but we willingly accord to them the merit of much thoughtful reflection on, and accurate observation of, the phenomena of the disease in question. We shall confine ourselves, in the following notice, to a few remarks on some of the more practical observations which have emanated from them in the discussion of the subject.

We coincide with Dr. Gairdner in all that he has said of the obscurity and frequency of the disease, and have often had occasion to regret the complete want of anything like uniform notions among medical men on these points. The larger proportion of practitioners see gout only when it affects the foot ; some are willing to acknowledge its presence in the fingers and in the larger joints ; but comparatively few are willing to recognize it without a local manifestation ; and can witness and treat numerous disorders of the system, and many acute and chronic affections of internal organs, without the thought ever having crossed their minds, that, in all the phenomena which are daily passing before their eyes there is really nothing more than the features of gout, however mysterious and distracting they may appear. The careful perusal of Dr. Gairdner's book will lead many to new and correct views on this subject ; and we feel convinced that the study of the disease will compel many to say with him,

"I believe the gouty diathesis is often very perfectly developed in individuals who never see its local manifestations, and I am convinced that the strumous is not more frequent than the gouty habit."—P. 4.

We cannot agree with our author in his objection to the commonly received opinion, that dyspeptic symptoms usually precede the fit of gout. Our experience amply confirms the doctrine which has long been taught, and we are somewhat at a loss to reconcile the statements in the following paragraphs.

"All definitions of gout affirm that its external manifestations are preceded by dyspeptic affections of the stomach. This, however, is chiefly true of subsequent attacks of the established disease, and by no means applies to its first invasion, which, undoubtedly, often happens without any preceding dyspeptic symptoms. Persons, indeed, in whom the first stage of digestion is sound and vigorous, and in whom the assimilating process is also complete and apparently healthy, are singularly liable to gout. The earliest sign of an approaching fit of the gout, to which my attention has been drawn, has been a dull pain in the left side of the chest, accompanied by an inability to lie on that side, and sometimes by fluttering, irregularity, or intermission in the action of the heart. These symptoms often continue for a great length of time without any perceptible increase. Patients not apt to take alarm about themselves frequently suffer them in silence, and even forget them."—P. 8.

Now, we ask what is the nature of this "earliest sign"—this cardiac disorder? The answer from many quarters will be, that it is symptomatic of stomach derangement; and acknowledging that it is a very constant and a very early symptom of gout, we have never known it but in connection with one of the most common signs of dyspepsia, namely flatulent distension. But we will allow Dr. Gairdner to answer the question, which, we think, he does in the paragraph immediately following that just quoted.

"These are very often the only precursory symptoms of gout, and they are sometimes relieved by a single dose of medicine, or a gentle course of physic, before they proceed to an actual paroxysm. A visit

to any aperient mineral spring, or even a fit of spontaneous diarrhœa will remove them. But if such signs of disturbed health be neglected, they increase so as to become distressing, giving rise to very inordinate action of the heart, to great throbbing and palpitation, which seriously interfere with comfort and well-being. This inordinate pulsation often makes itself very inconveniently felt in the head, making stooping, hurried walking, and running, distressing or impossible. A difficulty of respiration and feeling of stifling sometimes accompany the marks of disturbed circulation. To these are added tumefaction of the right hypochondrium, impeded action of the liver, and morbid deposits in the urine. In the train of the above symptoms is found dyspepsia, which does not in general shew itself in the first instance."—P. 9.

We are at one with Dr. Gairdner in regard to the train of symptoms. We differ with him only in respect to their cause. He, if we do not misapprehend him, looks upon the "disturbed circulation" as the primary disorder, while we regard the disorder of the digestive and assimilating functions, as first in place, and explanatory of all the subsequent phenomena.

The symptoms next in order of time, and the anomalous morbid indications which foretell the coming fit, are well described; and the importance of noting them is very properly dwelt upon, as the best season for employing remedies.

The second and third chapters of Dr. Gairdner's work, embracing the species of gout, the stages of the disease, its duration and termination, its hereditary nature, and the subject of metastasis, are treated of at some length, and deserve a careful perusal. In speaking of the atonic gout, we find our author noting a marked distinction betwixt it and the regular form of the disease in its mode of attack—a distinction which we are unable to verify, and altogether at a loss to explain.

"The atonic gout rarely manifests itself in its incipient stage, like the regular disease, by disorder of the circulation. It first shews itself by affection of the stomach, every form of dyspepsia is present, but particularly gastrodynia and flatulency. The bowels are confined, and this state of constipation, if neglected, according to a doctrine now in

fashion, is relieved by occasional disturbance and diarrhœa. The urine is sometimes loaded with urates which appear and disappear with the greater or less pressure of the complaint.—P. 57.

The nervous symptoms in connection with this form of the disease are well described. The mental suffering and bodily distress are depicted and illustrated with great ability. We are surprised that no notice is taken of the very frequent, and often persistent, deposits of the oxalate of lime in the urine of those labouring under this form of disease. The phosphates are frequently referred to, and when the nervous symptoms are very prominent their presence might be expected; but we have much oftener found the crystals of the oxalate of lime, notwithstanding the silence of most writers on the subject.

The theory of a morbid matter—a *materies morbi*—in gout, long the favourite doctrine of the schools, and now recently revived through the support given to it by the advance of organic chemistry, and adopted, to some extent at least, by Holland, and Todd, and Garrod, and others, receives no countenance from Dr. Gairdner, who appears to us to combat the theory all the more willingly, though not more successfully, that it has followed by a natural and strong impulse, from the fact of the very frequent accompaniment of symptoms of deranged digestion with the manifestations of gout; a relation, however, which he regards more in the light of a consequence and a satellite, than a cause. We must again enter our caveat against the following argument:—

“If it be considered how often the disease (gout) exists in its severest forms, with little, if any, sign of dyspepsia, and that in its first invasion, when the real nature of the complaint may be supposed to be most clearly indicated, and its accidental complications to be less manifest, the signs of depraved digestion are nearly always absent, it must be admitted that some other cause should be sought for.”—P. 85.

We have never found the first invasion of gout with the

absence of the signs of depraved digestion. The sufferer has always acknowledged that, immediately before, or at no remote time, there had been marked indications of indigestion and mal-assimilation ; and we cannot record an instance of the want of such manifestations during the progress of the disease. The hereditary proneness to the disease may be great, and the gouty diathesis well devolved, when a slight excess, or a slight attack of indigestion will prove the immediate cause of the fit. We have seen the children of gouty ancestors, apparently in perfect health, suddenly seized with well-marked gout ; but upon inquiry, we have always found that previously to the attack, and often but a short time before its visit, there had been distinct evidences of deranged digestion, in the unhealthy alvine evacuations, and loaded urinary secretion, while pallor of the countenance, and other signs of want of health, had betrayed their real condition. We cannot regard gout in any other light than that of a disordered state of the assimilating functions, the products of which vitiate the blood, which again, under certain circumstances, manifests an affinity for particular textures, and influences various functions and different organs. Dr. Gairdner allows that the blood is vitiated, and loaded with urea and its compounds. Surely this is an admission of the doctrine of a morbid matter, though we are not yet in a position to demonstrate what the *materies morbi* really is.

In chapter v., we have some original observations on the altered relations of urea and uric acid, which take place in the early assimilation of the food during the process of respiration ; and some valuable deductions (if time confirms the facts), both in relation to the pathology and treatment of the disease. We can only recommend the entire chapter to the careful consideration of our readers, as well as that immediately following, and which appears for the first time in this new edition of the work. It relates, Dr. Gairdner informs us

in his preface, to a subject of the keenest interest—the connection of a morbid condition with a normal and physiological function.

“The chemical investigation of sugar in urine (he writes) seems to have been nearly completed by the inquiries of late years. Yet there is one corner of the subject nearly untouched. We are sufficiently acquainted with the qualities of urine in which sugar exists in quantity great enough to constitute a specific disease. But the attention of pathologists has not been directed to small or saccharine impregnations which indicate disturbances in circulating fluids, yet do not amount to any diabetic tendency. That such do occur in many conditions of the system, had long been matter of suspicion with me ; and many circumstances concurred to impress on me the conviction that they attend various phases of gout.”—P. 127.

Among these concurring circumstances, we wonder if the very frequent presence of the oxalate of lime in the urine of the gouty, and its known relation to sugar, had any share. Dr. Gairdner inclines to the opinion, that sugar in minute quantity is a constant ingredient of healthy urine, and that diabetes is but a great exaggeration of a salutary function. Dr. Gairdner has elsewhere acknowledged that uric acid is a necessary and constant ingredient of pure and healthy blood. Why should it be pronounced unphilosophical to conclude that gout is, in like manner, a greater exaggeration of a similar function ?

The whole chapter, containing some interesting remarks on Tromer's test, and a new modification of it, as one to be relied on, is deserving of careful perusal.

Dr. Gairdner devotes two chapters of his work to the consideration of the nature of gout—discussing the question of what gout is not, and of what it is. We apprehend that our author, in order to support his favourite view of languor and disorder of the circulation and visceral congestion in connection with gout, has too readily arrived at the conviction, that “its nature is the very reverse of inflammatory.” We by no

means contend that inflammation is essential to gout ; but we cannot shut our eyes to the very frequent occurrence of the distinguishing phenomena of inflammation with the ordinary local manifestations of gout, and the not unfrequent alliance of inflammatory affections of the serous and mucous membranes, and of various internal organs, with the well-marked gouty diathesis. The case of the gentleman detailed at page 140, is interesting and instructive. It is given somewhat, we think, in triumph by Dr. Gairdner as an *instantia crucis* that the condition we are considering is not one essential to gout. The severe pain in the ball of the toe, in the case referred to, he argues, could not be of the nature of inflammation ; for the conditions necessary to constitute such could assuredly neither be so rapidly created, nor so speedily dispersed. We ask, is neuralgia never an inflammatory affection ? We know that in the gouty habit, sciatica, toothache, and various forms of tic-douloureux often alternate with, or take the place of the more ordinary manifestations of pain, heat, swelling, and discoloration ; and so, in the case alluded to, we learn that in three weeks after a second attack of violent pain of the same character, but in the opposite toe, "the disease caught the patient in the heel, and he went through a severe fit of the disorder, in which no symptom was wanting." The condition of the system, we apprehend, in the three attacks was the same ; the delicate nervous fibre, or its investment, was the seat of gouty inflammation in the first attacks, the tendinous sheaths and the skin were its resting-place in the subsequent seizure.

The gout, we are next told, seldom declares itself at the period of life when men are most prone to inflammation, but infests them in their decline, when the system assumes the congested, more asthenic, and lingering forms of disease. If by this it is intended to prove that the gouty diathesis is developed, generally, in the decline of life, we must demur

to its reception. No doubt the large proportion of the sufferers from gout are men who have passed the prime of life ; but in them the disease is more commonly seen in its chronic form, while in its acute stages, and in association with inflammatory affections of various parts, it had previously exhibited itself in connection with earlier years and unbroken health ; the fit being then at longer intervals, and of shorter duration.

We cannot coincide with our author in the opinion he expresses that "people of a vigorous constitution are little liable to gout, and only become so when repeated and long-continued excess has enfeebled their frame and wasted their energy." Our own experience of the purest forms of gout has been among those who really possessed the least impaired constitution, and who were remarkable for freedom from all such excess ; when we have seen it in different circumstances, as no doubt we often have, it has been when, through the long-continued prevalence of the diathesis, we could connect the enfeebled frame and wasted energies, not so much with the causes to which Dr. Gairdner has referred, as with the deteriorating influence of the disease itself. Neither can we support the statement that the terminations of gout, and its vicarious and cognate diseases, also mark its nature, in the sense entertained by him. "They are," he says, "suppression of the natural evacuations, spasm, cramp, dyspepsia, melancholy, apoplexy, and dropsy." We desiderate among the vicarious and cognate diseases all notice of such inflammatory affections as iritis, otitis, tonsillitis, pericarditis, bronchitis, synovitis, and a host of other diseases, universally regarded as of inflammatory origin ; while we must regard the apoplexies and dropsies, and other terminations of the disease, as the result of a disorganising process established and carried on in the internal viscera by slow inflammatory action.

Having arrived, as we think, not altogether in a satisfactory manner, at what gout is not, Dr. Gairdner is prepared for the much more difficult and subtle inquiry of what it is.

"There is no doubt," he says, "that a general state of vascular plethora of the great chylopoietic organs is always met with in gout."—P. 154.

"It is plain that the heart is oppressed with a flood of returning venous blood, and this, I think, associated also with the impure condition of this fluid, from the none-elimination of urea and urates, and probably of the biliary constituents, is the cause of those symptoms of disordered function of this organ, which I have pointed out as the earliest indication of the disease." "Venous congestion then," he goes on, "I consider the first condition essential to the formation of the gouty diathesis. . . . But the greatest venous canals of the body, as well as the larger arterial vessels, are endowed with a resiliency which enables them to struggle well against the flood of returning blood. This fluid, then, is compressed between two opposing forces; that, namely, which is derived from the heart and arterial system, urging it forward on its course; and, on the other hand, the antagonistic resistance of the great veins leading to the right auricle. Under this compression I believe that the vessels give way, and a true hemorrhage is occasioned in the part affected. If the rupture take place in a minute capillary carrying the serous portion of the blood only, œdema is the consequence; but if the burst vessel be one carrying red blood, a true ecchymosis is formed."—Pp. 157, 158.

"This view of a fit of gout," adds Dr. Gairdner, "may startle from its novelty; but I am thoroughly convinced, from long observation of the disease, that I have given the true rationale."

Now, we readily admit that a general state of vascular plethora of the great chylopoietic organs is usually, but not always, met with in gout; while we cannot help thinking that this condition is the result of the gouty diathesis, and by no means the cause of the fit; for, not to instance the case of children and very young people, the offspring of gouty parents who have manifested unequivocal signs of gout without any of the evidences of venous congestion, we have repeatedly seen gout in its purest forms in females

as well as in males of adult age, especially in the earliest manifestations of the diathesis, without any well-marked evidence of venous congestion, or of disturbed circulation. No doubt as the diathesis prevails, and the gouty habit is more and more developed, these signs of labouring circulation shew themselves. We have a distinct and painful recollection of our own case. We had been long dyspeptic, and had suffered especially from acidity and flatulence. The action of the heart had often raised apprehensions of serious disorder in that organ, and the liver and kidney had manifested, through their different secretions, decided proofs of functional derangement ; but we can call to mind no symptoms of venous congestion at that stage of our history. The disorder of the central organ was evidently connected with the process of digestion, was temporary, short-lived, and uncertain, and at a time when we were free from all irregularity, and busily pursuing our professional duties, we were seized with our first attack of gout. It was not till after repeated fits, that the symptoms of disordered circulation, so well described by Dr. Gairdner, made their appearance ; and it is right that we should state that they were gradual in their development, and that there was no correspondence between the evidences of abdominal congestion and the disturbance of the heart's action.

The very frequent occurrence of all the constitutional symptoms which attend a fit of gout, in connection with an inflammatory affection of a serous, mucous, or synovial membrane, or with some neuralgic attack or other disorder, and the subsidence of such seizure, along with the phenomena which attend the close of a paroxysm of gout, as well as the history of œdema, and the observation of ecchymosis, especially as we see it in the delicate texture of the eye-ball, forbid us entertaining the views of Dr. Gairdner on this part of the subject.

The concluding chapters of the work—on the existing causes, the curability, and treatment of gout—deserve a careful and attentive perusal. The observations they contain are founded on the experience of a physician of a deeply thoughtful and inquiring mind, and merit the earnest consideration of all who desire to treat with skill and success the various forms of this obscure but still manageable disorder.

The unpretending volume of Mr. Wells also deserves, and will repay, an attentive perusal. It is thoroughly practical; and founded on views which commend themselves to our acceptance. We are not sure, however, that we can adopt his opinions in regard to the subject of gout, as modified by syphilis. The laws which regulate the latter poison are, as yet, but imperfectly understood; and the complications of the disease resulting from the operation of two subtle poisons must, in our present state of knowledge, be a subject of extreme difficulty. There is something novel in Mr. Wells's views, and something very interesting in the observations he has made in regard to the effects of the iodide of potassium on these and other complications. We look forward with pleasure to a new and enlarged edition of Mr. Wells's little volume.

II.

ON THE RELATION OF RHEUMATISM AND CHOREA.

(Read before the *Medico-Chirurgical Society*, February 17, 1847.)

THE association and alternation of rheumatism and chorea have been noticed of late by several authors ; but comparatively little attention had been paid to the subject, till the combination of the convulsive affection, with inflammation of the pericardium, more recently attracted observation. Dr. Bright appears to have had his attention, at an early period, called to the connection of the two diseases.* Dr. Copland in 1821, related a case in which the complication existed, and where effusion both into the pericardium and spinal theca, was discovered on dissection.† Dr. Prichard subsequently recorded several cases in illustration of the connection ;‡ and Dr. Scudamore, in his work on rheumatism, mentions phthisis and chorea among the consequences of acute rheumatism which he had known to ensue.§ Hitherto the occurrence of chorea in conjunction with rheumatism, had been referred to metastasis of the rheumatic inflammation to the membranes of the spinal cord ; but its association with pericarditis, has led to other views in explanation of the connection, which will appear in the sequel ; meantime, I beg to offer, for consideration, the following histories, in illustration of a point, which

* *Medico-Chirurg. Transactions*, vol. xxii. p. 7. See also Bright's *Medical Reports*, vol. ii. p. 479-493.

† *London Medical Repository*, vol. xv. p. 23.

‡ *London Medical Repository*, vol. xxi. p. 1.

§ Scudamore on Rheumatism, p. 32.

has not, as yet, so far as I know, been adverted to by any writer ;—I mean the occurrence of the two diseases, conjointly or severally, in different individuals of the same family, indicating their probable dependence on the same morbid diathesis. The histories are three in number, and have occurred to me in practice within a few years, so as to lead to the impression, more especially when viewed in connection with other cases referred to, that the coincidence of the two diseases is by no means rare, certainly not so rare as the language of an able writer and experienced observer, would induce us to believe. “Judging from my own experience alone,” says Dr. Watson, “I should not say that the disease (chorea) was often associated with acute rheumatism. Dr. Copland and Dr. Bright have both, however, noted that connection, and therefore I cannot doubt that it does sometimes exist.” *

I. A hard-working artisan, aged thirty, of dark complexion, and well-developed muscular frame, after exposure to cold and damp, was laid on his bed on the 14th of January 1845, with symptoms which brought to his mind, with painful foreboding, a severe attack of rheumatic fever, of three months duration, which he had suffered six years before. I saw him for the first time, on the morning of the 19th, the sixth day of his illness, and at that time, with the exception of some household aperient, he had used no remedies. He was enduring, with much patience, considerable pain in the larger joints of the upper and lower extremities, and still more severe in the fingers and toes, accompanied with tenderness, redness, and swelling. His fever was smart, the pulse full and throbbing—in frequency 108 ; the sounds of the heart were normal ; the tongue was white, the skin was moist with the acid perspiration exhaling its peculiar odour, and the urine loaded with the lateritious deposit so common to his disease. Having no fear of producing metastasis, a dread of which still deters many from the

* Lectures on the Principles and Practice of Physic, vol. i. p. 644.

use of the lancet and other antiphlogistic remedies, in the treatment of acute rheumatism, the patient was bled from the arm, and twenty ounces abstracted ; ten grains of Dover's powder with five grains of calomel were ordered to be taken immediately, the same dose to be repeated in the evening, and to be followed in the morning of the next day, by a brisk purgative. The antiphlogistic regimen to be strictly observed. The morning of the 20th brought considerable relief ; he had slept well, the pain, especially of the larger joints, was subdued ; the pulse had fallen to 96, and was soft ; the sounds of the heart were natural ; the blood taken was very buffy—the serum very scanty—the coagulum unusually soft—and the fibrinous separation full half an inch in thickness, in an ordinary sized tea-cup. The bowels had not responded to the cathartic draught ; let him have a full dose of castor oil, and after its operation a pill containing two grains of calomel with half a grain of opium, to be repeated every sixth hour. On the 21st he continued easier ; pain chiefly confined to the wrists and fingers ; pulse 100 full and strong ; bowels freely moved by the castor oil. Continue the calomel and opium. On the 22d there was considerable pain and swelling in the fingers, wrists and shoulders, pulse 100 full and strong, no mercurial foetor. He was again bled to twenty ounces. The 23d found him much relieved, the pain and swelling gone from every joint, pulse 80 and soft ; gums gently tender and swollen. Auscultation elicited no abnormal sounds. The blood drawn yesterday, still buffy and cupped ; the urine scanty, but without sediment, and unaltered on the application of heat. Bowels open ; let the calomel and opium be intermitted, and ten grains of nitrate of potass given three times a day. On the 24th he continued to improve, pulse 80 and soft, urine copious, continue the nitrate of potash. On the 25th the pain and swelling returned to the large toes, and the pulse rose to 96 with increase of strength ; the action of the heart normal. Resume the calo-

mel and opium night and morning, and continue the use of the nitre. On the 27th of January, the ninth day of treatment, the patient was sitting up, free from complaint, and expressed himself as quite well, but deficient in strength, and anxious for food ; the pulse was 76, and all the functions natural. Suspend medicine, and let him have white fish and bread for dinner. On the 30th he continued well. I ceased my attendance, and he speedily returned to the workshop.

In the room adjoining that in which lay this rheumatic patient, there sat on the first day of my attendance, his eldest child, a delicate little girl, of five years of age, of fair complexion, and strumous appearance, with loaded tongue, and tumid belly, exhibiting all the gesticulations and jactitations of confirmed chorea. The disease was of four weeks' duration, and the occasion of it was ascribed to a fright she had shortly before sustained from some mischievous boy at school. The treatment commenced by clearing out the bowels by an active dose of scammony and calomel ; while the digestive functions were regulated by appropriate diet and gentle aperients throughout her illness. The administration of the arsenical solution was begun on the second day, in doses of five drops, morning and evening, and steadily persevered in, till the swollen eyelid, and silvery whiteness of the tongue indicated its peculiar action on the system ; along with which came the marked remission of the choreic symptoms, which I have never failed to observe as the result of its operation. The child improved in looks, in health and strength ; the involuntary contractions of the muscles subsided, and on the eleventh day from the commencement of treatment, simultaneously with her father, she was restored to health, which she continued to enjoy for years.

The father in this history suffered a subsequent attack of acute rheumatism, and recovered under similar treatment,

without experiencing any complication of the disease. The child, some years afterwards, without any renewal of chorea, and without any articular affection, manifested the well-marked signs of mitral-valve disease, which advanced steadily, embarrassing more and more the circulation and respiration ; and, after many months of suffering, she died with extensive dropsical effusion. No examination of the body could be procured. At present I would only remark the occurrence for the third time of acute rheumatism in the father, and the coincidence of chorea in the child, the disease in her being afterwards followed by those signs of cardiac disease which so frequently accompany rheumatic fever, and give to it its grave and dangerous character. The mother of this girl was a healthy woman. She had never been affected with rheumatism.

II. Early in the winter of 1840, I commenced the first of a series of attendances, destined to partake of a more than usually painful character, in the family of a widow lady, the mother of nine children, all of whom had at that time been spared to her in life, though not possessed of strong constitution, or blessed with vigorous health. They ranged from seven to twenty-one years of age, exhibiting the features of the strumous habit, and inheriting a strong predisposition to tubercular disease—phthisis having been very fatal in their mother's family. The father had died at the age of forty-seven, of an affection of the brain, accompanied with vomiting and convulsions. He inherited a predisposition to apoplexy. The mother had been subject to rheumatic and neuralgic pains, but had never suffered from acute rheumatism.

My first patient was a girl (M.), aged twelve years and six months, of pale and delicate appearance, with fair complexion, and light blue eyes, manifesting little appearance of approaching puberty. She had been labouring under the choreic jactitations for nearly two months, and their character had lately

become much aggravated. The accession of the complaint was imputed to a strong impression made on her mind some time previously, by having witnessed, during successive days, the grimaces and gesticulations of a boy who passed her in the street, while he was labouring under the disease. There was not much appearance of disordered health ; the bowels were somewhat torpid, and the tongue loaded. There was no headache or disturbance of the brain ; but the muscles of the face and of the right arm and leg were thrown by involuntary contraction into all the distortions which characterize the disease, and which, in the presence of a stranger, were much heightened by the inordinate sensitiveness which usually accompanies it. The practice was that which I have invariably adopted in the treatment of this affection. The bowels were freely moved by a purgative draught, and on the second day the exhibition of the arsenical solution was commenced, and continued in doses of five drops an hour after meals, adding one drop every third day, till the peculiar whiteness of the tongue, or swollen eyelids indicated its specific action on the system. The diet consisted of farinaceous vegetables, with an allowance of milk ; and the bowels were regulated by an aloetic pill, taken every night or alternate nights, as required. Purg- ing was avoided. Under these means the disease subsided in the course of three weeks. There was neither nausea, nor vomiting, nor irritation of the bowels, produced by the mineral. The annoying symptoms relaxed and disappeared, and the patient returned to pursue her education, which had been interrupted for nearly three months.

In the course of a year and a half, a younger sister (A), who had then reached the same age as my first patient, at the period of the illness just noted, was placed under my care labouring under the same affection, and precisely in the same form. She had the advantage of her sister in general appearance, being somewhat stouter and taller for her age, and mani-

festing more the appearances of approaching womanhood, but the catamenia had not occurred. The complexion, the hair and the eyes, resembled those of her sister ; there was the same disorder of the nervous system ; the same twisting and twitching of the muscles of the face, the same contortions of the arm, and the same dragging and shuffling of the leg. No cause could be assigned for the complaint ; there was neither pain nor uneasiness present, and no other appearance of deranged health beyond disordered stomach and bowels. The treatment was in all respects a repetition of the practice pursued in the sister's case, but it was longer protracted. The arsenic produced no unpleasant effects, and simultaneously with its physiological action came the relief and ultimate removal of the conflict between the will and the opposing muscular powers.

In January 1844, I was requested to visit (F.), a brother of these young ladies, a thin emaciated lad of eighteen, but having more the appearance of fifteen years of age. He was suffering from rheumatic fever in the sub-acute form. The ankles and knees were chiefly affected, being somewhat tender and puffy, the skin was warm and dry, the pulse quick, the tongue foul, the breathing natural, and the sounds and impulse of the heart normal. It was not a case for active treatment. Confinement to bed, an active purge and the quieting effects of ipecacuan and opium appeared at most to be required ; but within a week symptoms presented themselves which demanded more vigorous measures. A restless night, with increase of pain and fever, was followed in the morning with anguish in the precordial region, uneasy breathing, distress of countenance and tenderness on pressure in the epigastric region. Auscultation discovered a friction sound—percussion, increase of dulness of limited extent ; the general and physical signs were those of pericarditis. Repeated leeching and calomel and opium now took the place of less decided re-

medies, and in three days the precordial pain, the difficult breathing, and the to and fro cardiac sound abated and disappeared; the general rheumatic pains subsided, and in three weeks the patient, though feeble and exhausted, was enabled to leave his room.

During the convalescence of this youth, my attention was again called to the state of health of my first choreic patient, and also to that of an elder sister, then in her twenty-fifth year, both exhibiting the well-marked signs of tubercular disease of the lungs; the former in a state of condensation, the latter in the progress of softening and suppuration. To this sad malady we have seen that they were predisposed. The disorder made rapid progress, and, in little less than two months, cut short their existence in one and the same day—and within a few hours—the former dying by pulmonary hemorrhage, the other by exhausting hectic.

Symptoms of the same disease speedily began to manifest themselves in the rheumatic patient (F.), and he was advised, towards the close of the ensuing autumn, to seek the benefit of a southern climate, in the hope of arresting its progress. The expectations formed were destined to be disappointed; he returned the following summer with tubercular disease in the abdomen, in addition to his chest complaints; and spent at home a year of wearisome days and nights, harassed with cough and abdominal irritation; and enfeebled in mind as well as in body, the victim of the most painful delusions, he followed his sisters to the grave.

Some months before he sank, my second choreic patient (A.), now in her fifteenth year, but still without the appearance of the catamenia, was seized with pain, swelling, and redness of the left ankle joint, accompanied with slight fever; the affection shifted to the knee of the same side, passed over to the opposite side, and migrated during several days from one joint to another. There was not much constitutional disturbance;

the pulse was little accelerated, the sounds of the heart were healthy, the tongue was foul; the urine scanty and loaded; and the bowels deranged. It was not the acute fibrous rheumatism of the hardy workman first described; it was not the sub-acute form which affected her brother; its migratory character, and its glistening redness and puffiness around the joints it occupied, gave more the features of the synovial species, and indicated a somewhat different treatment. This consisted of a full purging dose of calomel on two successive nights, followed by castor oil in the morning; under which copious bilious stools were obtained, with apparent relief to the symptoms. On the third day the wine of colchicum, which appears to be most useful in this variety, was administered in repeated doses, and continued for several days, but without any marked benefit; it began to irritate the bowels, and was discontinued. Local bleeding and opium were then had recourse to, with evident mitigation of pain, redness, and swelling. The disease, however, was not subdued; the pulse was still more frequent than natural, and the pain and redness returned, from time to time, to the ankle first affected, with increased severity. The habit and constitution of the patient made me unwilling to employ mercury farther; but symptoms developed themselves during the third week of the illness, which forbade its being longer withheld. The sounds and impulse of the heart had, till this time, been normal and rhythmical; and there was no precordial uneasiness to lead to the suspicion, that the heart had partaken of the rheumatic inflammation. Now, however, it was apparent that mischief had commenced; the affection of the joints had in a great measure subsided, when pain in the region of the heart, dyspnoea, and increase of fever supervened; there was a loud systolic endocardial murmur, and slight excess of impulse. Repeated local bleeding by cupping and leeches, and the exhibition of calomel and opium, at short intervals, were now

had recourse to, and followed, after the gums became gently affected, by repeated blisters to the region of the heart. These means were beneficial ; the more urgent symptoms subsided ; the patient by degrees regained her strength ; the rheumatic pains entirely left the limbs ; but the endocardial murmur now diminished in loudness, and the impulse now increased in force, tell that the cure is incomplete, and that sooner or later the injured valves will be followed by other signs of irreparable organic disease.

During convalescence from this attack, the patient again experienced a return of her choreic symptoms. They were less severe in character, but more obstinate in removal, and less amenable to treatment. Arsenic was confided in, however, and after persistent use for many weeks, prevailed. Its employment was once and again interrupted in consequence of its irritating effects on the bowels ; these, however, were of short duration, and readily overcome ; and their occurrence was the marked occasion of alleviation of the nervous symptoms.

In this family history I would only remark at present, the occurrence of two cases of rheumatism and two of chorea ; one of the subjects having suffered once from the former, and twice from the latter affection within a short period, but the attack of the one being apparently unconnected with the other.

III. I lately prescribed for a boy aged thirteen, affected with chorea supervening on a second attack of acute rheumatism, but not complicated with heart disease, so far as the pure sounds and normal action indicated health. The affection was of mild character, and readily yielded to the remedies prescribed—gentle aperients, and the arsenical solution. The latter I have reason to believe was taken irregularly ; the boy discontinued his attendance, but I have ascertained that he is now quite well. An elder brother had been the subject of repeated attacks of rheumatic fever, the last of which was complicated with endocarditis, from which resulted thickening and

puckering of the aortic valves, followed by hypertrophy and dilatation of the left ventricle, as ascertained by post-mortem examination. This boy also laboured under chorea immediately supervening on his last rheumatic attack, and continuing for many months previous to his death, at times in a very severe form; but as he was not under my care till shortly before the fatal event occurred, when the tumultuous and labouring action of the heart was the principal cause of his suffering, I did not suggest the use of means, the employment of which was only destined to meet with disappointment. I must not forget to mention, that while there was a small quantity of serous effusion in the pericardium, there were no traces of previously existing pericarditis, no thickening of either surface, no white spots nor bands of adhesion. A sister of these boys at the age of seventeen, had been affected with chorea in a mild form, but had never suffered from rheumatism. The mother of the family had been the subject of acute rheumatism in a severe form, shortly after her first delivery. The father, who describes himself as a nervous man, and partakes deeply of the melancholic temperament, had never suffered from either affection.

In this family we have three cases of acute rheumatism and three of chorea, each of the diseases being distinct in one instance, and complicated with the other in the remaining two.

Dr. William Cumming has favoured me with the following additional evidence.

IV. In a family consisting of ten members, four have suffered at different periods of their lives from rheumatism. One of these at the age of twelve had a very severe attack, was seized in the month of October last, after a journey by railway of two days' duration, with violent delirium and other symptoms, which directed the attention of his medical attendants to the head as the part affected. The treatment adopted, on the supposition that the head was the organ suffering, was

apparently quite successful, and the patient seemed to be progressing towards a favourable recovery, when, after an opiate injection to remove retention of urine, he was again suddenly seized with the same untoward symptoms as formerly. On his first seizure, attention had been given to the heart's sounds, but nothing was perceived beyond a violent and impetuous action, nothing to indicate disease, either of the lining or investing membrane. On the relapse, however, there were heard both a very distinct systolic murmur, and a to and fro sound, the latter limited to a small space near the apex of the heart. Between the first day of seizure, and the relapse of the symptoms, no examination of the heart was made. He was cupped over the region of the heart, nauseating medicines exhibited, and as there was some difference of opinion as to the cause of the symptoms, the treatment included also such means as tend to relieve the head by derivation, such as a blister behind the ear, purgatives, etc. The remedial means were quite successful, the endocardial murmur ceased entirely after a time, but the exocardial (though very slight) persisted for at least three months, the period during which the patient remained under observation in Edinburgh. Another member of the same family has laboured for ten years under a neuralgic affection. Another who has had neither neuralgia nor rheumatism, had two distinct attacks of chorea, the one of four months' duration when she was six years of age, the other of two months when she was eight, both supposed to have been caused by the irritation resulting from the cutting of the permanent teeth. Does not the connection in the same family of these two diseases, when viewed along with those recorded, favour the opinion that the same diathesis which, under certain circumstances, leads to the production of the one affection, in different conditions tends to the development of the other?

The cases hitherto related by authors, with the view of establishing a connection between rheumatism and chorea, have been

individual examples, in which the two diseases have been concurrent, or where the one has supervened on the other ; and the doctrine of metastasis has been generally received as the explanation of this association. Dr. Copland remarks that the association of chorea with rheumatism has been observed on several occasions by him, and that in nearly all, there has been a marked disposition of the rheumatic affection to recede from the joints, or extremities, and attack the internal fibrous membranes, as those of the cerebro-spinal axis, and the pericardium.* Dr. Bright, however, in the interesting paper already referred to, has detailed several cases of chorea supervening on rheumatism, and accompanying affections of the pericardium, in which he conceives the symptoms to depend on irritation communicated to the system from lesions within the chest, and thinks there is reason to believe that the phrenic nerve is the more immediate means of communicating the irritation to the cord ; and he considers, moreover, that the great and important point is the fact, that the most violent attacks of spasmodic disease will occasionally owe their existence to inflammation of that portion of the pleura and the pericardium, where inflammation is often with difficulty detected, that part more particularly, where the phrenic nerve in its course, or its distribution, is to be found ; and he does not at all incline to the belief, that inflammation in or about the spine is necessary to produce chorea. “ Though, I doubt not (he says), that in some cases the coverings of the cerebro-spinal mass may be, and are implicated, yet I believe that the much more frequent cause of chorea, in conjunction with rheumatism, is the inflammation of the pericardium, and that the irritation is communicated thence, probably to the spine, just as the irritation of other parts, as of the bowels, the gums, or the uterus, is communicated, and produces the same diseases.” †

* Dictionary of Practical Medicine, vol. i. p. 335.

† Med.-Chir. Transactions, vol. xxii. p. 15.

Dr. Babington, in a valuable paper on chorea, speaks of rheumatism as a cause of the disease, when it affects the heart or pericardium, through the irritation of the plexus and ganglia, which so entirely surround that organ, and the origin of its great vessels. After detailing his second case, however, he considers it doubtful whether the chorea was owing to some rheumatic inflammation of the membranes of the cord, or to that of the pericardium ; and remarks in regard to his third case, that we are left in doubt, whether to consider it as the result of direct rheumatic inflammation of the membranes of the spine, or as depending on irritation of the ganglionic system. The latter, he is persuaded, is the more frequent occurrence.*

Dr. George Burrows, in his recent publication, has collected a number of cases of spasmodic diseases connected with inflammation of the heart, and arising from irritation of its nerves ; and he fully coincides with the general principle of the explanation which Dr. Bright has offered of the pathology of these affections ; but referring subsequently to Dr. Hope's explanation of the risus sardonicus, in severe cases of pericarditis, he observes, that although the spinal irritation may in some cases be excited through the phrenic nerves, the same amount and kind of irritation may be equally conveyed through the pneumogastric nerves.† Dr. Watson, in noticing Dr. Bright's cases, says, that he does not perceive any obvious or direct connection between the cardiac disorder and the nervous disorder ; and he offers two conjectures which occur to him, and which appear modifications of the two views already adverted to,—namely, that in the cases in question, some morbid condition of the membranes of the spinal canal may have arisen simultaneously with the inflammation of the pericardium, or that the cardiac disease may operate by some ill-

* Guy's Hospital Reports, vol. vi. p. 418.

† Burrows on Disorder of the Cerebral Circulation, Sect. vii.

understood influence upon afferent nerves of the cord, as an eccentric cause of the irregular movements.* Dr. Todd, in alluding to Dr. Bright's observations, admits that they render it highly probable that the pericardial disease may act as an excitant to the spasmodic nervous actions; adding, that in the rheumatic diathesis, the low state of the nutrient functions renders the nervous system highly susceptible of the influence of any extraordinary stimulus.† In a previous sentence, however, he had, I apprehend, approached a better solution. "With chorea (he says), a disease of very common occurrence in debilitated or ill-nourished constitutions, disease of the heart is frequently associated, a bellows sound being audible at the apex, or over the base of the heart, according as the disease affects the mitral or aortic valves. Is not this cardiac disease of a rheumatic kind? I cannot doubt that it is so, as we have abundant evidence to prove that chorea and the rheumatic diathesis, or even rheumatic fever may co-exist, and it cannot be questioned that the same defective or disordered nutrition which promotes the development of the latter disease, would be equally favourable to the former." He has elsewhere stated authoritatively that the rheumatic state of constitution is favourable to the development of chorea.‡

Dr. Branson, in a valuable communication to the Sheffield Medical Society, has pointed out the frequent occurrence of endocarditis (most frequently affecting the mitral valve) during an attack of chorea, and argued that these cases cannot be classed with those in which disturbance of a distant organ is merely symptomatic of mischief situated in the nervous centres, inasmuch as the affection alluded to is organic and not functional; a mitral murmur existing, and a mitral murmur is never inorganic. Dr. Branson had treated twenty-one

* Lectures on the Practice of Physic, vol. i. p. 644.

† Todd on Gout and Rheumatic Fever, p. 116.

‡ Lectures in Lancet, June 24, 1843.

patients affected with chorea, and of this number nine suffered more or less severely from heart disease ; and he states in conclusion, that when the pericardium is affected in chorea the rheumatic diathesis is more strongly marked than when the endocardium is the seat of disease.*

In the cases of chorea associated with rheumatism, which I have now brought forward, there was no evidence of the extension of the rheumatic inflammation to the membranes of the spine, and no indications, in any instance, of inflammation of the pericardium or pleura, so as to corroborate Dr. Bright's view of the supposed irritation of the phrenic nerve. In one case the nervous disease supervened upon a second attack of rheumatism, where there was no evidence of any form of cardiac complication ; and in the only example of rheumatic pericarditis noted, though occurring in a family where there existed a strong predisposition to the nervous affection, no manifestation of it occurred ; but phthisis and disordered mind, which have been noticed as among the results of rheumatic fever, were the chief complications. Two of the remaining cases of chorea supervened on inflammatory affections of the heart ; but like other instances on record, the inflammation was not of the external covering, but of the internal lining membrane of that organ, and thus do not admit of the explanation offered by Dr. Bright of the pathology of these affections.

The first case of chorea now related, as an isolated example, may be considered as a mere coincidence with rheumatism in the father, but, taken in connection with his well-marked predisposition to this affection, and in conjunction with the subsequent cases, and keeping also in view the circumstance that the patient was the first-born child, and that the disease had manifested itself at the early age of five years, and was subsequently followed by mitral-valve disease and

* Provincial Medical Journal, Nov. 1845.

dropsy, I apprehend the history is of considerable value in establishing a connection between the two diseases through the same diathesis. In the second family history it deserves remark, that two examples of chorea had occurred before there was ground of suspicion that such a diathesis existed. By and by, however, first one case of rheumatism and then another succeeds, and the latter is followed by a renewal of the chorea; establishing very plainly an intimate connection between the two diseases through this source. The third history is still more conclusive; the mother of the family had suffered from acute rheumatism shortly after the birth of her first child; that child at the age of seventeen was the subject of chorea, but never was affected with rheumatism; her brother, next in age, while yet a boy, had repeated attacks of rheumatic fever, the last of which was complicated with endocarditis, and followed by chorea of protracted duration, under which combination he died; while a younger brother, who twice suffered from rheumatic fever, but not complicated with cardiac disease, was subsequently the subject of chorea in a mild and manageable form.

Keeping these facts in view, and calling to recollection the several cases which have been recorded elsewhere, with the purpose of illustrating the connection of the two diseases, I cannot help coming to the conclusion that the simple and true view of their relation is to be found in the morbid condition of the blood, which is admitted to exist in the rheumatic constitution; and this explanation will apply equally to chorea occurring in individuals or families inheriting the rheumatic diathesis,—to chorea occurring in connection with rheumatism, but without the cardiac complication,—and to chorea associated with pericarditis, or endocarditis, or both; the inflammatory affections of the fibrous tissues, as well as the spasmodic affection of the muscles, and the derangement of the nervous system, originating in the same specific

disorder of the circulating fluids. The labours of the microscope, and the progress of organic chemistry, may ere long reveal to us in what this disorder consists; whether in a change of the physical or chemical relations of the blood, or in the formation of a new substance; and the discoverer may be able to demonstrate what is now only conjecture, that these changes are produced during the process of assimilation, or developed in the blood-vessels themselves.

Those remarkable cerebral affections—the wild delirium, and violent mania—which not unfrequently occur in the course of rheumatic fever, or follow in its train, and which have usually manifested themselves along with the cardiac complication, causing doubt and perplexity in the mind of the physician as to the real organ affected, and the true nature of the disease, admit, I apprehend, of the same explanation—the altered, or perhaps poisoned, nature of the blood circulating through the brain, and not, as has been supposed by Dr. Watson, the embarrassment of the cerebral circulation from obstruction of its central organ; for in some instances violent delirium has preceded the earliest symptoms of heart affection, and death in other cases has ensued on rheumatic fever accompanied with evidence of cardiac disease, where the condition of the brain was the chief cause of apprehension, and dissection has disclosed nothing more than a row of small slender bead-like warts on the mitral valve. Surely in cases such as these it would be well to look to the altered condition of the blood, as the common cause of the rheumatic affection of the joints, the inflammation of the membranes of the heart, and the disorder of the nervous centres.

I have lately witnessed the occurrence of sudden and violent maniacal excitement, in several instances, under circumstances somewhat analogous. Two of the cases occurred during the secondary fever of small-pox, another during the progress of purpura, and a fourth subsequent to an attack of

jaundice, accompanied with well-marked renal disorder. The subjects in all these cases inherited a family predisposition to mania. Dr. Frederick Bird has recently related several cases of puerperal mania, in which the disease appeared to have its origin in antecedent rheumatism, but I can only refer to the discussion on this subject in the Westminster Medical Society, and to the review of Dr. Burrows' work on Disorders of the Cerebral Circulation, in a late number of the Medical Gazette, in which the writer distinctly adopts the humoral pathology in explanation of the cases recorded by that author, of affections of the brain and spinal cord, depending on acute diseases of the heart. I close these reflections on the relation of rheumatism and chorea with a few remarks on the treatment of the two diseases.

"Acute rheumatism (says Dr. Latham) has experienced strange things at the hands of medical men. No disease has been treated by such various and opposite methods." In illustration of this I contrast a passage of Dr. Hope's work on Diseases of the Heart relative to the duration and treatment of rheumatism, with the opinions still entertained by other writers on these subjects. According to Dr. Alison, "The duration of a well-marked case of acute rheumatism, is seldom less than six weeks, often, particularly in winter, it is protracted considerably longer; or if it abate sooner, a relapse is extremely probable. The disease cannot probably be much shortened in its duration by antiphlogistic remedies, and if it were so shortened in external parts, we have good reason to think that the risk of affection of the heart would be greatly increased. No reliance whatever can be placed on the specific power of mercury over this disease."* With all deference to the accomplished physician, whose observation is thus expressed, I cannot help dissenting from him, and considering the promulgation of his opinions as not altogether free from danger. The

* Alison's Outlines of Pathology, p. 360.

risk of extension of the rheumatic inflammation to the internal fibrous tissues, is increased the longer we delay employing means for its removal from the external parts, and of these means, bloodletting followed by calomel and opium are the chief. Many, I believe, can attest the efficacy of the treatment adopted successfully in the first case detailed in these remarks, and many have had cause to regret the timid and cautious practice pursued in the two cases which follow. Bloodletting, free and early, with the assistance of calomel and opium, placed the hardy workman in a few days in a state of safety. The less decided practice in the other two issued in the extension of the disease to the heart, to overcome which, and to save life, bloodletting and mercury were at length resorted to. Such cases are of every-day occurrence. Dr. Hope has brought the evidence of numbers in favour of the practice of bloodletting, along with calomel and opium; and his experience of the duration of rheumatism, out of two hundred cases, is that the pain and swelling are greatly abated, if not almost gone within two days, and almost always within four, and that if the patient is not well in a week, it is a case of exception. He farther states, in recommendation of the plan, that it is rare to see inflammation of the heart supervene, if the treatment is early commenced, that one case in twelve would be the maximum.*

Rheumatism, however, cannot be regarded as an active inflammation and treated accordingly. It must rather be considered as a disease dependent on a specific morbid condition of the blood, exciting inflammatory action, particularly in the fibrous tissues; and our remedies ought to be applied with the view of lessening the amount of the circulating fluids, and altering their constitution. For this purpose moderate bloodletting, and calomel combined with opium, appear to be the most appropriate treatment; and I have repeatedly observed,

* Hope on Diseases of the Heart, third edition, p. 178.

particularly in cases which did not call for immediate loss of blood, that after persevering in the use of mercury for some days apparently without benefit, the abstraction of such a quantity as sensibly affected the pulse has been attended with immediate and permanent benefit. I have never seen the rheumatic inflammation of the joints translated to the heart in consequence of bloodletting, and cannot but fear that the prevalent notions regarding metastasis, and its connection with this practice, have led to serious errors in the treatment of the disease. If we bear in mind that a third part or more of all those affected with acute rheumatism also suffer inflammation of the heart, and that a large number also labour under inflammation of the pleura and lungs, and not a few under alarming disorder of the brain, we shall be desirous to employ all the means in our power, to overcome, as quickly as possible, that condition of the blood which, so long as it remains, is productive of such serious consequences to vital organs. I have often been disappointed with colchicum, and doubt its efficacy in the true fibrous rheumatism, though I have been more sensible of its therapeutic effects in the synovial variety—that form which is known under the name of rheumatic gout, and in which, purging with full doses of calomel, aided by other purgatives, so as to procure copious bilious stools, is also found useful ; a plan of treatment introduced by Dr. Chambers of London, who was also the first to point out the distinction between the fibrous and the synovial rheumatism, and suggest the application of means of treatment varying according to the texture implicated, observations which have been well illustrated by Dr. F. Hawkins, in the Gulstonian lectures for 1826. The antimonial solution, at one period, I saw extensively employed by my distinguished preceptor, Dr. Abercrombie, and with marked benefit ; but he was in the habit of employing bloodletting early in the disease, and of combining opium with antimony on all occasions ; and admitting the powerful

agency of opium when administered alone in rheumatic fever, I am inclined to ascribe the benefit obtained, as mainly due to it.

In the treatment of chorea, I can only speak of the efficacy of one agent, having never had occasion to test the powers and properties of any other ; and it deserves remark, that this remedy, so available in chorea, is scarcely less so in chronic rheumatism. Arsenic is a most valuable and powerful remedy in these, as in many other diseases, and it is much to be regretted that so many are deterred from employing it in consequence of the sickness and griping which it is apt to produce, or from a fear of its poisonous effects on the constitution. Dr. Babington, in the interesting paper to which reference has already been made, in speaking of the comparative merits of different remedies, has noticed arsenic as the most powerful of all ; but he admits that he has been dissuaded from employing it on the consideration alluded to ; other authors and practitioners have been influenced by the same views, so that its real merits are but imperfectly ascertained. Dr. Hughes, in a recent digest of one hundred cases of chorea, in which the efficacy of various modes of treatment is tried, in speaking of arsenic, considers it as slightly inferior to the other mineral tonics ; but he only employed it in seven cases, two of which it cured, and with five it failed, or disagreed. Dr. Todd, while admitting that arsenic has been a good deal used in this disease, and with unquestionable benefit, adds, "If I can cure my patients with iron or zinc, I would rather not employ arsenic. This metal, like mercury, is capable, after a longer or shorter time, of producing a cachectic state peculiar to itself, against which you have no means of providing."* In the experience of now nearly thirty years, and in a large number of cases, I have never known arsenic fail, and I have never witnessed the cachectic condition referred to. It has certainly

* *Lancet*, 1842-43.

in several instances disagreed, but I have not abandoned it on that account ; its use has been suspended for a few days, or even a week, and resumed, perhaps, to be suspended again ; but I have invariably found that the choreic jactitations have become more and more modified after every such intermission, till at last the disease has yielded entirely, and no permanent injury to the constitution has ever resulted from the employment of the remedy. In almost all cases the medicine has been withdrawn for a time, as soon as evidence of its physiological action on the system was observable, and before it could be said to have disagreed. The earliest manifestation of these effects are itching and swelling of the eyelids, redness of the conjunctiva, nausea, and uneasiness at the pit of the stomach, and particularly a peculiar silvery white appearance of the tongue, seldom accompanied with tenderness. These have invariably diminished and disappeared in the course of a few days after the mineral has been withdrawn, and no other unpleasant consequences have resulted from its use. In the last case of the second family history which I have shortly detailed, it was remarked that the arsenic was once and again suspended. On the first occasion the patient passed for a time from under my observation to the care of Mr. Aikman, an intelligent practitioner in East Linton, who writes in regard to her, that,—“ shortly after her arrival, she resumed the use of the arsenic, and continued it for about three weeks, when we were obliged to discontinue its use on the appearance of constitutional symptoms. When these subsided she again resumed the arsenic, and went on with it regularly until we were again interrupted by the constitutional disturbance ; and when it passed away, the improvement was so decided, and, up to the time of her leaving the country, so permanent, that there was no necessity for again having recourse to it.” He adds, in connection with this case, it may be interesting to you to know that, in another instance in which I have used

the arsenic, the cure was as complete and permanent, though, after persevering in the use of the drug for two months, not the slightest constitutional disturbance was excited."

I may take this opportunity of stating that, after extensive trials of the arsenical solution in periodic affections, in psoriasis, and other scaly affections of the skin, in epilepsy, and other convulsive diseases, and particularly in chronic rheumatism and chorea, I have been equally gratified by its efficacy as a powerful therapeutic agent, as by its freedom, under judicious management, from all poisonous or injurious consequences.

A general assent has been given by the profession to the views now offered in explanation of the connection between rheumatism and chorea. Dr. Walshe in this country, and Romberg of Berlin, among others, are no doubt still opposed to the notion of an intimate relation existing between the two diseases. Dr. Watson, however, has adopted these views in his admirable lectures. "Acute rheumatism (he says) is a blood disease; and it is most likely that the unhealthy blood circulating through the several organs, is the common source and cause of the articular, the cardiac, and the spinal symptoms; and the bond of connection between them." Dr. Todd has also called attention to an interesting fact in the history of chorea, I mean the condition of the urine as regards its high specific gravity, and the frequent deposit of lithates in considerable quantity. "Generally speaking (he observes), the density of the urine is highest in those cases in which the movements are most general and most active; and it falls steadily with their diminution, and with the restoration of a greater controlling power on the part of the patient." "You cannot fail to notice (he continues) that the general character of the urine in chorea bears a marked resemblance to that in rheumatism. This and other circumstances have led me to

associate the state of constitution in which chorea is apt to occur, with the rheumatic diathesis."* Dr. Todd no doubt alludes here to those cardiac murmurs which have been referred to as so frequently met with in young persons labouring under chorea, a description of which he has given in the Lumleian Lectures for 1849, intimating that to Dr. Addison of Guy's Hospital is due the merit of having first made public the frequent occurrence of the bellows-sound in chorea. Dr. Todd, in answering the question—What is the cause of this sound? has distinctly replied—"The true answer to the question is, I believe, to be found in the fact that many of the patients who suffer from chorea are of a rheumatic diathesis, and that in consequence of this rheumatic state, they experience an insidious endocarditis which generally affects the mitral valves. The proof that the rheumatic diathesis and chorea are frequently met together, is derived from these facts,—that many of the sufferers from the latter malady, when carefully examined, are found to have previously suffered more or less from chronic articular pains, to have sprung from rheumatic or gouty parents, and to exhibit deranged secretions such as occur in rheumatic states."† To this explanation I give a willing assent.

There is, however, no reason to doubt that in chorea a systolic murmur, heard most distinctly at the apex of the heart, and caused by regurgitation through the mitral orifice, may occur without any organic change in the valvular apparatus,—a disordered action, perhaps a choreic condition, of the muscoli papillares permitting the reflux. The subsidence of this murmur concurrently, in some instances, with the ordinary choreic jactitations gives support to this opinion. Dr. Walshe includes this murmur in the list of dynamic intra-cardiac murmurs.‡

* Clinical Lectures on the Nervous System, p. 441.

† Medical Gazette, May 1849. ‡ On Diseases of the Heart, third edit., p. 95.

M. Sée of Paris, in an elaborate paper on chorea, read to the Academy of Medicine in 1850, has recorded his hospital experience of the connection of rheumatism and chorea, in a large number of cases under his observation.* To this paper I refer for much valuable information in proof of the views advanced in the preceding pages. I would beg also to refer to an excellent paper by Dr. Kirkes in the Medical Gazette for December 1850, and to an able article by Dr. Bond, in the Medico-Chirurgical Review for July 1856, on the pathology of chorea.

Much diversity of opinion still exists respecting the most appropriate treatment of rheumatic fever; but in proportion as its humoral pathology has been recognized, so has the treatment by elimination gained ground. Bloodletting is now nearly abandoned; calomel is seldom employed; opium, as a powerful agent in subduing the nervous element, must continue to have its advocates; colchicum, cinchona, guaiacum, and actæa, will each find zealous supporters; the latter, perhaps, all the more readily that in chorea as well as in rheumatism it appears to possess something like specific powers; but the salts of potash and of lithia, as the means of depurating and eliminating, now possess more fully than any other mode of treatment the confidence of a large part of the profession. The acetate of potash, as recommended by Dr. Golding Bird, in the closing chapter of the last edition of his work on Urinary Deposits appears to me to merit the high encomiums he has passed upon it. I was consulted lately by Dr. Robert Hamilton in the case of a young gentleman of eighteen years of age, labouring under a second attack of rheumatic fever. It was of more than usual severity. Almost every joint was swollen, and painful; the fever was smart, and the sour-smelling perspirations were copious and exhausting. He lay unable to move a limb, or to change a posture. With the exception

* *Memoires de l'Academie de Médecine*, Tome xv. 1850.

of lime juice he had used no remedy. It was the fourth day of the disease, and no internal organ was affected. He was ordered to take the acetate of potass in doses of half a drachm, largely diluted with water every two hours. He was faithful to the prescription by night and day. Within twenty-four hours there occurred a copious diuresis. The urine as it increased in quantity, rose in specific gravity: the lithates were plentifully deposited; the fever, pain, and swelling, rapidly declined; and on the third day of our attendance, the seventh of the rheumatic fever, we found the patient sitting in his chair free from complaint. He had taken to the extent of two ounces of the salt in the course of three days, and no other remedy of any kind had been employed.

III.

ON THE CONNECTION OF ERYTHEMA NODOSUM
WITH THE RHEUMATIC DIATHESIS.

(Read before the Medico-Chirurgical Society of Edinburgh, 3d April 1850.)

It is wisely remarked by Dr. Gooch, in his admirable essay "On some symptoms in children erroneously attributed to congestion of the Brain," that "in observing disease, two sets of symptoms may be noticed, which are mixed together in the case, but which require to be discriminated to form a correct opinion of it. The one consists of the striking symptoms which form what may be called the physiognomy of the disease; the other consists of those symptoms which indicate the morbid state of organisation on which the disease depends. The former only are noticed by the common observer, but the latter are the most important, and the skilful physician takes them for his guides in the treatment." "He notices not only where the hour hand of nature's clock points, but also the run of its minute and second hands."*

These judicious reflections apply with marked propriety to many diseases of the skin, and perhaps to none more, than to that singular affection, a short notice of which I now offer to the Society.

The variety of erythema to which the term *nodosum* has

* Gooch's Account of some of the most Important Diseases of Females, second edition, p. 344.

been applied by systematic writers, is characterized by red elevated patches, of an oval form, varying in size from an inch to an inch and a-half in length, by half an inch or more in breadth, their long diameter being uniformly parallel to the axis of the limb on which the eruption appears, and this part is generally the anterior of the legs, or shin as it is called, over which, I have observed, that the patches are distributed with symmetrical regularity; occasionally, also, but more rarely, they appear on the forearms. I have never seen them on any other part of the body. The affection occurs most commonly in young women; but it is not limited to them, as some authors suppose, but is observed also in young men, and in children of both sexes. The eruption is preceded and accompanied by more or less febrile disturbance, by moist furred tongue, deranged bowels, and scanty high-coloured urine, often by pains in the joints and muscles, and always, when severe, by feelings of depression and great disorder. The patches continue for some days to rise above the level of the surrounding skin, becoming more elevated towards the centre, and forming painful bumps or protuberances, which appear, when pressed on by the finger, to offer a fluctuation, and promise a suppuration, which never, however, takes place. With the resolution the red colour fades, and is succeeded by a bluish or dusky hue, resembling somewhat the appearance of a bruise; the tumefactions soften and disappear, the general indisposition subsides, and the case usually runs its course in ten or fifteen days. In some instances, however, the protuberances have continued hard and painful for a longer time, and the blue discolorations have lasted several weeks. The disease is apt to recur, and its premature retrocession, or natural decline, have been noticed as the period of the invasion of serious internal disease.

Such is a general description (as given by authors,

and verified by observation) of a malady, which by many is considered more curious and rare than interesting and instructive ; to whose history little or no importance has been attached by most of the recognized authorities on cutaneous diseases ; whose associations with marked disordered function and morbid action have been nearly overlooked, and a knowledge of whose real character is only beginning to be developed, by the steady advance of an enlightened humoral pathology.

In illustration of the form in which the disease occurs in practice, I beg to offer a passing notice of a few cases, the last which have come under my observation. One of these was a boy, aged thirteen, said to belong to a healthy family, and to be free from any predisposition to disease. He had been living hitherto in the country, and had only lately come to town, to pursue his education at the New Academy. He was tall and strong for his age ; but his friends had remarked that, for some time past, his countenance was pallid, and his appearance cachectic, and that he had evinced much disinclination for mental or bodily exertion. I saw him on the second or third day of a febrile attack, and in the early stage of the eruption of the nodose erythema ; the patches were large and numerous, tender, painful, and hot, distributed over the fore part of the legs, and also over the forearms, with symmetrical regularity, accompanied by headach, languor, and lassitude, and by deep-seated pains in the joints and muscles of the extremities. The pulse was frequent, full, and compressible ; the tongue was loaded with a creamy fur ; the skin was hot, soft, and moist, the bowels inactive, and the dejections dark and offensive ; the urine was scanty and high coloured, and gradually deposited more and more of the lateritious sediment. The disease pursued its course, apparently unmoved by antiphlogistic treatment ; the tongue continued foul, the bowels disordered, and the urine deficient and de-

ranged. The febrile state had somewhat subsided, and the bright red discoloration had faded into a bluish or livid tint, when, about the seventh day of the eruption, the sulphate of quina, as recommended by Dr. Watson, was prescribed, and its exhibition appeared to produce a marked impression on the features and progress of the case. The tongue which had yielded nothing to calomel and jalap, now rapidly divested itself of its thick coating; the bowels assumed a more healthy action, and the evacuations a more natural appearance; the urine became copious and clear; the protuberances of the eruption softened and disappeared, the bruised marks vanished, and after a week of convalescence, the patient returned to his books and his play.

We have in this case a well-marked instance of the erythema nodosum in a boy of thirteen years of age, previously healthy, but manifesting before its occurrence the characteristic signs of a peculiar diathesis, as exhibited in the pallid and cachectic look, the defective excretions, and the deep-seated pains in the limbs and joints. We remark also, the beneficial effects of quina, a mode of treatment often found available in chronic rheumatism, and in rheumatic fever.

Another case, to which I shall at present allude, occurred in the person of a domestic servant, a young woman of twenty years of age, of pallid complexion and delicate appearance, and subject to irregular and defective menstruation. When seized with an attack of a febrile character, followed by copious patches of the nodose erythema, distributed over the fore part of the legs, and accompanied by the usual tenderness, heat, and pain of the eruption, she had requested the attendance of a respectable practitioner in the neighbourhood of her master's residence, who had prescribed rest, diaphoretics, and laxatives, under which the disease appeared to yield. On the eighth or tenth day of her illness, however, I was requested to see her, in consequence of an attack of acute pain

in the lower part of the left side, with impeded breathing, rapid pulse, and increase of fever. The bright blush of erythema had at this time sunk into the dusky blue ; the protuberances had softened and declined ; but the general derangement of health, manifested by the pale sickly look, the loaded tongue, and disordered excretions, had not given way ; and to these were now added the symptoms of thoracic inflammation,—the general and physical signs of acute pleurisy. By means of moderate bleeding, the employment of calomel and opium, and counter-irritation, these latter symptoms were overcome, and after a short attendance the patient was dismissed, with instructions to persevere in rules of diet, and regimen, and in means calculated to improve digestion and nutrition, and to regulate the menstrual discharge.

We remark, in this case, the occurrence of the erythema nodosum in conjunction with amenorrhœa and other signs of cachexia, and the supervention of acute pleurisy. In connection with this we may note a case, related by Mr. Wilson, of a young woman, aged twenty-two, who enjoyed good health until nine months before, when she obtained service in London as housemaid. From that period she suffered constant illness ; sometimes her bowels were constipated, sometimes she had nausea, at other times cough ; menstruation was disturbed, becoming scanty and light coloured ; she had leucorrhœa, and copious deposits in her urine, with difficulty in passing it. Associated with these symptoms, she had a constant feeling of languor, loss of appetite, and indisposition to make any exertion. While in this state she was seized with a dry hard cough, accompanied with headach, and the usual train of febrile symptoms, and a copious eruption of erythema tuberosum* made its appearance on the

* I consider erythema papulatum, tuberosum, and nodosum (says Mr. Wilson) so closely allied to each other, that were it not for the fear of creating confusion, I should include them under the same name. The two

fore-arms, knees, and legs. The majority of the spots were of the size of a shilling piece, they were distributed irregularly over the skin, and were very tender to the touch. On their first appearance they were vividly red, but soon became purplish and yellowish, and by the third or fourth day were on the decline. This patient recovered at the end of three weeks.*

In this case we remark also the evidences of a cachectic state of constitution, accompanied by defective menstruation, and other symptoms, such as are frequently observed in females resorting to large towns, and indulging in a mode of living contrary to their previous habits in the country,

A young lady aged fifteen, of pallid and cachectic appearance, came under the care of Dr. Pagan, for an illness which was supposed to be influenza. There were irregular feverish fits, with quick pulse, warm moist skin, white clammy tongue, and considerable pain in the muscles of the neck and shoulders of a rheumatic character. The digestive functions were much deranged, and the catamenia scanty, unhealthy, and imperfectly established. These symptoms were followed in a few days by an eruption of erythema nodosum on the legs. It matured, and faded, and disappeared along with the muscular pains, under the free use of the wine of colchicum,—a remedy which Dr. Pagan informed me he had been led to employ in the treatment of such cases, with the view of correcting the well-marked signs of hepatic and renal disorder he had generally observed to accompany the cutaneous disease.

The father of the young lady in this case was, at the period of her illness, labouring under serious disorder con-

former are commonly associated in the same patient, and I have more than once seen erythema papulatum on the face and hands, while erythema nodosum existed on the legs."—Wilson on Diseases of the Skin, p. 144.

* Wilson on Diseases of the Skin. 2d Edit., p. 169.

nected with a gouty-rheumatic habit, which had for many years exposed him to frequent returning fits of illness.

In this case, we remark also the indications of the rheumatic diathesis in the cachectic appearance of the patient, the unhealthy condition of the catamenia and other secretions, and the muscular pains. We note also the hereditary transmission of the diathesis, and the effect of colchicum on the disorder.

The following case was some time ago under the care of Dr. Warburton Begbie, in the Royal Infirmary :—J. M., aged thirty-four, has been a patient during the last six weeks, labouring under pelvic cellulitis, attended by purulent discharge from the vagina. During this period she has had three separate attacks of tonsillitis, two of which terminated in suppuration. To such affections she states that she has been subject since childhood. Five years ago, she suffered from acute rheumatism, when nearly all the joints were in turn affected; and in consequence of this illness she remained in an enfeebled condition for eighteen months.

On Saturday, November 23, she became feverish; the pulse rose to 100, and an eruption of erythema nodosum, interspersed with patches of erythema papulatum, made its appearance on both legs and arms. The nodose elevations were situated chiefly between the knees and ankles; and on the upper extremities along the ridge of the ulnæ. The saliva and perspiration, the latter of which was abundant, were of highly acid reaction. She suffered from severe pains in both knees and ankles; these joints were swollen and red. On the 25th, on examining the region of the heart, the sounds were slightly roughened. On the 26th, the first sound at the base was prolonged and rough, and there was slight extension of precordial dulness. On the 27th, there was distinct friction sound audible over the base of the heart. On the 28th, the roughening of the heart's sounds was nearly gone; but the

cardiac first sound was found replaced at the base by a distinct blowing murmur, evidently endocardial. For some days this murmur continued to become more and more distinct. On the 3d December the eruption of erythema had become dusky, and began to fade; and the reaction of the secretions was more natural; the pain of the joints was nearly gone, though evidence of slight effusion into the left ankle remained. The patient felt much better, and began to move about a little.

The treatment consisted in the administration of the acetate of potash, in doses of thirty grains three times a day, with twenty drops of the wine of colchicum to each dose, and the occasional use of the blue pill. Cotton wadding was applied to the affected joints.

The patient remained in the hospital during the month of December; and on leaving, was free from articular pains, though both ankles and knees continued somewhat stiff. A prolongation of the first sound of the heart, heard at the base, still existed.

In this case we observe also the well-marked signs of the rheumatic habit exhibited by the patient, and manifested in the pelvic cellulitis, and in the tonsillitis referred to, and subsequently developed more conspicuously in the rheumatic affection of the joints, and followed by the cardiac disorder and unequivocal symptoms of endocarditis.

Keeping in mind the leading features of these cases, let us turn to the writings of some recent authors, with the view of discovering whether any uniformity of observation, or correspondence in views, in regard to the nature of this affection, are found to prevail.

Mr. Plumbe informs us that a high degree of derangement of the secretions, and disordered state of those organs in which the process of chylication is carried on, has been noticed constantly when the disease has come under his observation.*

* Plumbe on Diseases of the Skin. 4th Edit., p. 503.

Dr. Joy says he has known it return frequently in the same individual, attended with considerable œdema, and often terminating in desquamation, succeeded by severe pains in the limbs, which demanded the employment of pediluvia, bandages, etc.*

Dr. Todd says, "I am not aware that any cutaneous disease occurs in connection with this (rheumatic) diathesis;" but subsequently he notices that an eruption, resembling erythema nodosum, and occurring chiefly or exclusively on the lower limbs, is occasionally witnessed in rheumatic fever.†

Rayer has seen the skin affection in connection with acute rheumatism.‡

Dr. Watson connects it with disturbance of the menstrual functions, and has seen it occur in connection with acute rheumatism; and mentions that a patient of his in the hospital was attacked with the affection of the joints immediately on the cessation of the erythema nodosum; and that in another this order was reversed.§

Dr. Copland notices that it is sometimes connected with the approach of the catamenia; and that its premature disappearance is sometimes followed by dangerous internal disease. Mr. Dendy saw pneumonia suddenly supervene on its retrocession.||

Mr. Wilson mentions that the erythema papulatum is usually associated with irritation of the gastro-pulmonary mucous membrane, and sometimes with rheumatism; the erythema tuberosum with disordered menstrual function; and that the erythema nodosum (all nearly allied) is observed also in connection with rheumatism.¶

* Cyclopædia of Practical Medicine, Art. Erythema. Vol. ii. p. 120.

† Todd on Gout and Rheumatic Fever, pp. 110 and 123.

‡ Rayer, *Traité des Maladies de la Peau*. Tom. i. p. 123.

§ Lectures on the Practice of Physic. Vol. ii. p. 836.

|| Dictionary of Practical Medicine. Art. Erythema.

¶ Wilson on Diseases of the Skin, p. 162-4.

Willan, Bateman, Thomson, and Biett are nearly silent on the subject of the complications of erythema nodosum, and little can be gathered from writers of an earlier date,* but enough has been culled of available materials, to demonstrate the connection of this form of erythema with a marked diathesis; and opportunity sufficient is afforded for a reasonable conjecture, that this is the rheumatic constitution, and that the skin affection is symptomatic of the blood disease. These conclusions may fairly be arrived at, for the following reasons :—

1st. The skin affection is most prevalent in, if not confined to, the young, and those under thirty—the chief subjects of the rheumatic diathesis and rheumatic fever.

2dly. It occurs very frequently in females suffering from menstrual derangement, confirming the views of Drs. Todd, and Rigby, and Sir Charles Locock, as to the intimate connection of disorder of the uterus with rheumatic affections.

3dly. It occurs in connection with disorder of the general health, characterised by pallor, cachexia, and defective excretion, and subsequently developed in febrile excitement, pains in the joints and muscles, and the copious deposition of lithates in the urine—a state of matters analogous to what takes place in rheumatism.

4thly. It is associated frequently with rheumatic fever, co-existing or alternating with it.

5thly. It is often complicated with those internal dis-

* In that curious store-house of medical facts, furnished by Dr. Parry, under the head of "Relation of Diseases by Conversion," it is recorded that rheumatism often alternates with cutaneous eruptions; and in speaking of this relation, after giving many examples of a similar kind, he says, "In all these instances, which have been derived solely from my own observation, and to which many others might be added from medical writings, the several forms of disorder appear to be vicarious affections, consisting of different modifications of one common action, directed from unknown and spontaneous causes to different parts."—*Elements of Pathology*, p. 392.

orders with which rheumatism is allied, particularly with pleurisy and pneumonia. It has also been noticed in connection with endocarditis, or other cardiac disease.

Lastly. It is successfully treated by colchicum and the alkaline salts, and yields also to a plan of treatment—I mean the use of bark—which was long extensively and successfully employed in the treatment of rheumatism, and still has its advocates among the best-informed physicians of the day.*

But the question will, no doubt, occur,—Of what value is the knowledge of this relation existing between the affection of the skin and the rheumatic diathesis, admitting that the connection were satisfactorily established? I answer,—Of great practical value. Let it be understood that the cutaneous disease is generally found associated with evidences of defective assimilation and cachectic condition of the system, such as precede or accompany an attack of rheumatism; that it not unfrequently co-exists or alternates with a paroxysm of that disease; and that, during the course of the erythematous eruption, or on its decline, or by its sudden retrocession, some of those acute affections with which rheumatism is allied—such as pericarditis and pleurisy—are apt to supervene; and where is the practitioner who will not

* "I once had a housemaid (says Dr. Watson) in whom the disorder (erythema nodosum) appeared, and was attended with unusually high fever and much indisposition. I treated her, therefore, antiphlogistically; *i.e.*, I kept her on low diet and gave purgatives; but the disease went on. Fresh knots came out as the old ones faded. At length, I do not remember why, I prescribed some quina for her, and the improvement was immediate and very striking. She relapsed, however, once or twice, upon leaving off the bark, but by persisting subsequently in its use for some days after, she appeared to be well, a permanent cure was effected. Since that time—now twelve or fourteen years ago—I have seen a good many examples of erythema nodosum, and I have treated them all alike,—*viz.*, first with an aperient and then with the sulphate of quina, and they have all rapidly got well."—Lectures on the Practice of Physic. Vol. ii. p. 836. See also Copland's Dictionary of Practical Medicine. Vol. iii. p. 630.

watch with jealous eye the origin and progress and termination of every such case? while, at the same time, from possessing correct views of the pathology of the disease, he will be in a position to treat, not those symptoms which constitute the physiognomy of the case, but that morbid action which is its essence, which is so productive of extensive mischief, and so often followed by disastrous consequences. He will look upon the skin affection as a symptom only of a great constitutional disorder, in which many vital organs are apt to suffer, remembering that the disturbance consequent on their serious lesion is often the first circumstance which arrests the attention of the patient or his friends, and will be ready to avail himself of every appliance for the discovery of obscure or insidious disease, and of every means of treatment by which the morbid element may be eliminated from the blood, and the peculiar diathesis to which it has given rise entirely overcome.

It is an important fact, which cannot be too much kept in mind, that all the phenomena which constitute the characteristics of rheumatism may be present in a case, with the exception, at one time, of fever, and, at another, of the affection of the joints, or of both these together; and that all the danger, and all the damage, which a paroxysm of rheumatic fever is capable of producing, may be equally, though much more silently and stealthily, brought about, when the *materies morbi* circulating through the blood has as yet, from unknown causes, failed to induce the febrile action; or, in raising it, to super-add the affection of the joints. It is in this way that we can account for the occurrence (in those of the rheumatic diathesis) of chorea and diseased heart, conjointly or separately, so often met with in young people; and, again, of copious effusion into the sac of the pleura in others, of which I have seen many instances, particularly in boys, who, though somewhat ailing, have been able to continue their attendance at school, and

engage in play, till some symptoms of impeded breathing have arrested the attention of friends, when exploration has discovered the lower half of one side of the chest dull on percussion, and exhibiting the other signs of pleuritic effusion,—an effusion which appears to have taken place in a manner somewhat analogous to, or identical with, that which often, in the same character of constitution, rapidly and unexpectedly fills and distends the synovial capsule of the knee-joint.

In all the boys alluded to, the evidences of a cachectic state had been previously noticed, and I believe the same condition is observable in those affected with effusion into the joints. For instance, some days ago, after prescribing for a lady in town, my attention was called to a domestic in the family, who had been complaining for several weeks. She was pallid and sickly; suffered from dyspeptic symptoms, from obstinacy of bowels at one time, and, at another, from relaxation; was feeble, and readily fatigued; and felt unable to continue her duties. On examining her urine, it was highly acid, and loaded with urate of ammonia. She had formerly had rheumatic pains. I ventured to predict an attack of this character, and, to ward it off, prescribed a simple and limited, but nutritious, diet, with alterative medicine, and full doses of the nitrate and bicarbonate of potash. I was requested to visit her again, when I found the synovial capsule of the left knee distended with fluid, and the joint affected with pain and stiffness,—symptoms which had all come on in the course of twenty-four hours.

In regard to rheumatic fever existing without any articular affection, a case is passing under my observation while I now write, which forcibly illustrates the fact, and a short notice of which may not be uninteresting.

Dr. Graves was the first, I believe, to direct the attention of the profession to this interesting point, and, though the correctness of his views has been doubted, and men of large

experience have not observed such cases, I am confident that they are by no means uncommon, and that the following extract from the work of the eminent physician referred to, contains truths of great practical value :—"In truth," says he, "in rheumatic fever, the quickness of the pulse, heat of the skin, tendency to profuse sweating, debility, restlessness, and thirst, may all exist without any inflammation of the joints, and may be resolved without such inflammation ever occurring, as I have witnessed in several well-marked cases of individuals liable to rheumatic fever, and who had previously suffered from attacks of fever with arthritis in the usual form, and subsequently, on exposure to cold, were seized with symptoms of pyrexia, which, in intensity, duration, and every other particular, were identical with their former fevers, save and except that, from beginning to end, not a single joint was inflamed.*

On the 16th of January last, during the prevalence of keen frosty weather, which called many of the admirers of the art of skating and curling to the pond, a gentleman of the legal profession, approaching the age of thirty-five, of stout make, and full habit of body, and, by hereditary right, strongly disposed to rheumatism,† repaired to Duddingstone, to enjoy his favourite amusement. He spent the early part of the day in keenly contested games of curling, in which he was alternately chilled and heated ; and left the ice, complaining of an aching pain in his right side, which he at once attributed to the free and un-

* Clinical Lectures, vol. ii. p. 159.

† His family experience had been signally painful and disastrous. He had lost his mother in consequence of inflammation attacking the heart, previously damaged by rheumatic carditis ; he had also lost a brother and sister, in early life, by carditis accompanying rheumatic fever ; a paternal uncle, by diseased heart ; and a cousin (a daughter of this last), by acute pericarditis, unconnected with articular affection, but with all the other evidences of rheumatic fever ; and lastly, he had seen his only remaining brother, from time to time, afflicted with the malady which had proved so great a scourge to his family.

wonted use of his arm, in pursuing his athletic exercise. Before he reached home, however, the pain amounted to a severe stitch, and towards the hour of dinner, he waited on me for advice. On examination, I considered him labouring under pleurodynia, and dismissed him with instructions to retire early to bed, to apply a large sinapism, and take a full dose of Dover's powder. His pulse at this time was 72, full and soft ; his skin was cool and moist ; and his tongue somewhat loaded. An aperient draught was also prescribed for the morning. Late in the evening of the same day, however, I was summoned to his bedside, and found him much indisposed ; his pulse had risen to 96, it was still full and compressible ; his skin was hot and moist ; the pain, which was seated in the lower part of the side, and inclining towards the back, was severe, and greatly increased by motion, by full inspiration, or the effort of coughing. The physical signs at this time gave no clear indication of pleurisy ; but judging, from general symptoms, that the costal pleura, at least, was affected, I ordered him to be cupped, and added to the Dover's powder five grains of calomel, with instructions to repeat the dose early in the morning, before taking the aperient. On the 17th he was not relieved, the pain was unsubdued, and more extended towards the base of the scapula ; the friction sound was audible over a limited space ; the pulse was 100, full and soft ; the tongue moist, and loaded ; the skin bedewed with sour-smelling perspiration ; and the urine, small in quantity, depositing a brick-dust sediment. The bowels had been freely moved ; the evacuations were dark, and highly offensive. A second abstraction of blood by cupping was prescribed, to be followed by calomel and opium in the usual form, and the free use of nitre in solution as a drink. On the 18th there was dulness on percussion over the inferior and lateral portion of the right side of the chest, with distant

respiratory murmur and imperfect ægophony; the general symptoms of rheumatic fever continued; but no joint was affected. During the three following days, there was little change in the symptoms; the pain had in a great measure subsided, and the signs of effusion were quite distinct—limited, however, to the lower half of the right side of the chest; the pulse continued to range from 100 to 108; the urine and perspiration, the tongue and bowels, still manifesting the same high degree of rheumatic character. The calomel and opium were continued till slight ptyalism was induced; and large and increasing doses of the carbonate and nitrate of potass, together with colchicum, were prescribed, in order to favour elimination by the kidney. Towards the 25th, ten days from the date of seizure, considerable absorption of the effused fluid had taken place, the kidneys acting vigorously, and the excretion depositing, day after day, large and increasing quantities of the lithate of ammonia. Convalescence advanced, and for some days before the 31st he was able to leave his bed, and spend some hours on the sofa. On that day, however, by imprudent exposure near a window imperfectly closed, he sustained a chill, and all his symptoms quickly revived. The disease now lighted on the opposite side of the chest, and pursued there a course corresponding with that followed on the right. It was rheumatic fever, with inflammation of, and effusion into, the left sac of the pleura. The same practice was renewed; the same results followed; and on the 14th of February, a fortnight from the relapse, and one month from the original seizure, he was again convalescent. On the 18th, while still confined to bed, and exercising the most exemplary care and caution, as regarded the *juvantia et lædementia*, he was seized with acute pain in the præcordial region, followed by anxious hurried breathing, rapid, feeble, and irregular pulse, cold, clammy perspiration, and inability to maintain the recumbent

posture. His expression of countenance was singularly distressing, and he indicated by his looks, more than by words, that this second relapse could not fail of a fatal result. I feared the worst in a constitution so strongly rheumatic, and with the morbid element now fixed on the pericardium. The to and fro sound was audible over the præcordial region, and the impulse there was unnatural and extended. Blood was immediately taken from the region of the heart, and calomel and opium given every alternate hour, till salivation should take effect. A second abstraction of blood followed, after six or seven hours: the pulse improved in strength; the pale, anxious, distressed countenance revived; the præcordial pain, and catch in the breathing, subsided; the physical signs gave way, and disappeared; and in three days the patient seemed rescued from his impending doom. It was only, however, to be subjected to another, but a less severe and threatening trial. On that day, there occurred renewed pain, of a deep-seated kind, in the region of the first pleuritic effusion, which had remained dull on percussion, and free from respiratory murmur, up to this period. To the pain, now succeeded cough, for the first time, followed by bloody expectoration, and some hurry in breathing; but exploration discovered no abnormal signs beyond the limits of the original pleuritic effusion; and, the symptoms not becoming aggravated, the hope was entertained that only a small portion of the lung was implicated in this pneumonic attack. Those hopes have been realised. The pulmonary symptoms have gradually disappeared; and now, at the close of ten weeks from the date of the original attack, the patient is again—and more than ever—a promising convalescent. He carries about with him, no doubt, a partially adherent pericardium, and a doubly adhering pleura, as well as a partially condensed lung; but his life has been spared; his infirmities, we know, are compatible with existence—even long extended; and his age will, ere long,

grant him immunity from future attacks of the malady which has proved so disastrous to his family.*

It is worthy of remark, that, during this long illness, the manifestations of the rheumatic habit never entirely left the system, nor appeared to yield to treatment, until the close of the tenth week, when they may be said to have declined, and disappeared. The tongue continued thus long foul, the bowels disordered, and the quantity of the lithates and purpurates in the urine was greatly beyond what I ever witnessed in any case of rheumatic fever, however lengthened in duration or severe in character; while the acid sweats annoyed, not only the patient himself, but even the bystanders, by their constancy and the pungency of their odour.

It also deserves notice, that this gentleman, who had hitherto enjoyed uninterrupted health, and suffered no obstruction in the discharge of professional duty, or in the practice of daily exercise, for a long series of years, had been observed, for some weeks before the seizure just described, to be pallid in looks, and somewhat languid in spirit, and indisposed for mental or bodily exertion; and I have ascertained that during this time, his digestion was imperfect, and his urine constantly loaded with the lateritious deposit—an assemblage of symptoms which is too much overlooked in cases of this class, and which I refer to the more, that it has been attempted to establish a diagnosis between rheumatism and gout, on the ground that the latter frequently presents premonitory symptoms affecting the digestive organs, which is not the case in the former;—a statement which I believe to be contrary to fact, and involving the risk of serious

* Ten years and more have elapsed since this history was first given. The subject of it is now in the enjoyment of perfect health, and has suffered no attack of rheumatism in the interval. His case appears to me to illustrate the expediency of the antiphlogistic treatment then employed, and to silence those who imagine that the constitution of the patient must be severely injured by such practice.

evil. The premonitory symptoms of rheumatism may possibly be slight—so slight as to fail in attracting the notice of the ordinary observer ; but I apprehend that they will always be discovered if sought after ; for no attack of rheumatism can take place without evidences of previous imperfect digestion and defective assimilation.

This disorder of the digestive and assimilating functions is often, indeed, the only departure from health which the physician is called upon to treat for days—it may be for weeks — before a paroxysm of rheumatic fever occurs. I cannot forget my own want of due attention to this class of symptoms in a case which, not many years ago, proved fatal under my care. The subject of it was a young lady, of twenty-one, who had been ailing for some time before I was called to see her. She was then pallid in countenance, and depressed in spirits. She owned no illness beyond a feeling of loss of strength, an occasional aching head, a want of appetite, and unrefreshing sleep. Her tongue was foul, her bowels disordered, and her urine scanty, and greatly loaded. The catamenia were suppressed. These symptoms went on from day to day ; no local pain, no febrile movement, threw light upon their real nature, and no family predisposition pointed to their true character. By and by, a degree of fever was lighted up ; and then a degree—a slight degree—of redness, pain, and swelling of the right ankle-joint, proclaimed itself, and revealed the latent disorder which lurked within, and which was now developed in great intensity. The fever, however, exceeded far the amount of articular complication ; the endocardium by and by declared its participation in the general derangement by the distinctive murmur ; and ere long the pericardium also, through the to and fro sound. No remedy availed to save life, though suffering was protracted—painfully protracted—for many weeks, when tumultuous palpitation and laborious breathing,

and dropsical swelling, closed the scene. No examination of the body was permitted, but the records of many such cases can declare the damage that was wrought. The retrospect has often filled me with regret, that I had not sooner attended to premonitory signs.

But it is not my purpose to enlarge on the importance, the extent, or the dangers, of the consequences which flow from the rheumatic diathesis. The subject is becoming every day more appreciated, and so, in proportion, is human suffering diminished, and the boundaries of science advanced. Much, however, remains to be discovered; and it is well to accumulate facts, however trivial in appearance, which go to advance our knowledge of the subject.

These imperfect remarks and reflections which have now been offered, may, perhaps, tend to add a connecting link to our lengthening chain of knowledge: at all events they will have served their purpose, if they lead any to "notice, not only where the hour-hand of nature's clock points, but also the run of its minute and second hands."

The views brought forward in the preceding pages have been generally recognized by the profession. Dr. Todd, shortly after their original publication, wrote me as follows:—"I beg to thank you for your interesting paper on Erythema Nodosum. I have no doubt your view is quite correct, and that it not only occurs in connection with rheumatic fever, but also with the rheumatic diathesis."

M. Shanahan, in an inaugural dissertation for the Faculty of Medicine at Paris upon this subject, has particularly directed attention to the following proposition:—The nodose erythema is not a mere variety of erythema, and not a simple cutaneous affection, but it is the manifestation or the consequence, either of acute rheumatism, or of the rheumatic diathesis. The accuracy of the observation, which, he acknow-

ledges, was originally made in the preceding pages, is also borne testimony to by M. Legroux, physician to the Hospital, Beaujon, under whom M. Shanahan had the opportunity of witnessing two interesting illustrative cases.*

M. Caillault observes that almost all the varieties of erythema occasionally occur in connection with febrile rheumatism. It is true, he says, that the blood drawn in these cases is habitually buffy, and that the subjects of such disorder are young, and have already manifested rheumatic ailments.†

Devergie, one of the latest and best writers on cutaneous diseases in France, finds erythema nodosum intimately connected with constitutional disturbance. He remarks that the affection is especially prone to attack young girls and boys; and that it usually occurs about the period of puberty. In the female sex it is often associated with amenorrhœa, while in boys it occurs in those whose growth and general development is taking place with rapidity. In the treatment of the former, it is of the greatest importance to establish menstruation. For this purpose Devergie recommends the employment of bloodletting, and particularly the application of leeches to the vulva.‡

I beg to refer also to an interesting paper by Dr. Laycock in the *Edinburgh Medical Journal* for August 1857, in which erythema nodosum and other skin diseases are demonstrated in intimate relation with the gouty and rheumatic constitution.

* Archives Générales de Médecine, June 1854.

† Traité Pratique des Maladies de la Peau chez les Enfants, page 365.

‡ Traité Pratique des Maladies de la Peau, page 194.

IV.

ANÆMIA AND ITS CONSEQUENCES: ENLARGEMENT
OF THE THYROID GLAND AND EYEBALLS.

(Read before the Medico-Chirurgical Society of Edinburgh, 3d January 1849.)

I PROPOSE to offer a short review of some cases which have come under my own observation during the last few years, in which impoverishment of the blood, originating in a manifest source, and existing as a primary and chief symptom, has been associated with enlargement of the thyroid gland, and with a remarkable protrusion also of the eyeballs,—constituting a marked class of features hitherto not recognized; and where, under treatment adapted to the cure of the constitutional affection, the local diseases have been arrested, reduced, or ultimately removed,—affording evidence sufficiently satisfactory that these affections stood to each other in the relation of cause and effect.

Anæmia may spring from different causes, and acknowledge various forms and degrees. It may originate in the defect or failure of the function of assimilation, and as a cachexia manifest itself in different shades of bloodlessness, such as are represented in the pale chlorotic girl, in the exsanguined coal-miner,* or as in the remarkable case of Haynes, described by Dr. Combe, in a valuable communication, published in the Transactions of the Medico-Chirurgical Society of Edin-

* Journal de Medicine, tom. ix., p. 3.

burgh;* or it may occur as the result of changes in the relative proportions of the constituent elements of the blood, occasioned by hæmorrhagic or other discharges, and present the features of blood-impoverishment in the many forms of disorder, the consequence of artificial and spontaneous drains, which we are accustomed to witness from day to day.

In all its forms, and from whatever cause it may originate, anæmia presents the same general and physical signs, and these will detect it in the endless variety of disordered functions pertaining to every organ of the body, and in those local diseases with which it is complicated, and to which it gives rise.

It is the vascular form of bronchocele which I have found in connection with the condition referred to, and I am inclined to believe that the coincidence of the glandular enlargement with a deteriorated state of the blood is by no means rare; and that those who have opportunities of observing the local affection, especially in its early stages, will find on inquiry that it has coexisted with some functional derangement, or perhaps with some organic disease, which in its nature has a tendency to vitiate or impoverish the circulating fluid, though the influence of such disorder may have fallen short of the production of what is more strictly speaking termed anæmia.

That an anæmic or spanæmic condition of the system is the true cause of bronchocele in those districts of the country where it prevails in an endemic form, I am not prepared to assert; but the wretched condition of the vast number of its unhappy victims, and the physical causes which have generally been assigned for its prevalence, together with the pale exsanguined complexion, the protuberant eyeball, and other signs of anæmia manifested by its subjects, render the conjecture not improbable. It is a curious coincidence, and worthy

* Edin. Med. Chir. Trans., vol. i., p. 194.

of remark, that the blood-impoverished coal-miner of Anzain and the goitrous peasant of the Alps, both attribute their apparently dissimilar maladies to the quality of the water they are accustomed to use for their daily sustenance ; and that the late researches of M'Clelland, Bally, and Inglis, in different and widely separated parts of the world, have well nigh established the fact, that the endemic prevalence of goitre is connected with the use of water impregnated with calcareous salts. May not the habitual employment of such water so influence digestion, assimilation, and sanguification, as to lead to the anæmic condition, which, in its turn again, is the cause of the development of goitre ?

In all countries, and equally in the endemic and sporadic forms, bronchocele has been observed to make its appearance, and to develop itself rapidly during confinement in childbed, and to undergo a temporary augmentation at the period of menstruation. Dr. Copland has seldom met with an instance in the female unconnected with some kind of irregularity in the catamenial discharge, or disorder in the uterine function ; but I have not been able to find any reference to the condition of the blood, as influenced by such disorders, in explanation of the connection of the two diseases.

Dr. Parry had often seen bronchocele follow diseases of the heart and other maladies, especially those called nervous, and other writers have noticed palpitations and affections of the lungs in connection with it ; but Dr. Parry suspected the thyroid gland itself to be intended as a diverticulum for blood disposed to flow with too great force to the brain ; and the latter have generally considered the chest disorder as the consequence of the local disease, and the derangement it occasioned in the circulation of the blood, instead of regarding it as an indication of a deranged condition of the fluid itself—a condition which, I apprehend, in many of such cases, is the true cause both of the cardiac and pulmonary as well as the

thyroidal disease. A just appreciation and skilful application of the means of diagnosis now within our reach, must lead to the discrimination of these affections, by discovering those simple, and all but infallible, signs which tell of the quality of the blood in the heart and its unfilled vessels.

It appears to be a form of the hydrophthalmia of systematic writers—perhaps that form of dropsy denominated buphthalmos, or ox-eye—which has accompanied the enlarged thyroid gland as a concomitant symptom of anæmia in the cases now to be related. The etiology of this affection of the eye is acknowledged to be obscure, and our best English writers have done little to elucidate the subject. Its connection with anæmia, strictly so called, is not referred to, though its dependence on a morbid condition of the system has been admitted by some writers, and struma, cachexia, and chlorosis specified as causes. Beer has noticed it as appearing in chlorotic girls as a symptom of that cachexia. Juengken regards it as resulting, among other causes, from serious abdominal disturbances, particularly those connected with menstruation, and from hemorrhoids; but Mr. Lawrence, in his learned work on diseases of the eye, remarks, that the facts which have come under his observation have not afforded the slightest support to these pathological views, nor to the measures of treatment founded on them. I cannot, however, refuse to accept these views, having found this enlargement of the globe of the eye the result of congestion and effusion, intimately connected with that condition of the system in which the blood is deficient in fibrin and colouring matter, and yielding to a plan of treatment founded on this pathological principle. How the eyeball and thyroid gland specially manifest this state of disordered blood remains to be determined.

In all the cases which have come under my own observation, the sight has been little if at all affected, neither has

there been any complaint of pain; the cornea has been healthy, the iris natural, and the pupil fitted to discharge its functions. The congestion or effusion has appeared to be in the vitreous humour—the chambers of the aqueous maintaining, at least in two cases, their normal size. The eyeball was enlarged and firm, conveying to the fingers, when pressed, the sensation of great distension. In one case the globe was so full and prominent, that when the patient slept her friends remarked that the eyelids did not cover the ball. I have requested Mr. Walker, well known as an experienced oculist, to examine the subject of the second case, now in progress of recovery; he has kindly done so, and favoured me with the following statement regarding it:—

“Both eyes are considerably more prominent than natural; the eyelids, however, close completely over the globes, which Mrs. M. says they did not do for some time. Vision is not at all impaired, nor is there any pain in the eyes, but often she says, there is a feeling of distension. The corneæ are of their natural size and shape; the anterior chambers are not larger than usual; the irides are lively and active; and the lenses are quite transparent. The sclerotic of both eyes is evidently distended from an increased secretion within; they are larger than usual, have somewhat of a bluish colour a little anterior to the insertions of the recti muscles, although they do not seem to be thinned at that point; have a slightly flattened appearance, and do not present the usual globular shape that they do in the healthy eye. Both eyes are much harder than natural. There is no appearance of any morbid growth in the orbits—the globes can be pressed backwards as usual without causing any pain, and their movements are natural.”

I.—In the autumn of 1839 my attention was called, for the first time, to the connection of bronchocele and anæmia in the case of a lady, aged thirty-two, one of a numerous and

healthy family, which, with one exception, had grown up to manhood. She had married at the age of twenty-four, and continued to enjoy for many years a full share of health. She had never been pregnant. For some years before I saw her she had suffered from continued mental anxieties and distress, and had laboured under profuse leucorrhœa, by which her general health and appearance were much affected. For the last four or five months she had complained of inordinate pulsation of the heart, which was greatly increased by excitement, by going up stairs, by walking fast, by every thing in fact, which hurried the circulation. At these times her face, which was otherwise pallid, flushed, and she became confused. The eyes presented an unusual appearance, being prominent and staring, giving a wild and startled expression to the countenance; a much larger share of the albuginea was seen than in the normal condition; the membrane looked dark at a distance, and when examined near was found to be pervaded by vessels—many of these were also seen apparently in the sclerotic coat itself when examined through a lens; there was no dimness of vision, but a painful sense of distension of the eyeballs; all this was increased on the occasion of palpitation, or when the face was flushed. Simultaneously with the appearance of these symptoms, an enlargement of the thyroid gland manifested itself. It was soft, smooth, and elastic, and of equal character throughout, presenting the form of the hypertrophied gland, and had rapidly developed itself to its present size—that of three or four times the magnitude of the gland in health; but it was subject to remarkable variations in this respect, according to the state of mind, rest, or palpitation. It appeared to be highly vascular, and conveyed to the touch the sensation of an erectile tumour. It had suffered no diminution from the continued application of iodine. The pulse at this time generally ranged from 100 to 130; it was small and jerking, and, on the occasions of excitement,

accompanied by a thrill. The inordinate action of the heart was felt beating in the head, so as to produce a state of almost constant watchfulness. There was much breathlessness, and frequent faintness, severe headach, vertigo, and tinnitus aurium. On attentively listening to the heart's action, the contraction of the ventricles seemed somewhat prolonged, and it was attended, especially under palpitation, by a soft bellows-murmur at the aortic orifice, and a corresponding *bruit* was heard in the carotid and other large arterial trunks; there was no extended præcordial dulness, neither was the impulse of the heart very remarkable. Along with these symptoms there was a high degree of nervousness, and much derangement of the digestive functions. The catamenial discharge was imperfect and irregular. In the interval leucorrhœa prevailed. A variety of treatment had been for some time pursued for the relief of these symptoms. Blood-letting had been resorted to, with that measure of benefit which Dr. Marshall Hall has so well described and accounted for in such circumstances.* Digitalis, mercury, and many other remedies were tried, but all in vain, and the condition of the patient was considered hazardous. The appearances and signs, however, were manifestly those of impoverished blood, and taking this view, a plan of treatment was adopted, which, after being continued for many months, has issued in restoration to health. This consisted of large doses of the carbonate of iron, with gentle aloetic purges, soothing doses of hyoseyamus, a full diet of animal food, a change of air to the seaside, and regular passive exercise in the open air. Under this plan the general system gradually became renovated, the leucorrhœa subsided, the thyroïdal swelling diminished and disappeared, the eyes regained their wonted character, the complexion its accustomed hue, and the heart and arteries their normal beat. This lady travelled on the continent for many months after I first saw

* "On Loss of Blood." Med. Chir. Trans. vol. xiii. p. 140.

her, and I had no opportunity of ascertaining the progress of her restoration ; but I saw her again two years afterwards, and she was then quite well.

II.—Some years passed away before I had an opportunity of again observing the connection between anæmia and bronchocele, and verifying the symptoms and appearances just described, when I was consulted by the late Dr. Beilby, in the winter of 1846, in the case of a lady aged thirty, married, and the mother of two children. The commencement of her illness was connected with long-continued and frequent hemorrhage from internal piles, often for weeks together, to the amount of five or six ounces daily. It had extended over a period of between three and four years, during a long part of which she had been subjected to much anxiety and distress of mind. The hemorrhage at last ceased on the occurrence of an abscess near the anus, and never returned ; but it left her reduced in strength and exsanguine. She had too long disregarded the repeated loss of blood, and only became alive to her situation when the violent palpitation of the heart, with throbbing and giddiness of the head, arrested her attention, which occurred almost immediately on the cessation of the hemorrhage. The catamenia continued regular. On my first visit, twelve months after the appearance of these latter symptoms, the large and prominent eyeball, which I cannot well describe, but which once seen cannot be readily forgotten, the dark discoloured eyelid, and the pallid complexion which bespeaks poverty of blood, induced me to examine the thyroid gland, then covered by her dress, before listening to the heart's action, or feeling the pulse at the wrist. It was tumid and hypertrophied, especially the lateral lobes, which were enlarged to four or five times their normal size, and had long resisted the use of iodine, which had been administered in large measure, and, according to the experience of the patient, with manifest disadvantage. The tumour, as in the former case, was subject

to remarkable variations, according to the state of the circulation, augmenting and decreasing as excitement or rest prevailed. She felt very sensitively the marked change in her expression, from what she termed the protruding eyes, and experienced at same time great discomfort from the sense of pressure, as if the eyeball were too large for the orbit. I need not repeat a description of the symptoms—the throbbing of the head, the ceaseless impulse of the heart, the anæmic murmur of the ventricle, the continuous rushing sounds in the veins of the neck and in the thyroid swelling, the whiff of the carotids, or the jerking of the pulse at the wrist. One set of symptoms I may notice in the words of the patient herself,—“A very painful sensation was experienced on leaving the horizontal posture, violent cough came on, causing retching and an agonizing pain in the head, seemingly caused by an extreme rush of blood to the brain, with a sense of bursting. This was relieved on resuming the horizontal posture, and taking food. As a preventive, I was forced for some months to breakfast immediately on awaking from sleep, lying perfectly still in the posture in which I awoke, as even a slight raising of the head would occasion distressing pain. After eating I could rise with impunity.” These are manifestations of the impoverished brain, and part of the train of symptoms induced by attenuated blood. Every symptom was referable to this condition; the murmur of the heart, of the arteries, and veins, proclaimed its presence, and nothing remained but to recommend the simple, and satisfactory treatment of the former case. It was begun and persisted in for some time, and attended by beneficial results; it was interrupted, however, from various causes, so that the success has not been equal to its known efficacy. Still, however, at this time the patient is manifestly improved, the thyroïdal swelling is greatly reduced, the protruding eyeballs much less conspicuous, and all the signs which accompany the anæmic condition gradually disappearing. She can

walk many miles without breathlessness, and lie down and rise up without pain or confusion.*

III.—A third subject of anæmia and bronchocele I have at this time under my care, in the person of an unmarried lady, aged fifty, who had for a long series of years enjoyed perfect health till about four years ago, when she became the subject of dyspeptic and uterine derangement. For many months she laboured under profuse and wasting leucorrhœa, when the protracted drain was followed by distressing palpitation, hurried breathing, rapid, feeble, and jerking pulse, pallid complexion, varied by flushing on the least excitement or exertion, great nervousness, disordered secretions, the characteristic eye, and the hypertrophied thyroid of this form of anæmia. The isthmus of the gland was more prominent than in the former cases, but the bulk of the tumour was less than in either. She had undergone a variety of treatment, with varying success for some years before I saw her for the first time, two years ago. At that time she was chiefly anxious regarding the protuberant eyeballs, and little concerned about the bronchocele or her general health, which she had begun to think did not admit of remedy. The general and physical signs were those of anæmia; and, believing that the local affection would yield to constitutional treatment, she was immediately placed under full doses of iron, the citrate was the form employed, full diet of animal food, and a moderate share of Bass's ale. She improved rapidly, but was seized in the autumn of 1847 with severe dysentery, then epidemic in the city. Through this ordeal she struggled, and, after a tedious convalescence, she regained her former position; the thyroïdal swelling and the projecting eyeballs appeared to suffer no change during this long illness, neither was the anæmic murmur of the heart and arteries increased by it. She resumed her former treat-

* This lady has quite recovered her health, and is now residing in one of our distant colonies.

ment, which had been interrupted by the attack of dysentery; and now, at the close of another twelvemonth, she is greatly improved in health; the thyroïdal swelling is scarcely perceptible; the protuberant eyeballs are much reduced; the pulse, though rapid and feeble, and still easily affected by exciting causes, is greatly moderated, and the breathing much more tranquil. There are no contra-indications to the continued use of iron and animal food; and a confident expectation may be entertained, that, under the persistent employment of these, the functions of assimilation and sanguification may be restored to health, and the local disorders now dependent on their morbid condition entirely removed.*

I had proceeded thus far with my narrative, when my attention was called to a paper in the Dublin Journal of Medical Science,† entitled, "Observations on a peculiar form of disease of the heart, attended by enlargement of the thyroid gland and eyeballs," by Dr. Macdonnell of Dublin, and at the same time to Mr. Hill's Remarks on that communication,‡ and through them, to the proceedings of the Dublin Pathological Society,§ where Sir Henry Marsh had more than once introduced the subject of this form of heart disease. These, as well as the notice of other cases by Dr. Graves,|| who appears to have been one of the earliest observers of this complicated affection, I have to acknowledge, had previously escaped my observation. I have now perused them with great interest, and beg to call the attention of the profession to them, as affording additional value to the cases now submitted, and, I hope to shew, a satisfactory confirmation of the views I have been led to take of the subject; though it is not without considerable hesitation that I venture to claim these cases as

* These expectations have been realised; this lady is now quite well.

† Dublin Journal of Medical Science, vol. xxvii. p. 200.

‡ Ibid. vol. xxvii. p. 399.

§ Ibid. vol. xx. p. 471.

|| Clinical Lectures, vol. ii. p. 193.

illustrations of anæmia, seeing that some of the most eminent physicians of the sister island have regarded them as examples of a peculiar form of cardiac disease, and neither indicated by their observations, nor by the mode of treatment adopted, that they consider them cases of blood disorder.

In each of the three cases which I have just related, it will be observed that there existed an adequate cause of impoverishment of blood; in two, in the form of lasting leucorrhœa; in the other, in that of continued hemorrhoidal discharge;—that these drains first affected the heart, producing the anæmic palpitation, subsequently symptoms referable to the brain; in fact, the well-known symptoms of anæmia, to which have succeeded, as part of the train of sequences, enlargement of the thyroid gland and eyeballs. It will be remarked that a considerable variety exists in the cases now on record, in regard to the appearance of the prominent symptoms. In some, the enlargement of the thyroid exists without the dropsy of the eye; in others, the enlarged eyes without the thyroïdal swelling; while in those in which they coexist, a considerable interval of time has elapsed before the one has followed the other;—but in all, the manifestations of disordered circulation have been first observed.

The Dublin cases, in all essential characters, bear a striking resemblance to the three histories now read; and though the fact of the subjects of them being sufferers from impoverishment of blood is not adverted to by any of the writers, I apprehend that sufficient evidence is afforded by such of the cases as are detailed at length, to shew that such was the condition of the patient. For instance, John M'Keon, the subject of the first case related by Dr. Macdonnell, long before the first symptoms of cardiac affection presented themselves, is stated to have suffered from indigestion, so that his food was passed in an almost unaltered state, to have been subject to prolapsus ani, and occasionally attacked with

bleeding from the protruded gut. It is mentioned also in regard to him, that he was subject to diarrhœa, by which he was greatly exhausted; that at one time it lasted for four months, obliging him to go to stool fifteen or sixteen times a-day; that towards the close of this attack, the stools acquired a black colour, and highly offensive odour, and that there were at times profuse discharges of blackish flakes like tea-leaves. It was about this period, says Dr. Macdonnell, that he first began to suffer from palpitations; his pulse was never under 120, and was at times as high as 200. Then follow in succession the enlargement of the thyroid gland, excruciating headaches, throbbing and sleeplessness, enlargement of the eyeballs, and all the group of symptoms already enumerated.

The second case detailed by Dr. Macdonnell, appears to me to bear evidence also of the anæmic condition. The subject of it, a woman aged twenty-two, of leucophlegmatic habit, began to menstruate at the age of fifteen, up till which time she enjoyed good health, and ever afterwards she suffered from leucorrhœa, and latterly from amenorrhœa. She then became affected with violent headach, palpitations, great lightness of head, enlargement of the eyeballs, with a peculiar staring appearance, which attracted the attention of all her friends, and on more than one occasion induced them to think that she had become maniacal, together with a numerous train of symptoms the detail of which is unnecessary.

Dr. Graves, in his admirable clinical lectures, refers to three cases of violent and long-continued palpitation in females which he had lately seen, in each of which the same peculiarity presented itself, viz., enlargement of the thyroid gland; but he has not detailed the history of these cases, nor indicated his views of their origin, but he has given, at some length, the case of a lady aged twenty (communicated to him by a friend) who became affected with some symptoms which were sup-

posed to be hysterical. After she had been in this nervous state about three months, it was observed that her pulse had become singularly rapid. The rapidity existed without any apparent cause, and was constant, the pulse being never under 120, and often much higher. She next complained of weakness on exertion, and began to look pale and thin, the rapidity of the heart's action continued, and then the enlargement of the eyes took place, and afterwards that of the thyroid gland. In about fourteen months the heart presented all the signs of Laennec's passive aneurism.

The investigations of Sir Henry Marsh, who was one of the first, I believe, to describe the symptoms during life, and as yet the only one who has detailed the appearances after death, in this peculiar affection, are very valuable. At a meeting of the Pathological Society of Dublin in January 1841, this eminent physician, after adverting to the fact of his having, the year before, described to the Society a singular variety of disease of the heart, now wished to exhibit another preparation illustrating this "very curious and interesting affection." The disease of which he then spoke presented the following striking characters:—remarkable engorgement of the veins, particularly of those of the neck; rapid, violent, and irregular action of the heart; and these in every instance co-existing with enlargement and swelling of the thyroid gland. He also mentioned that, in the majority of these cases, there was a remarkable prominence and protrusion of the eyeballs, so as to give to the group of symptoms by which this disease was characterized a very striking feature. After describing the leading symptoms more particularly, he proceeded to exhibit the appearances on dissection, to which I shall afterwards allude, and then read the notes of another case which had lately come under his notice, and in which he observed, the disease was very well marked. The subject of it was a woman, aged forty, who had been originally very plump. She

had been married, had borne ten children, and menstruated regularly. She was a person of lively and energetic manner, of a highly nervous temperament, and evinced much activity both of body and mind. She had been subject to epistaxis, but exhibited no signs of disease either of the heart or chest. She had been for a considerable time in attendance on an epileptic relative, and this had kept her in a constant state of nervous excitement and apprehension. Sir Henry said he mentioned this particularly, because the disease he had been describing seemed to begin with nervous palpitations. Her face was pale and somewhat tumid, eyes prominent, her lips purplish, the veins of the neck considerably distended, and the thyroid body much enlarged. The impulse of the heart gave motion to the integuments over a space exceeding far the ordinary limits of the cardiac region; and there was a considerable extent of dulness on percussion. The first sound of the heart was short, quick, and loud; the second faint and scarcely audible, in consequence of being masked by the first, but there was no *bruit de soufflet* or any other abnormal sound. She complained of attacks of dyspnœa in the morning, accompanied by a sensation of fluttering in the heart. Any unusual exertion or sudden mental emotion was sufficient to bring on distressing palpitations. Her pulse was quick and jerking, never below 90; her respiration clear and puerile. The bruit in the carotid artery, where it was pressed on by the thyroid gland, was actually perceived by the patient, and caused a great deal of annoyance. She felt a whizzing sound in her neck, of which she never could get rid, and it was one of her most distressing sensations. Sir Henry considered this a good description of the disease. He thought there was no valvular disease; but he believed that if the affection had been unchecked, morbid alteration of the valves would have been the probable result. In the treatment the strictest quiet and rest were enjoined, and the exhibition of the carbonate of iron

with extract of hyoscyamus was very beneficial.* In all this, I think, we cannot fail to recognise a faithful picture of anæmia;—the history, the progress, the development, the means of relief, all testify to it; and if any irregularity in the physical signs is calculated to raise a doubt, that doubt should be removed when we call to mind, that long-continued functional derangement of the heart, such as that produced by impoverished blood, may sooner or later pass into dilatation of the chambers of that organ, and so modify considerably the signs emitted by auscultation and percussion.

On reviewing the history of bronchocele and its association with other disorders, I am willing to admit the force of Professor Hasse's observation, that the different varieties occur so often independently of, or only accidentally complicated with, other diseases, that it is by no means an easy matter to establish any constant relation between them; still I cannot but hope that an approach has been made towards this end by the views indicated, and the cases recorded in the preceding remarks. We have seen the thyroïdal swelling in connection with leucorrhœal and hæmorrhoidal discharges, commencing when the drain has been established, obtaining its full development when that drain impoverished the blood, and subsiding under the use of means which we know are calculated to restore the red particles. And what are the other known conditions and disorders which have been observed in conjunction with bronchocele, but just such as are capable, under particular circumstances, of producing the same deterioration, or are themselves the signs and evidence of that deterioration? The influence or presence of child-bearing, and menstruation, or of menorrhagia and amenorrhœa, can readily be understood to operate in this way.

The attempt to connect bronchocele with excitement of the generative system, and to establish a relation between the

* Dublin Journal of Medical Science, vol. xx. p. 472.

diseases of the thyroid gland and those of the genital organs has entirely failed. If some of the cases now related appear to countenance such an opinion, in consequence of the illustration they afford of the glandular swelling being associated with some uterine affection, the others afford no such support; while they all confirm the simple view already taken, and prove that the same train of events equally follows the continued hæmorrhoidal discharge and the leucorrhœal drain.

And here I cannot help adverting to the misconception which I apprehend prevails, at least in some cases, in regard to the effects which the thyroïdal tumour is supposed to produce by means of its interference with the circulation and respiration. The pressure of the enlarged gland is generally considered to be the cause of obstruction to the free descent of blood from the head, and in this way the occasion of head-ach, giddiness, confusion of thought, and other symptoms already enumerated. These views were entertained in regard to that class of symptoms in some of the cases just related, and led to the adoption of a line of practice not likely to be beneficial; but an attentive observation of the origin and development of the whole phenomena, will, I apprehend, lead to sounder views, and ascribe to the want of healthy and sufficient circulation through the brain, the effects supposed to arise from an opposite condition;—the impoverishment of blood being the cause, at once of the disorder of the brain, the embarrassment of the lungs, the labouring of the heart, and the congestive turgescence of the eyeball and the thyroid gland. It cannot have escaped observation, that sufficient evidence of that impoverishment, and an adequate cause for its presence, existed previously to any manifestation of disordered cerebral or pulmonary circulation; while I may here mention that, in all the cases, the bronchocele was of a soft and elastic character, and not fitted by its size, position, or relation, to occasion such embarrassment as was observable, particularly in

the two cases first related, and note that all these disorders subsided under a plan of treatment calculated to effect a change on the constituent elements of the blood; we may therefore conclude, that to its abnormal condition the general disturbance, as well as the local disease, is to be ascribed.

But it may be replied that these views, if correct, can only apply to that form of bronchocele denominated *vascular*, in which the blood-vessels are chiefly implicated, and cannot explain the melicerous degeneration or cystic formation in the thyroid gland. All authors, however, agree that the vascular passes into the other forms of bronchocele, and though sometimes temporary and marked by periodical augmentation and decrease, through causes acting on the general circulation, it becomes permanent and assumes the character of the other forms of degeneration. I have under my care at this time a lady aged sixty-three, who in early life was subject to leucorrhœa. She married when a girl of fifteen, having then a small, it may be a graceful, goitre. She became the mother of a numerous family, and at each of her confinements could remark the augmentation of the thyroid gland. She remarked it more conspicuously on the occasion of a most painful and tragical event in her family, when, in the course of one night, she assures me it nearly doubled in size. It has made progress ever since, and now, at the period of her grand climacteric, the unsightly mass rests upon her chest, and requires the aid of a suitable support. It is hard, unyielding, and unequal, and presents the character of hypertrophied and disorganized structure. It is curious to observe in this lady, even now, many of the features of the anæmic condition,—the great nervousness,—the morbid appetite,—the dislike of animal and the craving for vegetable food,—the pale waxy complexion,—the palpitating heart,—the throbbing head, and the thrilling pulse of unfilled arteries.

But the best proof that this form of thyroïdal enlargement

passes into structural disease of a permanent kind, is afforded by the dissections which Sir Henry Marsh has been enabled to make after death. After relating the more prominent symptoms of a well-marked case of the disease now under consideration, Sir Henry exhibited to the Pathological Society a preparation illustrating the appearance after death. The first point to which he directed attention was the condition of the thyroid gland. It was altered in appearance since it had been first examined; it was now considerably shrunken; in its recent state it was much larger. When first examined, its surface was irregularly lobulated, and the lobes or cysts contained a considerable quantity of fluid. During life, it projected so as to form a very large and prominent tumour; whenever there was any inordinate action of the heart, it appeared to swell and increase in size, whilst at the same time the veins of the neck were so greatly distended as to give the patient a very extraordinary appearance. I must refer to the proceedings of the Society for a full account of the morbid appearances in other parts, and content myself now by stating, that the internal jugular vein of the right side was found so very much dilated, that when emptied by puncture it measured an inch and a half across, and it was filled by dark fluid blood: that the left auricle was enormously enlarged; the walls were not hypertrophied, but the capacity was far beyond the normal standard. The dimensions of the right auricle were also considerably increased, though not to such an extent as those of the left; the muscular fibres of its walls were slightly hypertrophied. The left ventricle was dilated and hypertrophied, but not to a considerable degree. Along the margin of the mitral valve were depositions resembling granular fat. The same disease existed, and to a greater extent, in the valves of the right ventricle. The symptoms during life had existed a long time; the disease terminated in general anasarca, followed by erysipelas and gangrene.

It is worthy of remark, that while some cases of this affection, like that now related, pass into organic disease, others appear to undergo a spontaneous cure, such as that detailed by Dr. Macdonnell, where, after a continuance of many years, it is reported that the strength is daily increasing, the eyeballs have much diminished, though they still retain some of the peculiar staring ; the enlarged thyroid has become more solid, and the heart's action is now tranquil, and unaccompanied by any abnormal sound. At an early period it is mentioned, that the two lower thirds of the neck were occupied by a soft flabby tumour corresponding to the lobes of the thyroid body, the left portion of the tumour being much larger than the other. The whole tumour measured sixteen inches and a half around its most prominent part to the sixth cervical vertebra.

If anæmia is capable of such varied and extended effects, how important is its diagnosis ! Fortunately in most of its forms it is not difficult of detection ; it proclaims its own presence ; and in the pallid countenance, and rapid pulse, the breathlessness, and faintness, and palpitations on slight bodily or mental exertion, it is readily recognized ; but even when masked and unsuspected, there are physical signs of no uncertain character which betray its presence. The soft systolic bellows murmur heard in the præcordial region, and followed by the ear into the large arterial trunks, is discovered when the impoverishment is great, and almost always under palpitation from excitement or other causes ; and the peculiar sighing sound, caused by the descent of the attenuated blood in the veins of the neck, is recognised by the stethoscope, even when the poverty is inconsiderable, and these lead to a sure and certain diagnosis, and suggest a plan of treatment which, in a large majority of cases, will be found equally sure and certain.

"These murmurs," says Dr. Latham, "whether appertaining to the heart and arteries, or to the veins, which have their origin in the quality of the blood that circulates within them,

furnish an eminent example of the highest degree of comprehensiveness, both for knowledge and for use, which can belong to the idea of a symptom. Where these murmurs are, there a countless variety of other symptoms is found in company with them, pointing to all organs of the body, and giving notice that the functions of all are going wrong; the surface pale and cold, palpitation and dyspnœa, appetite perverted, digestion imperfect, nutrition insufficient, secretion scanty and unhealthy, pain everywhere, and a shattered nervous system and an enfeebled brain. Such a portentous crowd of symptoms strikes the observer at once. But what they all mean we cannot tell until we take one single symptom for their sole and sufficient interpreter. The murmur, which is at the same time endocardial and arterial and venous, is comprehensive of them all, and includes the knowledge of them all, inasmuch as it points directly to their one common source, even the impoverished blood. And further, this same murmur not only contains the knowledge of all the rest, but it is the single representative of them all as an indication of treatment. Standing, as it does, for the sign of impoverished blood, we treat what it denotes, and nothing else. But in doing so we treat inclusively every error of function throughout the body which proceeds from it.”*

How often have cerebral affections, severe, lasting, and intractable, been completely removed by discovering an anæmic cause in a long-continued or oft-repeated hæmorrhage from piles. How often have cardiac disorders, too readily pronounced organic, been remedied by detecting the same cause in a long-neglected menorrhagia or wasting leucorrhœa. And so will we find, in some cases of less pressing moment, that a cure has been obtained, when means considered specific had failed, by discovering that the quality of the blood was the real cause of the local affection.

* Clinical Lectures on Diseases of the Heart, vol. i. p. 72.

Our first object in the treatment of anæmia and its secondary disorders is to ascertain the exciting cause, and having arrested or removed this, to improve the condition of the blood by the free use of the preparations of iron, and a liberal allowance of animal food, unless there are complications of such a kind as to contra-indicate their use. Wine is seldom necessary, and generally hurtful; but porter or ale may be taken with advantage. A change of air, travelling, and passive exercise, also do good. Persistence, however, is absolutely necessary both on the part of the patient and his attendant. Iron, the chief means of cure, in order to be effectual, must be continued for months, and perhaps, after an interval again renewed. It will not, however, disappoint our expectations; for whether it act by invigorating and improving the digestive and assimilative functions, or by restoring and augmenting the red particles of the blood, there is really no remedy in the hands of the physician, whose virtues have been so thoroughly tested and so deservedly recommended to our confidence and trust.

In the course of the conversation which followed the reading of these remarks before the Medico-Chirurgical Society, Dr. Christison stated that he had observed a case which bore the strongest resemblance to those now related. There was marked anæmia, although its cause was not apparent; and the affection of the thyroid gland, together with the prominent eye-ball, and somewhat maniacal expression, were exactly as those now described. Iron had been used in the treatment of the case, but not persevered in, owing to its causing headach.* The lady, who was the subject of this case, shortly afterwards came under my observation in conjunction with Dr. Christison, in consequence of a severe attack of pulmonary congestion, under which she rapidly sank, and to him I am indebted for the following history:—

* Monthly Journal of Medical Science for February 1849, p. 548.

At the age of twenty-one, and then unmarried, this lady had a severe attack of acute pleurisy, by which the whole right side was filled with fluid. She made a slow recovery, and ever afterwards the whole posterior region of the affected side, and its lower three-fourths in front, presented no respiratory sound, and remained dull on percussion. She, however, enjoyed good health, and was strong and active till her twenty-seventh year.

In the interval she had married, and had three children. After the birth of the third, she had an attack of peritonitis, limited to the pelvic region. She recovered well from this, and again enjoyed excellent health till her thirty-third year, except that she had a miscarriage about the third month.

In her thirty-third year she suffered a severe attack of general peritonitis, and for some time lingered in apparently a hopeless condition. It turned out eventually that the very early use of calomel and opium had obscured the nature of this attack, inasmuch as there had been obstruction as well as inflammation; for towards the close of the third week, a portion of the great intestine came away, six inches in length, four broad at its widest, sloughy all round the edge, and penetrated by several erosions. The three intestinal coats were recognized by several of the most skilful pathologists in Edinburgh, so that the fact is undoubted. Recovery quickly followed, and for the next five years her health was again perfectly restored.

In her thirty-eighth year she spent the autumn months in the Highlands, and on her way home, in the beginning of October, she lay on deck sea-sick, and exposed to the first inclement weather after a very fine season. In a day or two afterwards set in her final illness in the form of a wearing spurious fever, characterized by a very frequent pulse, forcible action of the heart, constant heat of skin, a dislike to warmth, extraordinary indifference to cold, increase of these symptoms,

together with restlessness at night, and slow emaciation, but with clean tongue, good appetite, sound digestion, wonderful strength, and no local uneasiness, or other symptom referable to the heart or any other organ.

Nine months elapsed without any material change, when, in July 1844, attention was called to an irritability of the bowels, of recent origin, causing their discharge twice or thrice a-day, but without diarrhœa. In the autumn she had cholera, which commenced with violence, but was checked by large doses of morphia. For nearly two years more no material change could be observed. The affection of the bowels became more troublesome, and at distant periods the discharges were for a few days rather loose, bilious, and slimy, on which occasions the state of the circulation was always worse, and there was more tendency to tumultuous action of the heart. With that exception, however, the heart's action, though always frequent and forcible, continued to be quite regular; and there was no increase of dulness on percussion over the region of the heart, no unusual vascular sound, no descent of the apex. A vascular whizz at the root of the neck was evidently anæmic.

In the autumn of 1845 a superabundance of urine drew attention to the kidneys. But the urine was merely diluted, and free alike of albumen and sugar; nor did this diuresis last long.

In the spring of 1846 the emaciation was great, yet the bodily strength was not much affected. It was about this time that a tendency to congestion of the veins of the neck was noticed. There was pulsation of the subclavian and jugular veins, and some enlargement of the thyroid gland; and the eyes became prominent and ring-eyed, imparting a distressing startled expression. In the autumn she went to Arran, where she got stronger, but did not improve in other respects.

Nevertheless, in returning home in October, she began to

rally, and lost the startled expression of countenance. In December of the same year, and in January 1847, she for the first time again enjoyed perfect health, went about as formerly, and gained weight. This, and two similar intermissions afterwards, not however so complete, constitute a material element in the case.

In February, without any obvious cause, the whole symptoms returned in an aggravated shape. A little later she had an attack of circumscribed pneumonia. A little œdema of the feet appeared. She continued to suffer from irritability of bowels.

In January 1848, she lost ground. The bowels were evacuated at least once after every meal, however trivial, and sometimes ten times a-day. At this time there was also frequent micturition; the emaciation became extreme; the eye-balls again prominent and ring-eyed; the cervical veins turgid, and the thyroid gland enlarged—not very prominent, but wide spread. The paroxysms of irregular action of the heart became more protracted. The catamenia gradually ceased.

In April she rallied a third time. During the summer months she was well, except that the bowels continued irritable, and the heart's action occasionally excited. In the end of July a return of weight and pressure in the lower pelvis, ascribed to uterine congestion, called for the application of leeches, which unfortunately caused a much greater flow than was intended. After a few days of relief, the irregular action of the heart became for the first time constant, and all the other symptoms returned with more intensity. The appetite failed, and œdema reappeared in the limbs. It was feared that the long-continued functional derangement of the heart had at length produced some attenuation of the walls of the right side, and some enlargement of its cavities. The heart's action was constantly tumultuous; the congestion of the cervical veins and fulness of the thyroid gland considerable;

the emaciation extreme ; and the affection of the bowels very troublesome.

Until the 4th of January there was a slow improvement. On that morning she had a return of pneumonic symptoms. The inflammation, however, seemed inconsiderable ; and on the 8th the cough was not great, and the expectoration scanty and easy. But at night the cough became incessant, and the expectoration very difficult. The next day put an end to her long sufferings.

Various modes of treatment had been tried, under the advice of the most esteemed physicians, both here and in London. Morphia solution, and astringents, readily controlled the bowel complaint. Aconite always allayed the disturbance of the circulation. Ether, too, taken internally, or inhaled in small doses, and likewise chloroform internally, often relieved the condition of the heart and undue nervous sensibility. Iron and other tonics, generous diet, passive exercise, and everything calculated to invigorate the system, had been fully employed.

On examination after death, the body was found greatly emaciated. The heart was somewhat enlarged, owing to slight dilatation of the right cavities. The walls of the right auricle were very thin. The valves were healthy. The pleuræ on the right side were united by dense firm adhesions. The lung was small, spongy throughout, but its upper third engorged, yielding a copious, frothy, slightly sanguinolent serum on pressing its cut surfaces. Left pleura and lung healthy. Thyroid gland was enlarged to three times its normal bulk from hypertrophy.

The stomach was drawn downwards, the convexity of the larger curvature being an inch below the umbilicus. Its mucous membrane healthy. Several coils of the ileum, immediately above the cœcum, united by old adhesions to the right ovary and neighbouring peritoneum, and this tied down

within the cavity of the pelvis. One of these adhesions contained a calcareous mass the size of a pea. The sigmoid flexure of the colon, and upper part of the rectum, bound down posteriorly by a dense thickening of the sub-peritoneal cellular tissue, of long standing. They formed in the left iliac region an obtuse angle, and were separated by a valve formed of the mucous membrane on one side, whilst a pouch existed at the other side. The mucous membrane corresponding to the part united posteriorly, presented several transverse folds or puckerings, caused by the adhesion or thickening below; but the membrane itself was everywhere healthy in texture; and no breach of surface could anywhere be detected.

The liver was congested, and somewhat indurated, presenting on section the nutmeg appearance. It was adherent to the diaphragm by several bands of chronic lymph. The spleen was large, but healthy. The left kidney large, but healthy. The right kidney small, and almost completely disorganised by the formation of numerous cysts, varying in size from a hazel-nut to a large walnut, filled with thick, whitish, purulent matter, mingled with calcareous gritty particles. The other viscera were healthy. The blood everywhere was fluid.

I believe it will be conceded that the original affection in this case, resulting in the fatal termination, was, as suggested by Dr. Christison, the irritable state of the bowels, and the too rapid descent of the aliment from the stomach, inducing an anæmic condition of the system, leading to the disturbance of the circulation, and involving the heart and vessels in irreparable organic change.

Happening to dine, some years ago, at the house of a friend, I was much struck with the appearance of one of the men-servants at table, as it vividly recalled to my mind the features of the cases just described. When he first attracted my notice during the early part of the dinner, it was by

the peculiarly prominent and staring eye-balls, together with the nervous agitated manner he displayed, and which, as the evening advanced, became more and more distressing. His face, which at first was pallid, became turgid and flushed, and his eyes seemed ready to start from their sockets. I was deeply interested in his history, and on leaving the house, found him seated in the lobby, apparently much exhausted. I took the liberty of asking him if he had any swelling of the neck, and was answered by his undoing his neck-tie, and disclosing a large and prominent swelling of the thyroid gland. I further asked if he suffered from palpitation, which he answered in the affirmative, and speedily satisfied me regarding it, by allowing me to place my hand, and apply my ear, over the region of the heart. Finally, I inquired if he had at any time suffered from large or long-continued loss of blood. To this he also replied affirmatively, and expressed no little surprise that the series of questions should have been put to him. The next morning he waited upon me and gave me the following history :—

J. K., aged thirty-two, by occupation a gentleman's servant, many years ago had a fall from horseback, by which he sustained a severe wound on the occiput, from which a profuse and continued hæmorrhage took place. He has never been quite well since that occurrence. In the beginning of 1845 he suffered from bilious fever, and made a slow and imperfect recovery. In August 1851 he had an attack of jaundice, which continued more or less for a whole year; and during its progress the symptoms which first attracted attention, in connection with the present history, developed themselves. For more than a twelvemonth he has been subject to palpitation, breathlessness, and giddiness. These symptoms were soon followed by enlargement of the thyroid gland, and by increased prominence and distension of the eye-balls, so as to give him a remarkable appearance of staring, which was noticed by all his friends.

In the spring of 1853 he first came under my observation. He was a man of middle size, and well-formed. His countenance was pallid and sickly ; but under excitement either mental or bodily, his face quickly flushed, and his manner became nervous and embarrassed. At all times, but especially under excitement, the action of the heart was forcible and rapid, and this action was communicated to the vessels of the neck and head. The eye-balls were enlarged and prominent, presenting the appearance of great distension. The thyroid gland was also much enlarged throughout its whole body, varying in size according to the force of the heart's action. This enlargement was accompanied by a strong pulsation over the tumour, and in the vessels of the neck ; and a peculiar thrill was felt, and a loud murmur heard, over the whole extent of the gland. The action of the heart was violent and jerking ; and a loud bellows murmur attended the first sound, and was heard most distinctly over the region of the aortic valves. In a state of quiet and rest these symptoms became moderated, and the patient was able to continue his domestic service, in the enjoyment of comparative health. He was directed to take persistently for months the milder preparations of iron, and to use a diet chiefly of animal food. Under this plan he improved in health, and all his more urgent symptoms subsided by degrees. In the autumn of 1853, he went to England, and continued, I understand, to improve in health ; but I lost sight of him at this time. Early in the spring of 1854, he had engaged to accompany a distinguished officer to the Crimea, as his body-servant. Before the time arrived, however, when he was to have entered on his duties, he was, after exposure to cold and fatigue, seized with inflammation of the chest, and obliged to relinquish the undertaking. His illness was severe and continued, and he never recovered from it. It appears to have aggravated greatly the peculiar symptoms under which he had so long laboured, and compli-

cated the aspect of his case. He was able to return to Scotland, however, and in March 1854, he again, after an interval of several months, came under my notice. At this time he had engorgement of the liver, with jaundice, and the signs of organic disease of the heart, accompanied with general dropsy. His eyes were still prominent, and the thyroid gland enlarged, but neither of these now maintained the striking character which they possessed previously to his leaving Scotland. No remedy was of any avail, and he sank on the 28th of March, worn out with the sufferings of complicated disease in the thorax and abdomen. The body was opened on the 30th, when the following appearances presented themselves:—

The body was that of a moderately-stout and middle-sized man. The linens in which the body was shrouded were in many parts—as the neck, axilla, scrotum, and legs—quite soaked with serous fluid exuded from the surface. The cuticle was in many parts loose and easily detached from the cutis vera, and in every organ of the body examined, signs of decomposition were generally met with, frequently so marked as to obscure the proper pathological conditions. The subcutaneous tissue, and, indeed, the cellular tissue generally, contained very little fat, and was in every part more or less infiltrated with serum.

On opening the thorax, the pericardium was found of large size, and overlapped, at its sides only, by the margins of the lungs. It contained about six ounces of a transparent yellow-coloured fluid. Upon the anterior surface of the heart, near to its base, a milky spot was observed, about the size of a florin-piece, and another upon the opposite surface of the pericardium.

All the cavities of the heart were filled with dark-coloured blood in a more than usually fluid condition; one well-formed decolorized clot was found in the right ventricle. The heart was large, soft, and flaccid. All its chambers, but more espe-

cially the ventricles, were considerably dilated ; the tricuspid orifice admitted four fingers, the mitral three. The tricuspid and mitral valves were large, but otherwise normal ; the sigmoid valves were also normal. The vena cava inferior was unusually large ; and the aorta was small when compared with the size of the pulmonary artery. The endocardium and inner surface of the aorta were stained of a deep red colour.

Both pleuræ contained turbid fluid of a dark red colour, computed at about eight or ten ounces in each. The posterior surface of the upper lobe of the right lung was firmly adherent to the costal pleura by strong short bands of lymph. The lower lobe of this lung was crepitant, and infiltrated with bloody serum ; the posterior part of the upper lobe was condensed, non-crepitant and friable as if hepatized, but the advanced state of decomposition in which it was, prevented a decided opinion being formed concerning it. The left lung was crepitant, with the exception of its posterior part ; and from the surface of a section a considerable quantity of bloody serosity was readily expressed.

The sterno-hyoid and sterno-thyroid muscles were much thinner and broader than natural from being stretched over the thyroid body, which was of large size. The external jugular veins were normal ; the internal jugulars were large ; the left one when slit open measured an inch and a half across at a level with the cricoid cartilage. The thyroid body was of large size, but was not weighed ; its weight may however be computed at being four or five times greater than natural. Each lateral lobe measured an inch and a half in breadth, and was of a corresponding thickness. This great increase in size was not partial but general, and although the isthmus was comparatively larger than the lateral lobes, there was complete symmetry of both sides. It was of a dusky-red colour, smooth, and well-defined, and slightly irregular on

its anterior surface, but still retained the natural convex and semi-lunar form of the organ when in a state of health.

The peritoneum contained about a pint and a half, or two pints, of a clear fluid, tinged of a bright yellow. The spleen was enlarged in all its diameters, and was computed to weigh about twenty ounces. It was of very firm consistence, and on section presented the trabeculæ well marked, and also the Malpighian bodies, which were of an opaque yellowish white appearance. The kidneys were both very large and very soft. The cortical was to the medullary substance, relatively, increased in amount, and the great size of both organs seemed to arise from this circumstance; otherwise their actual pathological condition could not be ascertained on account of the advanced state of decomposition which they were in. The liver was certainly not enlarged, perhaps rather small; its surface was somewhat irregular, slightly and superficially fissured at points; no rounded nodules, however, as of cirrhosis, could be observed. On section the tissue was (considering the decomposed state of all the organs) rather hard and dense, and seemed partially atrophied; its colour was deep orange, and in some places there was an approach to nutmeg congestion.

This history is interesting as having occurred in a male; the cases on record, with few exceptions, having hitherto been seen in females. It is more particularly interesting as affording an opportunity of examining the morbid appearances after death, the only accounts of which that have as yet appeared being those communicated to the Pathological Society of Dublin by Sir Henry Marsh, and by Basedow in Germany. In the case now related, as well as in that immediately preceding, it will be observed that there exists a remarkable similarity in the chief morbid appearances with those described by Sir Henry Marsh. These consist chiefly in the very fluid state of the blood found in the heart and great

vessels, in the dilatation of the cavities of the heart, and of the venous trunks, in the enlargement of the spleen, and disease of the liver, and in serous effusion into the different cavities.

Flajani appears to have been one of the earliest observers of the group of symptoms which characterize this remarkable affection. The following case is taken from his work :*—"A young Spaniard had been suffering for three years from a tumour in the front part of the neck, which, in the course of four months, had so greatly increased in size as to occupy not only the anterior aspect, but both sides of the neck. He remained under medical care for the space of seven months, not so much on account of the tumour as by reason of the difficulty he experienced in breathing, and the very great palpitation of the heart (*un palpito straordinario nella regione del cuore*). In order to relieve his sufferings he was necessitated to give up his employment as an artist, and to lead a tranquil life, in order that an incurable organic disease might not be developed. The young man, who was twenty-two years of age, although aware of the serious nature of his disease, desired some remedy which should lessen the tumour, or should at least prevent its increase, conceiving that the pressure it exerted on the parts below, added to the difficulty of breathing and of speaking. Such was the account given to me by his medical attendant when I was summoned to see the patient. On examining the tumour I found it of considerable size, and divided in the middle, by a kind of cleft, into two parts. Externally the colour was natural, except that the superficial veins were swollen and varicose in appearance : it was not painful on touch, but pressure with the finger caused difficulty of breathing. I found the patient attenuated, perhaps reduced by the frequent bleedings to which he was obliged to have re-

* *Collezione d'osservazioni e riflessioni di Chirurgia*. Roma, 1802. Tome iii.

course at least every month ; the pulse irregular, but not feverish.

“ After having examined the part, without entering into any details respecting the nature of the disease, or of the accidental circumstances with which it was accompanied, I applied myself solely to the treatment of the tumour. The thyroid gland was evidently the seat of the malady, its substance being occupied, as well as the surrounding cellular tissue, by an acrid humour. Such being the nature of the disease, the indication for cure must consist in effecting the resolution of the deposited humour (*ristagnato umore*). For this purpose cold compresses saturated with a solution of sal ammoniac in vinegar and water, were applied. After the employment of this application for twenty days, there was a very visible diminution of the tumour ; it had fallen to less than a third of its former bulk : the patient, moreover, breathed with greater ease, and it was found unnecessary to employ the usual monthly bleeding. Besides the external remedy now referred to, I caused the patient at night to apply an ointment of camphor and spirits of wine, with white ointment spread on a narrow strip of linen, over the tumour, while during the day he continued the former lotion. By means of the simple remedies now mentioned, after four months of treatment a complete cure was obtained. All the symptoms which accompanied the disease diminished in proportion to the diminution of the tumour, so much so, that by this time there was no further occasion for any bloodletting, and the whole frame became invigorated. The palpitation of the heart vanished, and the patient resumed his occupation of painter, which he continued to exercise till his departure from Rome five years after his recovery.

“ I find, continues Flajani, in my journal of observations, other two cases closely similar, the first that of a young coffee-house keeper, the second that of an accountant. In the accompanying symptoms they were identical with those men-

tioned in the history already detailed, and, thanks to the same remedies, the cure in both was equally satisfactory. I need not give the particulars of these cases, but content myself with the expression of my opinion, that by the pressure of the parts have originated almost all those symptoms which have been referred to, and which counterfeit organic disease."

In these cases no mention is made of the enlarged or protruding eyeball. This symptom is usually found consequent on the enlarged thyroid gland, and as a farther stage in the progress of the blood impoverishment. The cure in these cases was probably induced by the cessation from the monthly bloodlettings, and the rest and quiet which the patient enjoyed. The origin of the vascular disturbance, in the first case, was in all probability due to the system of bloodletting to which the young Spaniard had been subjected.

On reviewing the literature of this interesting subject, I think it will be found that, while Flajani appears to have been an early observer of the two most prominent features in this disorder of the vascular system, namely, the enlargement of the thyroid gland, with disorder of the heart's action, we must acknowledge that to Dr. Parry we are indebted for having more pointedly, and in ignorance of Flajani's cases, drawn attention to the assemblage of symptoms which characterize the affection. "There is one malady," he observes, "which I have in five cases seen coincident with what appeared to be enlargement of the heart, and which, so far as I know, has not been noticed, in that connection, by medical writers. The malady to which I allude, is enlargement of the thyroid gland."* The first case of the coincidence witnessed by Dr. Parry, was that of a married woman, aged thirty-seven, in August 1786. Six years previous to that date, she caught cold on lying-in, and for a month suffered under a very acute rheumatic fever ;

* Collections from the unpublished medical writings of the late Caleb Hillier Parry, M.D., vol. ii. page 111.

subsequently to which she became subject to more or less of palpitation of the heart, very much augmented by bodily exercise, and gradually increasing in force and frequency, until Dr. Parry commenced his attendance, when it was so vehement, that each systole of the heart shook the whole thorax. The pulse was 156 in a minute, very full and hard, irregular in strength, and intermitting at least once in six beats. She had no cough, tendency to fainting, or blueness of the skin, but had twice or thrice been seized in the night with a sense of constriction and difficulty of breathing, attended with slight hæmoptysis, and had also frequent and violent stitches about the lower part of the sternum. About three months after lying in, while she was suckling her child, a lump about the size of a walnut was perceived on the right side of her neck. This continued to enlarge up to the period of Dr. Parry's attendance, when it occupied both sides of her neck, so as to have reached an enormous size, projecting forwards before the margin of the lower jaw. The part swelled was the thyroid gland. The carotid arteries on each side were greatly distended; the eyes were protruded from their sockets, and the countenance exhibited an appearance of agitation and distress which, continues Dr. Parry, I have rarely seen equalled. She suffered no pain in the head, but was frequently affected with giddiness. She nursed for a year the child of her first lying in. Subsequently she had five times miscarried, and for the last four months the menses had been irregular, and defective in quantity and colour. She had œdema of the legs and thighs, with scanty high-coloured urine. She was bled at the arm, which immediately relieved the dyspnœa, and pain across the sternum. Diuretics were prescribed, but the œdematous swelling increased. She had been purged seven or eight times a-day. Her pulse was 114, full and hard, and never more than six strokes without intermission. This was the state of symptoms on the 16th of August. The bleeding was ordered

to be repeated, and the diuretics continued. On the 25th the œdema had extended nearly to the navel. "From this time," Dr. Parry quaintly remarks, "no farther application was made to me respecting this patient, who, probably, soon paid her debt to nature."

Dr. Parry has related five other cases which had come under his notice subsequently to that now recorded. In all of these the thyroïdal swelling was coincident with symptoms of cardiac disorder; but in none is the protuberance of the eyeballs noted. The termination of all the cases is not mentioned; and no dissection is recorded. In regard to one of the cases, the fifth, Dr. Parry writes:—"The inordinate action of the heart had been of long duration, and considerably preceded the commencement of the thyroïdeal swelling. The patient did not remain at Bath long enough for me to know the result of the disease which, doubtless, would ultimately prove fatal." "My attendance," he continues, "on the three last patients having occurred at the same time, first suggested to me the notion of some connection between the malady of the heart and the bronchocele. I mentioned that opinion to Mr. G. Norman, surgeon, to whom I shewed the lady last mentioned. Shortly afterwards I expressed the same opinion to Mr. Cruttwell, surgeon, to whom it then occurred that he was attending a patient with a similar coincidence, and that in her the bronchocele succeeded to the affection of the heart."* Having made this observation, which I doubt not all future experience will verify, Dr. Parry, learned and ingenious as he was, rested contented by remarking, that, "One can scarcely avoid suspecting that the thyroid gland, of which no use whatever has hitherto been hinted at by physiologists, is intended in part to serve as a diverticulum, in order to avert from the brain a part of the blood,

* Collections from the unpublished medical writings of the late Caleb Hillier Parry, M.D. Vol. ii. p. 119.

which, urged with too great force by various causes, might disorder or destroy the functions of that important organ."

Mr. Samuel Cooper, and others, in noticing these observations of Dr. Parry, have given a reference to a writer in the 1st volume of the *Medico-Chirurgical Journal and Review*, as affording additional evidence of the coincidence of enlargement of the thyroid gland with cardiac disease; and accordingly we find, on turning to page 181 of that publication, the following statement:—"One of the editors of this journal has lately seen three cases of this complication. A lady died a few months ago at Ryde, in the Isle of Wight, after a lingering illness, exhibiting, among various anomalous symptoms, some strong signs of cardiac lesion. The following appearances presented themselves on dissection:—The thyroid gland was much enlarged, scirrhus, adhering to, and pressing on the left carotid artery. She had suffered under bronchocele for several years. The body was much emaciated. The pericardium adhered to the substance of the heart, and contained four ounces of a brownish serum. The heart itself was greatly enlarged, and thickened in its parietes, particularly the left ventricle, which was filled with coagulated blood. The aorta was enlarged as it issues from the ventricle. The columnæ carneæ were almost as hard as cartilage, and several white specks of incipient ossification were dispersed over the surface of the heart. The liver was greatly enlarged, and its natural structure much deranged. The mesenteric glands were also enlarged and diseased. The spleen was much enlarged, and there was an abscess in its substance, filled with dark-coloured pus. The kidneys were considerably enlarged, but there did not appear much deviation from the natural structure." I have condensed the account of the morbid appearances. The writer proceeds—"The history of this case is not sufficiently known to authorize any opinion relative to the priority of the cardiac or hepatic lesion; or whether the

bronchocele preceded or followed the visceral derangements. Could the pressure on the carotid artery by the thyroid gland disturb the functions of the heart? What is the nature of, and how is produced, that uneasiness about the throat which is so often complained of by patients labouring under cardiac disease?"

The reviewer of Dr. Parry's *Elements of Pathology*, in another part of the same volume, in noticing the association of bronchocele with diseased heart mentioned by Dr. Parry, states:—"Whether or not it be an accidental concatenation we know not; but in two decided cases of cardiac enlargement now under our care, the thyroid gland is considerably enlarged."* And by a strange coincidence, on turning accidentally to the "Medical Miscellanies" in the same volume, I find recorded, without any reference to the subject now under consideration, the following case of "Cardiac Affection:"—"A young lady twenty-two years of age, after a severe cold and cough, became affected with a palpitation of the heart, and a swelling on each side of the neck as large as a goose's egg, accompanied with dyspnœa on the slightest motion, and inability to lie in bed, except when the head was much raised. These symptoms had continued for six months, when the reporter saw her. On first opening the breast and exposing her neck, the two tumours appeared to pulsate, both to the eye and the hand, like immense carotid aneurisms; and a strong pulsation was observable down the left side to the left hypochondriac region, and also at the epigastrium. She was extremely nervous, the least noise or exercise throwing her into a state of violent agitation and alarm, accompanied with such distressing dyspnœa and palpitation of the heart, that she thought her chest would burst. On a minute examination of the tumours in the neck, the arterial pulsation was so unequivocal, that scarcely a doubt could be entertained of

* Lib. Cit., page 154.

their aneurismal origin ; at least the reporter could not decide that they were not so. That great functional, if not structural, derangement had also taken place in the heart, was manifest. The lady had that very morning been taking bark and port wine for her apparent debility, under the direction of a medical friend, and had been using discutient applications to the tumours, without success. The young lady was tall, extremely plethoric, and the eyes had a prominence as though they were about to start from their sockets. Her pulse varied every moment with her state of mind ; her bowels were constipated ; her appetite not impaired, and by no means restricted by her medical adviser.

“She was ordered to be bled immediately ; and this operation to be often repeated afterwards, if necessary ; to abstain in toto from animal food, and every kind of drink but water ; to make use of no exertion, and to keep the bowels open with the following pills :—

R Ex. hyoscyam, ʒi. ; Ex. Colocynth. comp., ʒi. ; Sub. mur. hydrarg., gr. x. ; Pulv. Digital., ʒi. Misce et divide in pil. No. xxx., quarum capiat unam vel duas mane ac vespere.

“The young lady returned to the country, and as the reporter heard nothing of her for some months, he concluded she was very ill, perhaps dead. He was agreeably disappointed a few days ago to meet her in the street, apparently in perfect health !

“Anxious to know what had happened in the interval, he accompanied her to her lodgings, and was informed that she had obeyed the injunctions given her ; had been twice or thrice bled ; abstained from animal food, etc. ; and now found herself comparatively well, there being only a moderate palpitation at the heart on walking fast or going up stairs, and the tumours were greatly reduced in size. The reporter

examined the tumours carefully, and found them to be enlargements of the two lobes of the thyroid gland. They were so reduced in size now, that they were movable, and their structure easily made out, but a very trifling communicated pulsation was perceptible in them. Her eyes were no longer prominent; her dyspnoea and palpitation, except on moderate exertion, were no longer distressing; in short, the whole tenor of her formerly alarming symptoms, was changed into comparative health.*

It is certainly very remarkable that cases such as those just related, attended by features of so prominent and marked a character, and suggesting to a mind so original and accomplished as that of Dr. Parry such a conjecture as that referred to above, should, for a long season, have been unnoticed and forgotten; for it was not till 1835, so far as I have been able to ascertain, that the late Dr. Graves of Dublin, in ignorance of Dr. Parry's, or of subsequent observations, referred in his lectures to similar cases that had come under his notice. "I have lately," he says, "seen three cases of violent and long-continued palpitation in females, in each of which the same peculiarity presented itself, viz., enlargement of the thyroid gland; the size of the gland, at all times considerably greater than natural, was subject to remarkable variations in every one of these patients. When the palpitations were violent, the gland used notably to swell and become distended, having all the appearance of being increased in size, in consequence of an interstitial and sudden effusion of fluid into its substance. The swelling immediately began to subside as the violence of the paroxysm of palpitation decreased, and during the intervals, the size of the gland remained stationary. Its increase of size, and the variations to which it was liable, had attracted forcibly the attention both of the patients and of their friends. There was not

* *Medico-Chirurgical Journal and Review* for February 1816, p. 179.

the slightest evidence of anything like inflammation of the gland.

"One of these ladies residing in the neighbourhood of Black Rock, was seen by Dr. Harvey and Dr. Stokes; another of them, the wife of a clergyman in the county of Wicklow, was seen by Sir Henry Marsh; and the third lives in Grafton Street. The palpitations have in all lasted considerably more than a year, and with such violence as to be at times exceedingly distressing; and yet there seems no certain grounds for concluding that organic disease of the heart exists."*

Dr. Graves at this time pointed out the distinction between the enlargement of the thyroid gland in these cases, and that in ordinary goitre; and suggested that the thyroid body might be slightly analogous in structure to the tissues properly called erectile, and that the globus hystericus is not necessarily a simple nervous affection, but really arises from a temporary enlargement of the thyroid.

Dr. Stokes informs us that, after hearing Dr. Graves' clinical lecture on the combination of palpitation of the heart with enlargement of the thyroid gland, he communicated to him the case of the young lady referred to in a previous part of this paper, as recorded by Dr. Graves, and now related more fully by Dr. Stokes in his work on the diseases of the heart. In this case the enlargement of the eyeballs is for the first time particularly alluded to in connection with the enlargement of the thyroid body, and the whole assemblage of symptoms from the rise to the termination, given with evident marks of correct observation.

It was soon after this time that Sir Henry Marsh called the attention of the Dublin Pathological Society to this interesting subject, and subsequently Dr. Macdonell published his "Observations on a peculiar form of disease of the heart, attended by enlargement of the thyroid gland and eyeballs,"

* Clinical Lectures on the Practice of Medicine. Vol. i. p. 193.

which led to farther discussion, as has already been noticed in a previous part of this paper.

In the autumn of 1839, as has been mentioned, my attention was called for the first time to the connection of enlargement of the thyroid gland and eyeballs, with disorder of the circulation, in the case of a lady in whom I was particularly interested. At that time Dr. Parry's observations had not come under my notice, neither had I become acquainted with Dr. Graves' reference to the subject in his clinical lectures, published in 1835. I am sure I shall detract nothing from what is due to the memory or reputation of two distinguished physicians, I mean the late Drs. Bright and Hope of London, who saw the case along with me, when I mention that the leading features of the disease, as well as its literature, were equally unknown to them. When the second and third cases detailed in these pages came under my observation, I had still remained unacquainted with what had been written; and I know, in regard to one of these cases that, after much careful examination by some of the most eminent physicians here, it was considered a case of cerebral, not of cardiac, disease. It was while the first case was under observation that I satisfied myself that the condition of the blood—an anæmic or spanæmic condition—was the first link in the chain of morbid sequences which characterise this affection. It was under this conviction that I detailed the three cases alluded to, believing that the subject was entirely new, and that I determined to bring it under the notice of the Medico-Chirurgical Society, when, in preparing my observations, I found that the history of the disease had been already written, but that the views I have been led to entertain of its nature, had not occurred to any who had been engaged in attempting to elucidate it.

To these views, after a lapse of many years, and with the advantage of having seen and treated many additional cases, I still adhere. I am aware that some of the earliest observers of

the affection are still unwilling to acknowledge its humoral origin. They readily grant the existence of functional disturbance of the heart; some will have it to be of nervous origin; but they will not concede that the heart is functionally affected by the quality of the blood it is called to circulate, or that the system generally suffers from blood-impoverishment. It is gratifying to me to know that the distinguished and lamented physician, to whose accurate discrimination the profession will willingly bear witness, and to whom we are indebted for at least reviving our acquaintance with this disease, has acknowledged the explanation given in the preceding pages by the following letter:—

4 MERRION SQUARE, SOUTH,
DUBLIN, 26th February 1849.

“My dear Sir—Many thanks for your letter, an answer to which I deferred until I had an opportunity of reading your paper, which it was not in my power to do until the day before yesterday. It interested me exceedingly, and I think it very probable that future observations will confirm your views. I recommend strongly to your notice several elaborate remarks on Goitre in Siberia, contained in different parts of the English translation of Ermann’s *Siberia*, published last year.—I remain, my dear sir, truly yours.

To Dr. Begbie.

ROBT. J. GRAVES.”

Without attempting to supply a complete account of the various contributions, now very numerous, to the literature of this affection, which have appeared during the last few years, that is, since the time when the association of the triple morbid signs of heart, thyroid gland, and eyeballs, became fully recognized, it may be useful to indicate the chief sources from which information may be gathered, other than those already referred to, before proceeding to inquire briefly into the nature of the

explanations which have been offered of the phenomena themselves.

Testa, the author of a well-known work, in the Italian language, on diseases of the heart, has been referred to by some recent writers on this affection as having, probably, been familiar, with the special abnormal condition of the eyes in connection with cardiac disease. Interesting, however, as the observations of Testa are on the loss of sight, and alteration in the appearance of the eyes as produced by diseases of the heart and aorta, there is no reason to suppose, from any statement he has made, that the remarkable prominence of the eyeballs, associated with palpitation of the heart, now under consideration, was observed by him.*

The condition of the eyes had, no doubt, at a somewhat early period, been noticed by oculists, but by them attention had not been directed to the disordered circulation, or to the general malady under which the sufferers, in all probability, laboured. Demours, in 1821, had certainly observed the form of exophthalmos as peculiar.† In 1840 a German physician, Basedow, had distinctly apprehended the occurrence of the three principal features of the malady. He proposed the appellation of cachexia exophthalmica (glotzaugencachexie, literally large staring-eye cachexia), to be applied to the disease. In consideration of the assemblage of symptoms having been thus early described by him, it has been suggested, first of all, by Hirsch, and afterwards by some recent French writers, to designate the disease "Maladie de Basedow." The still earlier description, however, of the triple features of the disorder by Parry, Graves, Stokes, Marsh, and others, renders this inadmissible. In the same journal‡ in which Basedow's interesting paper appeared, other German writers have subse-

* Delle Malattie del Cuore. Tom ii. chap. 9.

† *Precis Theorique et Pratique des Maladies des Yeux.*

‡ Casper's Wochenschrift, 28 Mars 1840.

quently recorded instances of the affection; in particular Henoch (1849), Helft (1849), Lubarsch (1850), and Heusinger (1851).

One of the most instructive and detailed accounts which has appeared in Germany was furnished by Romberg and Henoch in 1851. I take the following condensed account of their observations, from a paper in the *Edinburgh Medical and Surgical Journal* for April 1854:—

“Taking the cases which have occurred in their own experience, and those which have been elsewhere recorded, there are in all twenty-seven, which form the subject of the following interesting remarks by Drs. Romberg and Henoch. They acknowledge twenty-seven to be too small a number of observations to warrant any very decided opinions being drawn from them, but at the same time believe it sufficiently large to afford the groundwork for much useful study. By far the larger number of the patients were females, only four of the twenty-seven were males. All with one exception were young, the most common age being between twenty and thirty. In the larger number of the cases there existed the combination of the three symptoms of palpitation of the heart, enlargement of the thyroid, and prominence of the eyes; while in six of the twenty-seven cases one or other of the three was absent. In the two cases first treated by Dr. Romberg in the Clinic, the prominence of the eyes was not observable. Undoubtedly of these phenomena the palpitation of the heart is the one best understood, and corresponds most readily with the view taken of the whole disease. Almost always the cardiac symptoms are those first discovered and first complained of; then, after a longer or shorter period, the swelling in the neck commences, and the prominence of the eyes follows. Only a few of the recorded cases lead to the supposition that the three diseased appearances arose at, or about, the same time; certainly in the fifth case treated in the Clinic,

the enlarged thyroid was the first symptom noticed. It is well to inquire wherein the original affection of the heart consists. That in some instances there exists organic disease is proved as well by examination during life as by *post-mortem* examination (Basedow and Marsh); but again in others it is equally certain that the cardiac symptoms depend merely on an increased irritability of the organ (Cooper, Begbie, Lubarsch). Cases explicable on both these grounds, and on these only, have been treated in the Clinic. In regard to the thyroidal swelling, it is interesting to note its increase and subsidence after the violence of the cardiac palpitation: this fact is expressly stated by Sir Henry Marsh and mentioned by Begbie as existing in his third case, and also noticeable at times in the fourth; this of course points to an intimate relation between the two symptoms. Marsh and Heusinger describe the condition of the thyroid as a true hypertrophy, and it has been noticed by Graves, that after the lapse of years the consistence of the gland has been much increased.

As regards the remarkable prominence of the eyes, this symptom comes on gradually, and, so far as vision is concerned, it is not of much importance, seeing that only in one case (Lubarsch) was it at all seriously impaired; but though sight is not much affected, the prominence of the eyes produces a singular disfigurement, causing the sufferer to be not unfrequently avoided in company. Acknowledging the great difficulty of determining upon what peculiar condition the prominence of the eyes depends, our authors set aside the view of the increase of the aqueous humour causing a true enlargement of the eye (Begbie, the theory also adopted by Dr. Stokes), also that which attempts a solution by reference to an hypertrophy of the post-ocular cellular tissue (Basedow). They look upon the idea of the prominence being due to a want of tone in the ocular muscles, and an accompanying congestion in the posterior parts of the eye (Cooper, Dal-

rymple) as more likely ; but they appear to think still more favourably of the view of Heusinger, who found in two cases an extraordinary accumulation of fat in the cellular tissue behind the eyes, and regards it as the probable cause of the exophthalmos.

Again, regarding the disease as a whole, these authors proceed to remark, that certainly the larger number of the individuals so affected exhibited evident symptoms of anæmia, such as a remarkable paleness of the skin, the peculiar sound audible in the bloodvessels of the neck—headaches often very violent—giddiness, especially when in the upright posture—humming sound in the ears—attacks of fainting—small frequent pulse, etc. Irregularity of the catamenia also is commonly present, while fluor albus, and sometimes complete amenorrhœa, have been found. Symptoms of an hysterical nature further distinguished not a few of the cases, the globus hystericus, neuralgic pains in different parts, coldness of the extremities, and strange wanderings of the mind. Basedow describes a remarkable calmness and a great desire for pleasure as characteristic features of the mental condition. In some of the cases it is clear that if the disease was not originated, at all events it was furthered, by the occurrence of a severe hemorrhage or flux, which reduced the system ; also a depressed state of both body and mind seemed connected with its first occurrence. But though anæmia was present in a large number of the cases, there are others whose commencement could not be traced to it, and anæmia cannot therefore be regarded as an essential requisite towards the explanation of the complex phenomena. The irregularity in the uterine system, too, cannot be regarded as altogether explanatory of the disease ; for, independently of males being subject to it, these uterine derangements, though marked, were of very varying nature. Heusinger directs attention to the condition of the spleen, which he found after death much

increased in volume and manifestly diseased." *Klinische Wahrnehmungen und Beobachtungen.*

In 1854 Schoch wrote an inaugural dissertation, the title of which is given below.* The distinguished Graefe has still more recently devoted a long article in his Archiv to the condition of the eyes;† and Prael has furnished the same periodical with an interesting paper.‡ In France, of late years, the attention of the profession has been directed to this affection by several writers; in particular by M. Charcot, whose various contributions have appeared in two different journals, and in the Transactions of the Biological Society;§ also by M. Hervieux,|| and M. Fischer, the latter in an elaborate memoir supplied with a bibliographic index, to which I must acknowledge my obligations.¶ Lastly, the eminent professor of clinical medicine, M. Trousseau, in 1860, delivered two lectures upon cases which had fallen under his observation.** In other parts of the continent than Germany and France, physicians have been enabled to study this affection. I may specially refer to the very instructive memoir, published in 1859, on the cachexia exophthalmica of authors, by Dr. Withusen,†† a translation of which, by an accomplished physician of Dublin, Dr. W. D. Moore,‡‡ appeared

* De Exophthalmo ac Struma cum Cordis affectione. Berlin, 1854.

† Archiv für Ophthalmologie, Band III., p. 187, 1857.

‡ Op. cit., p. 278.

§ Memoire sur une affection caracterisee par des palpitations du cœur et des artères, la tumefaction de la glande thyroïde, et une double exophthalmie, etc. Gazette Medicale de Paris, 1856; and in Memoires de la Societè de Biologie, 1857. Sur la Maladie de Basedow Cachexie Exophthalmique, Gazette Hebdomadaire. Paris, 1859.

|| Note sur un cas de Cachexie Exophthalmique. L'Union Medicale, 1857.

¶ De l'Exophthalmos Cachectique. Archives Generales de Médecine, vol. ii., 1859.

** Lancet for December 5, 1860.

†† Bibliothek for Laeger, 1859.

‡‡ Dublin Medical Press, July 1859.

in the course of the same year. In America various cases have been recorded by different writers, in particular by Dr. Isaac E. Taylor, Professor H. J. Bigelow, Dr. Morland, Dr. John S. Flint, and Professor Austin Flint,* who, in the course of a chapter in his work on Diseases of the Heart, devoted to the subject, refers to the cases which have been detailed by the fore-mentioned authors, and gives a brief narrative of "three instances of an enlarged and pulsating thyroid body, in connection with a notable degree of cardiac disorder," which had fallen under his own notice during the last four or five years. In our own country, since the period of my first observations, there have been several interesting and valuable contributions; while, just as on the continent, the ophthalmologists have been specially led to direct attention to the subject. Mr. White Cooper of London recorded five cases, under the head of "Protrusion of the eyes in connection with anæmia, palpitation, and goitre;†" Dr. Scott Alison has also noticed the connection of anæmia and goitre;‡ and Dr. Robert Taylor has recorded four cases, with a further analysis of twenty, collected from various sources.§ The account of the disease, furnished by Mr. Haynes Walton, in his work on the Surgical Diseases of the Eye, is well worthy of notice. The list of British writers who have studied the affection would be incomplete without the names of the eminent oculist of Glasgow, Dr. Mackenzie, and Mr. Dalrymple of London. In Ireland, where the association was first observed, there have, as was fitting, more recently appeared several valuable observations, particularly from Dr. Banks,|| and the late lamented Dr. Bellingham.¶ Finally, I may refer to the

* A Practical Treatise on the Diagnosis, Pathology, and Treatment of Diseases of the Heart. See p. 267.

† Lancet, vol. i., 1849, p. 551. ‡ London Journal of Medicine. No. 6.

§ Medical Times and Gazette, May, 1856.

|| Dublin Hospital Gazette, 1855.

¶ A Treatise on Diseases of the Heart, p. 527.

account of a discussion on the subject in the Royal Medical and Chirurgical Society of London, on November 27, 1860, as affording proof of the disease having attracted the notice of several physicians there, and more especially that of Dr. Williams.*

A considerable advance has been made, during the last few years, in our knowledge of the pathology of the affection now under consideration. While the earlier observers of it in its triple character were unanimous in regarding it as dependent on organic changes in the heart, an opinion formed, no doubt, from the examination of the cardiac signs in long standing cases of the disease, and the inspection of a few bodies after death, as well as from having seen no well-marked effects from any mode of treatment resorted to at that period, all recent research has tended to establish the fact, that in its origin it is not an organic disease, but a functional disorder of the heart and blood-vessels.

In regard to the nature of this functional disturbance of the circulation, so multiplex in its manifestations, and so serious in its results, a difference of opinion prevails. Some maintain that it has a nerve, others that it has a blood, origin. Dr. Stokes and others hold that the abnormal signs of the cardiac and vascular system which characterize the disease in its early stages are due to nervous excitement, that the affection is a neurosis. "Indeed," says Dr. Stokes, "all that we can say as to its nature amounts to this, that it is a special form of cardiac neurosis, which may eventuate in organic disease."† An attentive consideration of the general symptoms, and the acoustic signs which, with wonderful uniformity, attend this functional disturbance of the heart and its vessels, has led me to the conclusion that it arises from an abnormal condition of the circulating fluids—an altered,

* *Lancet*, December 8, 1860.

† *On Diseases of the Heart and Aorta*, 1854, p. 282.

vitiated, or impoverished state of the blood itself ;—and while maintaining this view, I do not overlook the nervous element so conspicuous as a characteristic feature of the disorder. But I apprehend that the attenuated blood is the cause of the over-excitement of the nerves of the heart, in consequence of the fluid reaching the source of the circulation with a morbid velocity—a velocity proportioned to the impoverishment it has sustained—and thus acting dynamically in producing this excitement and disordered action. It is the more necessary to perceive and acknowledge this first step in the abnormal action of the heart, in order that we may apply the remedies calculated to remove it. For while it may be admitted with truth that, in either view, the palpitation which attends the disorder under consideration is a nervous affection, the admission may be limited so as to exclude a correct notion of the essence of the disease, and hinder the application of the only means fitted to overcome it. The physician who looks upon the disturbance of the heart's action as purely nervous will probably content himself by administering remedies calculated to soothe and allay nervous irritability ; while he who looks beyond the nervous element will find in the attenuation of the blood the true cause of this excitement, and while studying to calm and compose the nervous symptoms in the disorder, will chiefly have in view the means capable of rectifying the quality of the blood, which has first over-excited the heart's action, hurried the circulation, and superadded the general disturbance of the entire system.

It has been noticed that, although in a large proportion of those affected with the disease it is found combined with a greater or less degree of anæmia, with all the symptoms characteristic of that state, still this blood disorder is not invariably present, and that patients have been observed whose whole habit of body and constitution have been directly the opposite of sufferers from anæmia. Withusen mentions that

he has seen the disease in those who were strong, and had their muscular system fully developed, their complexion being red, while they exhibited a certain amount of energy in both their mental and bodily faculties. "One of my own cases," says he through his translator, "afforded a striking example of the truth of this statement, the patient presenting a well-marked instance of the plethoric condition."

Had the subjects of the palpitating heart, with enlarged thyroid gland and protuberant eyeball, invariably presented the conspicuous marks of bloodlessness in the pallid complexion, the exsanguine lips, the feebleness and faintness, the breathlessness and giddiness, which characterize its full development, there would have been now no question regarding the presence or absence of anæmia. This condition does not, however, present itself at all times and under all circumstances in the same external characters. A long continued indigestion, a chronic diarrhœa, a profuse and wasting menorrhagia, an enfeebling leucorrhœa, will, after a time, blanch the skin, debilitate the muscular and nervous energies, confuse the brain, and disturb the heart, and the most passing observation will tell where the mischief lies; but it is equally true that a daily hemorrhoidal discharge of trifling amount, or a catamenial illness prolonged beyond its usual period, and recurring month after month in this abnormal manner, will ere long, and short of blanching the lip or diminishing the bodily strength, tell that it is disturbing the heart and hurrying the circulation. The eye may discover nothing which indicates that the blood is being impoverished by the daily or monthly drain, but the ear will reveal the true condition by detecting the well-known murmur at the base of the heart, with the humming sound in the unsupplied veins, and the thrilling pulse of unfilled arteries.*

* On the subject of anæmic murmurs and anæmic palpitation, see Hope on Diseases of the Heart, pp. 109, 123, 507.

I have seen a plump and rosy girl of twenty-one, after a walk of several miles, enter my study to tell me of her staring eyeballs, which told their own history, indifferent to the graceful goitre which lay concealed beneath her dress, regardless of the passive hemorrhage which paid its monthly visit, and prolonged its stay for eight or ten days, and heedless of the rapid circulation which was associated with these morbid phenomena. The protruding eyeballs, and the nervous, agitated manner of the patient, were the conspicuous symptoms in her case ; but behind these, and in spite of her full figure and good complexion, there were concealed the physical signs of attenuated blood. After some months of treatment calculated to check the drain under which she suffered, and replenish the impoverished blood, she greatly improved in health. The menorrhagia was arrested, and the protruding eye-balls became less marked ; she ceased her attendance, however, before she was quite well ; but I have a confident hope that long ere now she has been restored to health.

I have seen a lady of forty-five, the mother of a numerous family, still looking fresh and youthful, arrive to consult me regarding severe neuralgic pains, a sense of breathlessness and faintness, and distressing nervous feelings under which she had suffered from the period of her last confinement, three years previously. The peculiar protrusion of the eyeballs, of which she herself was scarcely conscious, though remarked by all her friends, and the full and prominent thyroid gland, satisfied me she was anæmic, though she did not carry with her the peculiar exsanguine countenance and pallid lip of that condition. She had, however, in addition to her protruding eyeballs, and tumid thyroid gland, and their associates of nervousness and neuralgic pains, the well-developed signs of anæmic palpitation. She was suffering from no discharge calculated to impoverish her blood, and she had no ailments of a character suited to interfere with

assimilation or nutrition ; but being interrogated, and carried back to the period of her last confinement, she admitted that on that occasion she had been in imminent danger from flooding. From that period she dated the commencement of the disorder of her health under which she had laboured. After many months of persistent employment of the preparation of iron, aided by generous diet and frequent exercise in the open air, she returned to me greatly improved in health. The neuralgic pains were less severe and constant, the nervous symptoms much subdued, the thyroid gland diminished in size, and the eyeballs much less prominent, the left having retreated within the orbit to a greater extent than its fellow. The action of the heart was more tranquil, and the circulation generally more normal.

I have seen no instance of the disease in which the general and physical signs of anæmia were not more or less completely developed ; and no case in which an adequate cause of that condition was not furnished in its history ; nor any one in which a marked mitigation, or complete removal of the symptoms, has not taken place under a plan of treatment calculated to overcome the blood disorder.*

The circumstance of the large proportion of the subjects of the disease being females has been adduced in favour of its nervous origin. Of fifty cases collected by Withusen, forty-two were women, and only eight men. The age at which it commonly occurs in the former is stated to be between twenty and thirty ; in the latter it is met with at a much later period of life, namely, from thirty-two to fifty-six. This preferential occurrence of the disease in females, and these figures and proportions, tend strongly to favour the view taken of its anæmic origin. For what are the causes of anæmic palpi-

* It is the combination of iron with calmatives and sedatives, which I have found most useful, especially the tincture of the muriate of iron with the tincture of henbane.

tion—a palpitation which is persistent, and not occasional—but just the disorders of the female sex at the period of life referred to. Among these, none are more common or more influential than irregularities and derangements of the catamenia, amenorrhœa, leucorrhœa, menorrhagia, and the disorders connected with child-bearing and delivery. To the drains upon the blood, and to its impoverishment from such sources, women, at the ages between twenty and thirty, are specially liable, while they do not altogether escape the risks which arise from hemorrhoidal and other discharges incident to men, and to all the disorders connected with impaired digestion and assimilation, to diarrhœa, and particularly to that form now too little recognized, I mean lenteria, under which I have found many of the subjects of this disease to be suffering. Then again, let it be asked, What are the causes of nervous palpitation—a palpitation which is occasional, and not persistent—but just the excesses and indulgences of the other sex in the early period of life, more particularly masturbation, venereal excesses, and the abuse of stimulants and tobacco, the habits of over-study, and the neglect of exercise; while to these may be added the many causes of indigestion common to both sexes; yet we never find the prominent eyeball, or the enlarged thyroid gland, associated with these nervous palpitations which are so common in the earlier years of manhood. When this triple affection occurs in men, it is at an age when the excesses to which allusion has been made are less in operation, when nervous palpitations are seldom observed; but it is at a period of life when hemorrhoidal discharges are most common, and when the system is most apt to suffer from impoverishment of blood arising from diseases of the digestive organs, from diarrhœa, from chronic diseases of the liver, the spleen, and the kidney, the organs employed in the elaboration and depuration of the blood.

It is very remarkable how uniform and favourable has been the reception, among the best informed of our writers on diseases of the eye, of the rationale offered of the phenomena respecting that organ. Anæmic exophthalmos is now recognized as the appropriate appellation of that condition of the eyeballs which accompanies the particular constitutional disturbance under consideration. I confess that it is with some unwillingness that I give up the notion I first entertained and expressed in regard to the state of the eye. Having come to regard the complex phenomena constituting the disease as originating in vascular disturbance, I was naturally led to view the protrusion of the eyeballs as the result of congestion, and effusion into the ocular capsules, an increased secretion of the humours of the eye—a true hydrophthalmia. This view was supported by the characteristic features of the organ itself, and by the admission made by Beer, Juengken, Mackenzie, and other ophthalmologists, that the particular dropsy of the eye alluded to was found in connection with cachexia, chlorosis, and such like constitutional disturbances. Dr. Stokes, without acknowledging the anæmic origin of the general affection, has since adopted the explanation offered of the condition of the eyeballs:—"We cannot come (he says), to any other conclusion than that it is an example of double hydrophthalmia, or, at least, of enlargement of the eyeball itself. When we consider the nature of the vascular apparatus of the eye, and recollect also that in this disease the powers of vision remain unimpaired, and that the eye shews no symptom of increased vascularity, we cannot but conclude that the enlargement is owing to an actual increase of the vitreous and aqueous humours of the eye."* The fact immediately afterwards adverted to by Dr. Stokes, namely, that this enlargement of the eye may appear in a sudden manner, of which he gives an instance, affords additional countenance to the explanation.

* On Diseases of the Heart, p. 295.

Nevertheless I cannot resist the weight of authority brought to bear in an opposite direction, and emanating from those who have made the diseases of the eye their special study. We are informed that there is no enlargement of the eyeballs—that they look as if they were enlarged, but are not so in reality. Of the actual nature of the change in the orbit causing the protrusion, it is admitted that we are still ignorant ; but all appear to be agreed that it is not a variety of hydrophthalmia, but a variety of exophthalmos that accompanies the blood disorder. “ The motion of the eyeballs being in general so little affected (says Dr. Mackenzie), it does not appear likely that the cause is an effusion into the ocular capsule. Such an effusion, however, would explain the apparent enlargement of the eyes.”* He suggests that a varicose state of the ophthalmic veins may possibly be the cause ; but the comparative rapidity with which the protrusion occasionally manifests itself, and the equally rapid manner with which it retreats within the orbit, forbid this explanation of the phenomena. The theory propounded of a loss of tonic power in the ocular muscles, so that the globes as it were drop forward, is equally untenable ; for there is no loss of motor power in the eyeballs, and this power is found compatible with the greatest amount of protrusion, while it must have been observed that, under excitement, the protruding eyeball appears still more protruded.

Of the other theories which have been advanced in explanation of the ocular phenomena, I am disposed to accept the one suggested by Mr. Haynes Walton, as the most probable, that, namely, which attributes to congestion of the deep-seated veins of the orbit the cause of the protrusion.† Such a view explains some of the conflicting symptoms of the affection, and is less at variance, or rather more in consonance with the vascular congestion in other parts, and more particularly with

* Mackenzie on the Diseases of the Eye, 4th ed., p. 310.

† Surgical Diseases of the Eye, p. 303.

that of the thyroid gland, while it is strictly in accordance with the anæmic origin of this complex disorder. Dr. Taylor, adopting Dr. Marshall Hall's views, as to the spasmodic contraction of the muscles of the neck in paroxysmal and convulsive diseases, suggests that this may be the cause of the impeded return of the blood from the head.*

Withusen has advanced a step farther in regard to the state of the circulation. "There is," he says, "a disturbance of the circulation, whether active or passive, in the vessels of the head and neck. In the eyes this disturbance, the nature of which we cannot define, must find its expression in its most vascular membrane, wherein almost all the blood which reaches the organ is collected. As is well known, a higher degree of congestion of the choroid is often combined with prominence of the eyes. Many patients suffered from an unusual degree of congestion of the choroid; the large, prominent, staring, and brilliant eyeballs, hard and tense to the touch, the injection both of the conjunctival and ciliary vessels, the dirty and bluish sclerotic, the dilated pupil and tardy movements of the iris, which was arched forwards; in the one case the greyish smoky pupil, in both the hyperæmic state of the bottom of the eye, as seen with the ophthalmoscope. Such were the objective symptoms. The subjective are not less characteristic: severe frontal headach, a feeling of tension and pulsation in the eyes, with pain and intolerance of light, decided disturbance of vision, particularly extreme myopia, *muscæ volitantes*, and photopsy. But besides these unmistakeable symptoms of increased intra-ocular pressure, my patients had a high degree of the ordinarily so-called *hebetudo visus*, characterised by a remarkable want of accommodation." Graefe also found in his patients the same want of power of accommodation, but doubts, on theoretic grounds, that the myopia which is

* On Anæmic Protrusion of the Eyeballs, in the Medical Times and Gazette for May 24th, 1856.

observed in many cases had pre-existed. His view is, that the eye, being pressed forward by an accumulation of fat in the orbit, must be shortened in the direction of the axis of vision, and so become presbyopic ; but in his patients, signs of intra-ocular pressure seem to have been wholly absent.* The Continental oculists furnish examples of inflammatory affections of the eye-ball ending in partial or complete loss of vision, as the result of exophthalmia in connection with bronchocele and cardiac disease. Withusen† remarks, "I have been anxious to direct attention to an affection of the choroid as a possible causal element in the development of exophthalmia in this disease ; decided conclusions can be drawn only from ophthalmoscopic and necroscopic examinations, for which time will certainly furnish opportunities.‡

* Bemerkungen über Exophthalmos mit Struma und Herzleiden. Archiv für Ophthalmologie, 1857.

† Dublin Medical Press, July 20, 1859.

‡ In a well-marked case which I have lately had an opportunity of seeing, and in which the anæmic condition, resulting from menorrhagia and long-continued lienteria, was very perceptible, Dr. Argyll Robertson has subjected the eyes to ophthalmoscopic examination, and his report, which I subjoin, so far confirms the opinion as to the existence of a morbid state of the choroid :—

"*Right Eye.*—The pupil had been dilated by atropine, and upon examination with the ophthalmoscope, I detected a general deficiency of choroidal pigment, most marked anteriorly. The nasal half of the circumference of the optic disc was sharply defined by a narrow line of pigment ; but no pigmentary deposit occurred elsewhere. The inner third of the optic disc presented a brighter appearance than the outer part, and the blood-vessels, on reaching the margin of this central portion, disappeared from view, and presented a curved extremity ; in fact, constituting central or physiological cupping of the optic nerve. There was an abundant vascular supply, and no pulsation either arterial or venous.

Left Eye.—Choroidal pigment deficient as in the right eye. The optic disc was somewhat oval in shape, the long axis being vertical ; and at the nasal side of its circumference there was a narrow white 'crescent,' caused by atrophy of the choroid at that part, allowing the sclerotic to shine through ; this was bounded by a line of pigment. At the temporal margin of the optic disc there was also a small deposit of pigment. The vascular supply was normal, and no pulsation in either artery or vein visible. There was a marked difference in size

These necroscopic examinations extended to the thyroid gland will, no doubt, throw light on its functions and uses, while they will reveal also, from time to time, the organic changes which take place in the glandular structure during the progress of this disease. There is every reason for concluding that the original departure from health is confined to the vessels of the part, and that for a time—a considerable time—this morbid condition is capable of repair and removal. The long continuance, however, of this over-excited action of the circulation in the thyroid body leads to organic change, primarily in the dilatation of the vessels themselves, and subsequently in hypertrophy, induration, and degeneration of structure. A conjecture thrown out by Dr. Stokes is deserving of notice, namely, that some analogy may be found between the turgid condition of the gland and that of the liver, in cases of obstruction or weakness of the right side of the heart.

Regarding the disease as a whole, I cannot help arriving at the following conclusions :—

1st, That the essence of the disease consists in a vitiated or impoverished condition of the blood—a true anæmia.

2d, That this abnormal condition, this attenuated quality of the blood, acting directly on the cardiac nerves, through the rapidity with which it circulates, excites the heart and vessels to over-action.

3d, That the anæmic palpitation thus produced is, after a longer or shorter time, followed by turgescence of the vessels of the head and neck, and by enlargement of the thyroid gland, and protrusion of the eyeballs.

4th, That these phenomena are subject to remarkable between the two optic discs—the right being the larger—but this I imagine was due to the effects of the atropine. The tension of both eyes was normal.

The chief points of pathological importance are, the general deficiency of choroidal pigment, exhibited in both eyes, and the special deficiency at the margin of the optic disc in the left eye. This is generally found to be accompanied by short-sightedness, which I believe is present in this case."

variations as to intensity, according to the state of the heart's action.

5th, That the acoustic signs in the heart, in the vessels of the neck, and in the thyroid gland, are those of anæmia ; and cannot be referred to any other morbid condition with which we are acquainted.

6th, That the disturbance of the circulation, the turgescence of the thyroid gland, and the protrusion of the eyeballs, are all capable of mitigation and removal, by means calculated to improve the quality of the blood.

7th, That this condition of the vascular system, if not removed, issues in organic change, in hypertrophy and dilatation of the chambers of the heart, in enlargement of the great vessels, in induration and structural degeneration of the thyroid gland, and in disorders of vision, and partial or complete loss of sight.*

* In the two fatal cases recorded in the preceding pages, the sight, though to some extent affected, continued to the end ; and the eyeballs, which were prominent during life, had, after death, receded within the orbits.

V.

ON DYSPEPSIA AND NERVOUS DISORDER, IN CONNECTION WITH THE OXALIC DIATHESIS.

(Read before the *Medico-Chirurgical Society of Edinburgh*, June 6, 1849.)

IT is not my intention to speak now of Oxaluria in general. I am aware that the oxalate of lime is found in the urine, under circumstances apparently very different from those here described,—that it is found in all ages, and in both sexes, and in different conditions of life,—that it is found as the immediate exciting cause of a fit of gravel, where no mal-assimilation has prominently manifested itself; and that the records of public institutions for the management of the insane shew, that it is very common in the urine of those suffering under melancholia.* I shall limit my remarks, at present, to a class of cases, of a well-marked character, in which its presence is a prominent feature, and from which important indications of diagnosis and treatment may be drawn.

* That oxalate of lime is not unfrequently the product of changes in the urine after it has reached the urinary passages, and even after the secretion has been voided, cannot be denied. The discovery, however, of oxalic acid in the blood by Dr. Garrod, and the frequent detection of the oxalate of lime in the urine immediately after micturition, distinctly prove that oxalic acid can have its origin in the system: that in oxalic dyspepsia such is the case, I have no doubt. I may take the opportunity of referring to the works of Drs. Thudichum and Parkes on the Urine for a complete account of oxalate of lime sediments. In the *Edinburgh Medical Journal* for February 1862, will be found a full analysis of an able essay on Oxaluria by Dr. Smoler of Prague.

This class is composed chiefly of those in the prime of life, and includes more males than females. They are the subjects generally of the sanguine or melancholic temperament; men unaccustomed to laborious or active exertion, usually belonging to the upper classes, and accustomed to indulge in the good things, particularly the *sweets*, of the table. They present themselves as sufferers from dyspepsia, from its mildest to some of its most aggravated forms; often with no disorder apparently, but the uneasiness arising from imperfect digestion, and languid assimilation, a sense of load at the pit of the stomach, and with flatulence and palpitation some hours after a meal. Oftener, however, they have sufferings of a more severe kind, referable not to the digestive organs alone, but affecting very seriously the nervous system, and threatening the mental condition of the patient. They are usually peevish, sensitive, and irritable; or dull, desponding, and melancholic. At times, full of gloomy fears and dark forebodings, they are painfully distrustful of their own powers, suspicious of some lurking disease—especially pointing to consumption or disease of the heart, as the source of their apprehensions—and from the dread of some threatened evil, they are not unfrequently hurried to the brink of mental derangement. In the milder forms, there is in these patients the anxious countenance and the look of ill health, a loaded tongue, a dry skin, and an irritable pulse. In the more confirmed, a dingy dark complexion, perhaps a red and tender tongue, with growing emaciation, falling off of the hair, eruptions of the scaly kind, sometimes of boils or carbuncles, pain of a dull but deep-seated kind in the back and loins, hemorrhage from the bowels and bladder, incontinence of urine, and complete prostration of the virile powers. These latter symptoms I have seen in many instances accompanied by feebleness and loss of power of the lower limbs, such as to lead to the suspicion of permanent paraplegia. The progress of these evils may be

varied and slow ; under diet and regimen, with the enjoyment of pure country air, it may be checked and controlled ; under medicine it may be entirely arrested ; but if neglected or maltreated, the malady will assuredly subject its victim to the sufferings and perils of stone in the kidney or bladder, or to the still more serious consequences of malignant organic disease.

Such are the miseries that flow from the oxalic diathesis, from a poison generated during the process of digestion and assimilation, carried into the blood through the ordinary channels, but limited in its pernicious consequences by the busy agency of the urinary organs, in separating it from the circulation, and discharging it from the system. Through this process of elimination, we are enabled, by the aid of tests simple and satisfactory, to detect the offending matter in the urine, in the form of oxalate of lime, and are thus prepared with a plan of treatment, equally simple and successful for mitigating the pains and miseries of the patient, and for gradually subduing and ultimately removing the diathesis, which has been the source of lasting mental and bodily suffering.*

These views have been well illustrated in the writings of

* The opinion thus expressed, I am well aware, is not likely to meet with uniform acceptance. Some there are, who, like Dr. Bence Jones (*On Animal Chemistry in its application to Stomach and Renal Diseases*, page 63), consider the occurrence of oxalate of lime in the urine as of little or no importance. Others, again, go so far as Dr. Owen Rees, who has virtually denied that oxalic acid is ever formed in, or excreted from, the blood ; while Lehmann and Scherer have asserted that no connection whatever can be traced between the symptoms described as those of oxaluria, and the presence of oxalate of lime in the urine. With all deference to these authorities and others of weight, I have long entertained a very different opinion, and the additional experience of years has largely strengthened and confirmed it. Every day's observation is tending to establish the correctness of the views, in respect to urinary pathology, of the eminent physician who first directed attention to the oxalic diathesis—I mean the late Dr. Prout ; and I doubt not that, in regard to this disorder, as well as the kindred affection diabetes, his views will ultimately prevail.

Prout, Golding Bird, and others ; and every day's experience confirms their truth and their importance. But it is still to be regretted that the careful examination of the qualities of the urine, with the view of detecting those morbid conditions of the secretion, which originate in imperfect digestion, and defective assimilation, is so much neglected by those who seek to palliate or cure the sufferings of the dyspeptic, or the miseries of the hypochondriac ; and that the victims of these sad and painful maladies are too often left to run the endless and hurtful round of routine practice ; to experience, perhaps, a mitigation of one set of symptoms, at the expense of an aggravation of another ; to exhaust the list of remedies, and the list of advisers ; and to fall into the hands of the ignorant or designing empiric, to the injury and disappointment of themselves, and the disparagement of the profession.

I. A clergyman, aged thirty-six, of sanguine temperament, and spare habit, studious, and devoted to his profession, which he had exercised for many years in North America, applied to me, at the close of October 1845, for the relief of symptoms of stomach affection, under which he had laboured for many years. He was highly dyspeptic and nervous, and in his adopted country had been treated actively by different hands for supposed bilious and liver affections, and been subjected to a variety of prescriptions, from the mild anti-bilious pill, to the large and salivating doses of mercury, with only one effect—the aggravation of his sufferings. After a long trial, and many disappointments, he was forced to relinquish his calling, and return to Scotland, in shattered health and broken spirits. On his arrival, at the date referred to, he was pale and emaciated ; and indications of mental and bodily suffering were discernible in his countenance and manner. His appetite was depraved, and he ate largely. He suffered from flatulent distension, and irregular beating of the heart ; from languor and lowness of spirits ; from restless nights and troubled

dreams ; from unrefreshing sleep and anxious awakings. He was incapable of mental application, and had well-nigh abandoned the hope of restoration to his duties, and to health. His skin was dry and parched ; his tongue loaded ; his bowels irregular, and the dejections unhealthy. His urine, which hitherto had not been examined, was of a deep amber colour, and perfectly transparent, possessing a peculiarly rich smell, and a sp. gr. of 1·028. It was of acid reaction, slightly phosphatic, and contained urea in excess. Under the microscope, which alone can determine satisfactorily the presence of the oxalate of lime, a large number of the characteristic crystals of that deposit were discovered, and the treatment pursued was in accordance with the principles and practice maintained by Dr. Prout, in the management of that diathesis. The bowels were cleared out by repeated doses of gentle laxatives ; the diet was regulated so as to exclude, as much as possible, all saccharine materials, and milk, farinaceous vegetables, and animal food in small quantity, enjoined. Tepid sponging and warm clothing were also recommended, and the nitro-muriatic acid, in doses of twenty drops twice or thrice a day, prescribed. On the 25th of November, nearly four weeks from the commencement of this mode of treatment, the urine was again examined and found of sp. gr. 1·024, while it maintained the former characters, both under the eye, in glass vessels, and under the microscope. The general appearance of the patient, however, was somewhat improved, and the dyspeptic and nervous symptoms were less distressing. A steady perseverance in the same mode of treatment was enjoined. On the 18th December the urine was of a straw colour ; of acid reaction, of sp. gr. 1·024 ; unaltered by heat or nitric acid, and presenting under the microscope fewer crystals of the oxalate of lime, together with some of those of lithic acid. The symptoms in general were mitigated ; but as the patient complained of gastralgia, and the urine was more decidedly

acid, the former prescription was intermitted, and ten grains of the white bismuth ordered to be taken three times a day ; and the same attention to diet, regimen, bathing, and clothing, as heretofore, continued. In the beginning of January the nitro-muriatic acid was resumed. On the 31st the urine brought for examination contained a considerable deposit of the lithate of ammonia, and readily cleared on the application of heat. It was still of high specific gravity, 1.025, and of acid reaction ; while under the microscope the crystals of the oxalate of lime were fewer in number, and less in size. The nitro-muriatic acid was again suspended. Digestion being now performed with less uneasiness, and the general appearance of the patient improved, while his nervous symptoms were much abated, he was allowed, at his own request, to occupy the pulpit of a brother minister from time to time ; and finding that he could satisfactorily discharge such duties, his spirits and health correspondingly advanced. He was ordered to use, alternate months, a vegetable bitter infusion, with the addition of the carbonate of potass, when the lithic acid was in excess, and the nitro-muriatic acid as formerly. Under this plan he gradually recovered flesh and strength, and presented, both in body and mind, the indications of renovated health. The improvement kept pace with the progressive diminution of the oxalate of lime in the urine, and when the peculiar diathesis appeared to be subdued, which happened within a twelvemonth from the commencement of treatment, he was able to resume his ministerial duties, and has for some time been settled in the west of Scotland, the pastor of a numerous flock, and the comforter and adviser of a populous parish.

II. A gentleman, aged thirty-five, attached to no profession, accustomed to regular exercise, and rather luxurious in his habits ; of sanguine temperament and strumous habit ; about the beginning of 1844, according to his own account,

began to complain of indigestion, characterised by loss of appetite and strength, by frequent perspirations over the forehead, on making slight muscular exertions, and by increasing emaciation. A papular eruption appeared on the chest and between the shoulders, and continued more or less for eighteen months. This was accompanied by an uneasy sense of weight at the pit of the stomach, loaded tongue, restless unrefreshing sleep, and great anxiety of mind. At this time he left Edinburgh, with the view of a permanent residence in the north of England, and in the hope of the enjoyment of better health. He was however disappointed, and after a trial of five months of the climate and practitioners of the south, he returned to his former home, depressed in mind and wasted in body. I saw him towards the end of October 1845, a miserable dyspeptic and hypochondriac; suffering from headache, flatulence, and palpitation; from constant restlessness of mind, and painful anxiety regarding the future; ever desirous of change, but never attaining the desired haven. He was particularly suspicious of the presence of consumption, or disease of the heart. His tongue was furred; his bowels constipated; the evacuations discoloured, and frequently mixed with blood. He complained of pain in the region of the liver, and of numbness of the right arm. His skin was dry and parched, his eyes were suffused and painful, and his hair was falling out. He complained of a "lanky feeling" about the loins and abdomen, of uneasiness in the region of the bladder, and of the loss of all sexual desire. His urine, at this time, was of high amber colour, and of sp. gr. 1.040; of acid reaction, and with excess of urea. Under the microscope there were large numbers of the octohedral crystals of the oxalate of lime and much epithelial matter. He was ordered repeated doses of castor oil, a simple diet of farinaceous food, warm clothing, tepid sponging of the skin, and the nitro-muriatic acid. On the 25th of November the urine

was of sp. gr. 1.036, and still loaded with numerous crystals of the oxalate of lime. The general symptoms had undergone little change. On the 18th December the urine was loaded with the lithate of ammonia, and the crystals of the oxalate of lime were less numerous, the sp. gr. was 1.030 ; the dyspeptic and nervous symptoms were less severe. He was ordered to intermit the acids, and to use an infusion of snake root, with small doses of the carbonate of potass. On the 8th of January 1846, the crystalline deposit, as seen under the microscope, was still undiminished, and was mixed with a few crystals of lithic acid. There was little amendment in the general symptoms. The snake root was intermitted, and the nitro-muriatic acid resumed. On the 22d February the oxalate of lime had considerably diminished, and the lithic acid increased, the bowels were more easily managed, the tongue had improved, and the dyspeptic and nervous symptoms were less urgent. He was ordered to alternate monthly, the use of the acids, and the vegetable infusion. On the 5th April the oxalate was much diminished, and the lithate of ammonia seen in large quantity. He was ordered to persevere, and on the occurrence of warm weather to seek the country, and country sports. On the 3d of August the sp. gr. of the urine was 1.026, it was of straw colour, and contained numerous crystals of lithic acid, and a few only of oxalate of lime. The acid was intermitted for two months. On the 12th November the lithic acid had disappeared, but the octohedral crystals were present in considerable numbers and of large size. The acid was resumed. During November and December the oxalate diminished in number and size, the patient gradually improved in looks and spirits ; he regained his lost powers ; his skin became soft and smooth ; the blood disappeared from his stools ; his manner and conduct indicated that he no longer thought only of himself and his ailments, and in the course of a few more months, under the

cod-liver oil, he regained his lost flesh, and acquired new health. He has long since ceased his attendance on me, but I have frequent opportunities of observing his studious observance of those rules of diet, regimen, and exercise, which I hope will exempt him from the perils and sufferings of the oxalic diathesis.

III. A gentleman, aged forty-five, educated for the bar, but inheriting a patrimonial estate, to the management of which he was more devoted than to professional pursuits; inheriting also a predisposition to gout and cerebral disease, accustomed to a full table, and not indisposed to avail himself of his opportunities—particularly, it had been observed, in the matter of sweets—had been a patient sufferer from indigestion during a series of years, in which he contrived, by a temporary abstinence, and the frequent use of Gregory's mixture, or some such household remedy, to allay the more pressing symptoms of his malady. He began, however, to be subject to boils, and to ailments of a gouty-rheumatic character, and became the subject of professional discipline.* After trial of many remedies for an obstinate attack of a rheumatic kind, affecting chiefly the loins and lower extremities, and involving (according to the opinion of those to whom we are accustomed to submit with deference) the coverings of the spinal marrow, he was cured by the powerful agency of arsenic, and for some time continued in fair health. In the beginning of 1846, however, having relaxed the rules of diet and regimen prescribed as essential for him, he experienced a return of his dyspeptic ailments, accompanied with much depression of mind, and anxious and fearful prospects of the future; he lost looks and flesh; his clothes, to use a common expression, hung upon him; he shunned company, and regarded himself

* A tendency to cutaneous affections was specially noted in the sufferers from the oxalic diathesis by Dr. Prout. See his work on Stomach and Renal Diseases, page 67.

as a victim. His tongue was foul ; his pulse irritable ; his bowels irregular. He was still a gross eater, and suffered from flatulent distention, giddiness, and palpitation. He became again the subject of boils and carbuncles, affecting chiefly the trunk and thighs ; these were tedious in suppurating, and slow to heal. He complained of uneasiness in the region of the bladder, which frequently lost its power of retention ; and of pain and heaviness across the back and loins. His urine presented the characters of oxaluria ; it was of high amber colour, and without sediment, of sp. gr. 1.030, and disclosed, under the microscope, numerous crystals of the octohedral form. He was placed under a diet suitable to his diathesis, and a persistent use of the nitro-muriatic acid was enjoined ; a tepid salt-water shower bath and warm clothing were added as powerful auxiliaries. Under this mode of treatment he made rapid progress towards recovery ; his boils, long languid, began to heal ; his skin, long torpid, became soft and perspirable ; his tongue cleaned ; his pulse improved ; his appetite, long restrained, returned to rules of health ; he lost his dull despondency ; he lost his irritability of bladder ; he lost the oxalate of lime in the urine ; he acquired the look of returning health ; he acquired fresh spirits ; and, before many months were over, he acquired, under the use of that valuable remedy—the cod-liver oil—both flesh and strength, which he preserves uninterruptedly to this day.

IV. A gentleman, aged forty-five, in early life accustomed to earn his bread by the sweat of his brow, and to suffer the privations attendant on a close application to the desk, had become dyspeptic and nervous, when he succeeded unexpectedly to the inheritance of a distant relative. Relief from the restraint of business, and the enjoyment of repose in a beautiful part of the country, with access to every thing calculated to insure health, had for a time the desired effect of improving his digestive functions, and allaying hypochondriacal

fears. During a winter residence in Edinburgh, and while suffering from an aggravation of his ailments, he came under my care. At this time he was much depressed, and very anxious about his health. He suffered greatly from flatulent distension of stomach, and palpitation of the heart, yet he ate largely at table, and indulged particularly in the sweet course. He had restless nights, and unrefreshing sleep. He was disinclined to all action, and though in the possession of every comfort he was gloomy and desponding. His countenance was expressive of mental anxiety, and his aspect sallow and cachectic. He spent his days apart from his family in his solitary study, unfit for mental exertion, and believing himself unfit for bodily exercise. He complained of feebleness of his limbs, of aching pains in back and loins, and of loss of virile power, and threatening palsy of the lower limbs. His pulse was quick and irritable, his skin was dry and parched, his tongue furred, his bowels were irregular, the dejections scanty, his urine was copious and clear, the desire to pass it frequent and troublesome. It was of acid reaction, of pale amber colour, of rich and fragrant odour, and on resting a time in a glass vessel deposited largely the clear crystalline sediment visible to the naked eye. This deposit under the microscope was found to consist of numerous crystals of the oxalate of lime, of large size, with some portions of bladder epithelium.

In the treatment of his case, much stress was laid on the circumstance of his malady being curable, and he was constantly reassured of this. His diet was limited to light animal food and fresh vegetables, each in moderate quantity, with a few glasses of wine daily, and the free use of water, to the exclusion of all malt liquors. His medicine was confined to the nitro-muriatic acid before meals, and a gentle aperient dose of rhubarb, with carbonate of potash at mid-day or bed-time. Under this plan of treatment he speedily

improved. The digestive functions, long impaired, gradually resumed a healthy tone ; the heart, long labouring and bounding, was permitted to return to its normal action ; the mind and spirits rose in proportion ; action became a pleasure ; there was an object in life, and life was once more enjoyed. The skin became moist ; the tongue cleaned ; the appetite, long voracious, submitted to moderate meals ; the bowels became regular ; the urine was less copious, and now and then deposited the lithates and lithic acid, the oxalates gradually disappearing. In six weeks there was a manifest amendment, and as days passed by he steadily improved, and was pronounced well at an earlier period than I have ever known in such cases of oxalic dyspepsia.

It were easy to multiply cases of this description, the record of which I have preserved ; but it may be sufficient, in the further illustration of the subject, to limit attention to the history of one other, in which the progress and termination were sadly different.

V. Some twenty-five years ago, I formed the acquaintance, and became the professional adviser, of Mr. D——, a practitioner of law, of a few years' standing. He was a young man of superior talent, of persevering industry, and studiously devoted to his profession, in which he was destined to take a high place ; but he was early in life the subject of dyspeptic derangement, and from this cause, and the irritability of temper, which so often accompanies it, his path was crossed and his prospects somewhat clouded. His energy of character and constitution of mind enabled him to surmount many difficulties, and he was still found contending against uncertain health and desponding spirits. During many years he was subjected to the discipline considered essential to the cure of indigestion and its consequences, and to those regulations of diet and regimen which experience had proved useful in such affections. He enjoyed the occasional advice of men eminent in the profession, and went the round of antidotes for

the varying features of his multiform complaints ; contriving to prosecute his sedentary profession, cheered and invigorated at one time, by the relaxation and enjoyments of a country life, and depressed and exhausted at another, by the toils and anxieties of the Parliament House. His malady though obstinate, had produced no serious lesion, and his life, on more than one occasion, had been pronounced eligible for assurance, and selected accordingly.

Years passed away, and Mr. D—— was still a dyspeptic. I regret that at this time I had not yet turned my attention to a careful examination of the urine in his class of ailments, as, I doubt not, it would have elicited much valuable information in regard to their nature, and assisted materially the successful treatment of the case. He passed from under my charge, he passed into other hands, and, under the care of the late Dr. Davidson, his symptoms underwent all that patient investigation which he was accustomed to exercise, and profited by that extensive knowledge which he was well known to possess. But after years of treatment, he was still a growing dyspeptic. Under the names of acute and chronic, of nervous and irritative dyspepsia, his ailments had been tried by a variety of remedies, but they had all failed to effect a cure. He fell into the hands of the homœopathist, and there for a time he rested, and fancied he obtained relief. It was not, however, lasting or complete. The remedies of the followers of Hahnemann, and the regimen which accompanies them, were found, after a fair trial, to have accomplished nothing, beyond what the full doses and the varying dietetics of the orthodox practitioner had as yet effected. Hydro-pathy and the German Spas remained to be tried. I met him in the summer of 1845, on the outskirts of the city, on his way to embark for the Continent. He was pale and emaciated, and in his countenance I thought I could discern the lineaments of organic disease. I urged him

strongly to remain for a time in London, and consult Dr. Prout, having, by this time, become sensible of the value of those discoveries with which his name is so much associated, and strongly impressed with the belief that my former patient was the subject of oxaluria. He neglected, for a time at least, the advice thus proffered; he proceeded to the Isle of Wight, and there spent some time at the water cure; but after a while, he returned to his native county in the north of Scotland, a hopeless dyspeptic and hypochondriac. It was then that a near relation of his own, belonging to the medical profession, thought it desirable to transmit to the eminent physician referred to a written statement of Mr. D——'s case. It was followed by a speedy reply, in which he expressed his decided opinion that the patient was suffering from the oxalic diathesis, and suggested a careful analysis of the urine, with the view of establishing the point. The examination confirmed the correctness of the view taken, and the patient was directed to the mode of treatment suitable to his case, including, among other means, the use of the nitro-muriatic acid. In a few months he made remarkable progress, and towards the close of the year he returned to Edinburgh with his health apparently completely re-established. I saw him immediately on his return, and was much struck with the great change in his appearance. He had indeed the look of health; and in reply to all questions touching his former symptoms, assured me, that one and all had disappeared under the use of the acids which he had persistently employed for many months. He now returned to his professional duties, in which he engaged with renewed energies, and in prosecuting which he spent the depth of winter and the early weeks of the ensuing spring of 1846. During the months of January and February, however, he had been remarked to have fallen off in looks and flesh, and had shewn a marked susceptibility to cold. On the 11th of March, in consequence, as it was supposed, of such exposure

some days previously, he suffered from a febrile attack, accompanied by short dry cough, and was for the first time confined to the house. There were no symptoms present of an inflammatory character, but percussion discovered considerable dulness over the upper part of the left side, and auscultation failed to elicit the natural respiratory murmur. The symptoms however, which occasioned most suspicion were the presence of considerable œdema of both ankles, and the coagulability of the urine by heat and nitric acid. The urine was still of amber colour, and of sp. gr. 1.018, and under the microscope disclosed a few crystals of the oxalate of lime. These latter characters, however, gradually disappeared, it became pale and serous, and of lower specific gravity; œdema of the ankles increased; dyspnœa and cough, accompanied with expectoration, came on; he was annoyed and exhausted by urgent diarrhœa; and was seized, on the 8th April, with pleuropneumonia of the upper lobe of the right lung, with great dyspnœa and restlessness, and he died on the 11th, exactly one month from the commencement of the fatal illness. Examination on the following day discovered those lesions, the existence of which might readily have been inferred from the symptoms during life; but it revealed the absence of others which might well have been expected to have presented themselves during the progress of a long-standing affection of the stomach. The upper lobe of the right lung was the seat of recent inflammation; it was condensed, the pleura inflamed and covered with recent lymph. The left lung was adherent to the ribs by old effusion; the upper lobe was hepatised in part, and here and there studded with tubercles of considerable size, some of which had passed into the suppurative stage. Both kidneys were enlarged, pale, and waxy; the right, at its inferior edge, was the seat of a malignant fungoid growth, of the size of a large walnut. The stomach and bowels, which were carefully traced and minutely examined by Dr. Spittal,

who kindly conducted the dissection, were remarkably free from disease.

This is a painful and instructive history. It has its parallel in many of every day occurrence,—cases in which deranged digestion and mal-assimilation have loaded the circulating fluids with impurities which have poisoned the health, enfeebled the nerves, and thrown an oppressive weight of duty on the kidneys and other emunctories. Over-taxed by the extra work, these last have become themselves the seat of irritation, congestion, and chronic inflammation, passing ultimately into that degeneration by which these organs refuse their office, thus loading the blood still more with those noxious particles they are unable to remove, and exposing the system to the risk or certainty of those intercurrent affections of dropsy and diarrhœa, of pleurisy and pericarditis, and many others, which, sooner or later, perhaps suddenly, hurry on the fatal issue.

The remarkable and complete remission which took place in all the prominent symptoms of the case, after the administration of the acid treatment, is a striking feature in Mr. D——'s history. No doubt the means employed overcame the oxalic diathesis, and the assimilating functions were restored to a normal condition; but still, I apprehend the fatal event was intimately connected with their previous long-continued disorder, and that even during the period of convalescence and temporary recovery, changes in the organic structure of the kidneys had commenced, which attained their full development when the secondary inflammation in the chest indicated that the renal apparatus could no longer serve to eliminate from the blood the urea and other impurities with which it was overcharged. These views receive a full confirmation from our knowledge of the progress of other renal affections, and particularly of that of Bright's disease, as well as from observation of the course of rheumatic fever in engendering the

secondary inflammations of the membranes of the heart and lungs, which so very often are characteristic features of that disease.*

It has been alleged—and I apprehend the opinion is very generally entertained—that the deposit in the urine of the oxalate of lime is of rare occurrence, and that the morbid condition of the blood in which it originates cannot be considered as identified with the ordinary forms of indigestion. On the contrary, I am clearly of opinion, that the deposit in question is of very frequent appearance, and that its continuance in the urine marks a peculiar diathesis which must have resulted from mal-assimilation, characterized by more or less of the train of symptoms detailed in the foregoing histories. These cases occurred to me in practice along with several others, all within a short period of each other; and taking a retrospective view of the sufferers from stomach and nervous complaints by whom I have been consulted during the last few years, I find that the large proportion of them have been the subjects of the oxalic diathesis; and that the dyspeptic and hypochondriac symptoms have yielded and disappeared, just in proportion to the diminution and retirement of the oxalate of lime in the urine. The indigestion and mal-assimilation which result in the lithic acid diathesis, and which are exemplified in gout and rheumatism, in febrile and inflammatory ailments, are, no doubt, of more frequent occurrence, but it is comparatively seldom that we have to deal with these as a form of dyspepsia, the primary disorder being generally overlooked in the more pressing urgency of other symptoms which follow in its train. The symptoms, again, which denote the phosphatic diathesis, though generally regarded as belonging to indigestion, are by no means so marked or so common as those connected with the oxalic poison, and are characterized by

* See an admirable paper by Dr. Taylor in the 28th volume of the *Medico-Chirurgical Transactions of London*.

more serious disorder of the brain and spinal marrow. Many of the most obstinate and severe headaches which we are called to treat in young women, and in those of a certain age, and which are usually regarded as nervous and dyspeptic, are dependent on this diathesis, and yield only to a plan of treatment by which the mal-assimilation is corrected, the blood purified, and the earthy salts removed from the urine.

The truth of the ancient adage, that "the knowledge of a disease is half its cure," is more than confirmed in the diagnosis of the oxalic diathesis ; for, as certainly as we discover the persistent presence of the characteristic crystals in the urine, so certainly do we possess the means of cure in appropriate diet and suitable remedies, unless where long neglect of functional derangement has led to incurable organic disease. I take leave to point to the four cases first detailed, in confirmation of this statement, and as affording a great encouragement to all who are subjected to the vexations and disappointments inseparably connected with the management of the chronic dyspeptic and hypochondriac ; and would even point to the last and fatal case, as at once a beacon and an encouragement, for that too bore testimony to the efficacy of the same treatment, which was adopted, unhappily, too late to save life, though not too late to renovate the health, and prolong the days, already doomed to be broken, and cut short, by the insidious, yet resistless, progress of malignant organic disease.

VI.

ON FATTY DEGENERATION OF THE HEART.

(Read before the Medico-Chirurgical Society of Edinburgh, 15th January 1851.)

THE injuries and diseases of the brain may be speedily, they are seldom immediately, fatal: the lesions and affections of the heart are often the cause of sudden death.

Yet, the numerous and ever recurring instances of the extinction of life, which arrest the attention of all minds, by the striking rapidity of their course, or by the fearful suddenness of their issue, have been too readily regarded, both in the popular, and in the professional view, as examples of the apoplectic seizure. The great centre of the nervous system has been too commonly considered the seat of the fatal lesion: the central organ of the circulation has, till lately, been too much overlooked in the large share it has taken in these appalling calamities.

Morbid anatomy has disclosed to us many alterations of the structure of the heart, which have proved the cause of immediate dissolution; and many more, which, either directly or indirectly, have led to a rapid consummation. Our improved means of diagnosis have taught us to anticipate such a termination to many of the cardiac affections with which we are every day familiar: our advancing knowledge of their pathology, and the aids of organic chemistry, may, ere long, point to more successful means for staying the progress, if we cannot avert the issue, of these severe and fatal lesions.

Microscopic observation has recently revealed to us certain remarkable changes in the muscular structure of the heart, of slow and insidious development—a fatty degeneration of its fibres—a morbid condition most difficult to detect during life, hitherto unassailed by any remedy, and which, there is reason to believe, has been productive of most fatal consequences, and the immediate cause of the sudden and unexpected demise of many distinguished men.

Histologists have recognised two varieties of fatty disease of the heart. In the one form the fat, composed of oil cells, is deposited on the surface of the organ ; it then gradually encroaches on, and insinuates itself between, the muscular fibres, so as greatly to conceal, and ultimately to impoverish and waste them. In the other form, the fatty matter, composed of granules and small oil-globules, occupies and fills the sheath of what was previously muscular fibre. The one variety consists in the growth of fat upon the muscular tissue ; the other, in the degeneration of the structure itself into fatty matter. The two conditions appear to arise from different causes ; the one is the result of an accumulation, in the blood, of the elements of fat, the other is the result of decay and disintegration.*

Rokitansky has described a third perfectly distinct species of fatty degeneration, occurring almost exclusively in hypertrophied hearts, which, at the same time, exhibit the remains of earlier endocarditis and carditis. In this form, the fat does not accumulate in masses, there being no fat vesicles inclosed within fasciculi of cellular tissue, but is beaded, as it were, in minute microscopic granules, closely interlaced and embedded among the primitive fibres of the heart's muscles.†

The growth of fat upon the heart has been described by some of the earliest writers on morbid anatomy, though they appear to have been ignorant both of its nature and conse-

* Quain. *Medico-Chirurgical Transactions*, vol. xxxiii. p. 151.

† *Manual of Pathological Anatomy* (Sydenham Society), vol. iii. p. 315.

quences. The fatty degeneration of the muscular tissue has only recently attracted the notice of the British, French, and German authors. In our own country, Duncan jun., Cheyne, and Adams, were amongst the earliest observers. They have been followed by Smith, Stokes, Paget, Quain, and many others; while, on the continent, the subject has been illustrated by the labours of Laennec and Andral, of Rokitansky and Hasse, and other cultivators of pathological anatomy. It is not my purpose, however, to enter at any length into the literature or history of this formidable disease. The subject is full of pathological interest, but it has already been handled in an able manner by Dr. Quain, in whose recent essay will be found an admirable summary of our knowledge up to the present moment. All that I contemplate now, is to review some passages in the life and death of two distinguished men, who have lately passed from amongst us, with the view of assisting to solve the question,—Are there any symptoms diagnostic of fatty degeneration of the heart, by which its existence can be inferred, with anything like certainty, during life?

Dr. Chalmers died in his sixty-eighth year. It was my privilege to know him well, and to see him often, during the last fifteen years of his life. The world knows his genius, his talents, and his labours. To a mind of the highest order, and of wondrous energy, he united a hale and vigorous, a manly and robust, frame of body; and in the pursuit of the best interests of his fellow-men, he spared no exertion, either mental or physical, in carrying out the great object of his life. He was hardly ever incapacitated by infirmity, or loss of health, in prosecuting his enterprise; and from early manhood to green old age, even up to his latest hour, he toiled, and spent his energies and his strength. I mention these things to shew that the fatal disease which lurked within, which was progressive in its nature, and probably of long standing, could

neither have produced serious uneasiness, nor proclaimed its presence by any unequivocal signs. One serious, one alarming, illness, it is true, overtook him some years before his death; and though we can now look back, and somehow connect that first indication of disordered circulation with a well-grounded suspicion of commencing cardiac disease, yet his complete, his perfect recovery, and the absence ever afterwards of any manifestation of a like kind, were calculated to lull and repress all apprehension of coming danger. The attack to which I refer happened in the winter of 1834, thirteen years before he died. It was thus :—He was engaged in the early part of the day in attending a meeting of the Presbytery of Edinburgh, and had taken an interest and share in the subjects of discussion. On returning home with a friend, he was suddenly seized, on the street, with loss of power and diminished sensation over the right side, the arm and leg being chiefly affected. He felt, to use his own description, as if instantaneously a large weight of books had been placed in one of the pockets of his great coat, and so thrown him entirely to one side. He must have fallen to the ground, but his friend supported him, and had him conveyed to a neighbouring house, and, after a little, to his own home, whence I was called to see him immediately on his arrival. I found him in bed, calm, but impressed with the conviction that he was struck down by a formidable disease. His mind was quite entire; nor did it suffer in the least during the course of his illness. His speech was somewhat affected, his articulation imperfect. The muscles of the right side of the face were partially paralysed; those of the arm and leg decidedly so. Sensation over the whole of the right side was much impaired, and particularly over the thigh and leg, which he continued to beat firmly with the left hand, in the hope, as he said, of recalling the banished sensation. The face was pale, the skin cool, the pulse soft and frequent.

There was no headache or giddiness, nor any pain or uneasiness beyond what has been described. The treatment varied in nothing from that usually pursued in such cases—moderate bleeding, purging, diaphoretics, rest, quiet—in a word, the antiphlogistic plan. Under this ordeal he daily improved; sensation and motion were gradually restored, and, after a few weeks' confinement, he returned to his avocations, and engaged as heartily and laboriously as ever in his literary and professorial duties.*

Events in the church, of the deepest moment and most intense interest, by and by, thronged upon him and occupied his mind; and negotiations, in high quarters, connected therewith, pressed upon his attention year after year. He was found equal to the time. Perhaps it might be said with truth, that these matters to which I allude told upon him. He was now approaching his grand climacteric, yet he was firm and robust. With accumulating years came a disposition to obesity; and with the silver grey on the massive forehead, came also the pallid and somewhat sickly look of fading health. Yet he seldom complained; or, if indisposed, it was only by some trivial ailment arising from indigestion. He was sometimes sick at stomach, but he was never faint, nor ever swooned away. He sometimes manifested a sense of exhaustion; but even then, it was remarked, that with uncommon alacrity, he could, when occasion required, rouse himself to great mental or bodily efforts. He had no præcordial pain, or distress in breathing; no palpitation of the heart, or intermission of the pulse. He ascended heights with wonderful facility; he slept on either side, and his rest was calm and refreshing. Had any symptoms at this time called for exploration of the chest, we might perhaps have discovered,

* During the month of June following, Dr. Chalmers apprehended a renewal of these symptoms; but the threatened attack passed away, and never again returned.

by the assisted ear, that the impulse of the heart was feeble and indistinct; and that its first sound was imperfectly heard. We might, perhaps, have conjoined these signs with the soft, but not feeble pulse, the pallid countenance, the time of life, and the ready disposition to take on fat, and so have persuaded ourselves that degeneration of the muscular tissue had already made progress. But it could only have been a reasonable conjecture: there were no symptoms so unequivocal as to lead us to infer that this particular lesion was to prove the cause of death. The manner and circumstances of that event I shall now briefly relate:—

Early in May 1847, when in the enjoyment of his usual health, Dr. Chalmers repaired to London to give evidence on an interesting question before a committee of the House of Commons. He preached on three successive Sundays with all the eloquence and energy of former days; and during the week was much engaged with the business of the committee. His minute and lengthened examination, the manner in which it was conducted, and the deep, the intense interest which he felt in the whole proceedings, bear witness that even then, when within a few days of his death, he had no symptoms of serious illness. On his way homewards, he visited some near relatives in the south of England, and reached Edinburgh at the close of the month in excellent health and spirits. He attended public worship on Sunday the 30th; he met his family in the usual exercises of the day, and retired to rest at an early hour; being engaged on the following day to read to the General Assembly a report which had occupied much of his time and thoughts. On Monday the 31st, not having answered to the usual call in the morning, his chamber was entered, and he was found cold and lifeless. I saw the body before it was disturbed. It lay in the half recumbent posture; the head supported by pillows; the arms folded on the breast. The bed-clothes were scarcely disordered; and on

them rested a basin, which had received the contents of the stomach. He had been overtaken by sickness and vomiting; but at what hour it is impossible to fix. This last circumstance of vomiting, coupled with his former paralytic attack, rendered it very probable that some cerebral lesion was the cause of death.

The examination of the body was conducted by Dr. Bennett on the evening of the following day, the 1st of June—the weather at the time being unusually sultry. Dr. Bennett has furnished me with the following description:—

External appearances.—The body was fat and robust; the head large; the chest broad. Putrefaction had taken place to a considerable extent. The features were swollen, bloated, and of a purple colour. The neck and upper part of the chest were of a green colour, and emphysematous.

Head.—The integuments of the scalp were unusually thick; on dividing them, fluid blood oozed from their cut surfaces. The cranium was of great thickness and density. On raising the calvarium it was everywhere fully a quarter of an inch thick, and in some places three-eighths of an inch; it was unusually weighty. The two surfaces of the arachnoid membrane were pretty firmly united superiorly, and were lacerated on separating the brain. The angle formed superiorly where the falx turns down, was crossed on both sides, from before backwards, by firm bands of chronic lymph and fibrous tissue, some of which were nearly an inch long. A calcareous deposit, the size of a pea, was situated about the centre of the falx. The cerebral arachnoid was thickened, and perfectly opaque in the immediate neighbourhood of some of the larger meningeal vessels, presenting, on removal, a white glistening appearance; it was easily removed from the cerebral convolutions, which, superiorly, were large, and the sulci deep. The brain weighed fifty-three ounces avoirdupois, and in its structure was everywhere healthy. The choroid plexus contained

small groups of simple cysts. A large quantity of fluid blood came from the divided arteries at the base of the brain.

Chest.—Both lungs were slightly adherent at their apices by one chronic adhesion of limited extent. On the left side, the pleura at the seat of adhesion was thickened, over an extent the size of a shilling, about one-eighth of an inch. The serous surfaces and lungs were otherwise perfectly healthy. The pericardium was healthy. The heart was flabby and unusually soft. The coronary artery was loaded with calcareous deposit, much contracted, and in one place obliterated, presenting considerable resistance to the knife. The heart contained no blood; its endocardial lining was deeply stained of a reddish and purple colour; the valves were healthy. The walls of the left ventricle, towards the base, and at their thickest part, were only half an inch thick; at the apex, in one place, only one-eighth of an inch thick; the surface of the section shewed that the muscular substance had undergone the fatty degeneration. In some parts of the ventricle, half the substance was completely fatty; in other parts, nearly its whole thickness was fatty, with a thin line one-sixteenth of an inch thick of muscular substance only remaining. Even this muscular substance was of a pale and yellowish colour. The right ventricle was unusually thin, and, superiorly, was so soft, that it broke down under the finger, and could be torn like a soft pulpy substance. Everywhere the substance of the organ was soft and friable.

Abdomen.—Liver small, of a dirty olive-green colour throughout. Gall-bladder distended with yellow fluid bile. Spleen small; on section, presenting a black colour. The omentum and sub-peritoneal cellular tissue were greatly loaded with fat. The kidneys were imbedded in a surrounding mass of fat an inch thick, they were soft and flabby, of a dark mahogany colour, but in texture healthy. The stomach, internally towards the larger curvature, of a greenish hue, with

slight extravasation of blood below epithelium. Intestines were healthy.

Microscopic Examination.—The substance of the heart throughout consisted of fatty granules. The muscular fasciculi could scarcely be seen, although here and there traces of the longitudinal fibrillæ could be observed. No transverse striæ were anywhere visible.

I should mention that Dr. Bennett suggests, as the probable cause of the want of blood in the heart, that it had drained away, in its fluid and putrid state, from the divided cerebral vessels, during the examination of the contents of the cranium.

Before venturing a remark on this interesting case, I would recall to the recollection of the Society the history of another eminent individual, who was known to many of us, and whose life and death, in many respects, bore a remarkable resemblance to those now related.

Dr. Abercrombie died in his sixty-fifth year. I knew him long and well. I had the happiness of living, during many years, under his roof; and was witness, through a great part of his life-time, to his zealous professional labours, his unwearied industry, and his active benevolence. He enjoyed, during a long series of years, uninterrupted health; so that I can scarcely call to remembrance an occasion on which, for more than a few days together, he could be said to have been unfitted for professional duty, till the illness, which we well remember, filled his mind with the most serious apprehensions, in regard to his future usefulness. It was in the winter of 1841, three years before his death, that, in driving to a professional engagement, he was suddenly seized with loss of power and impaired sensation over the left side, but without the loss of consciousness or any affection of speech. He immediately returned home, and gave orders for the abstraction of blood by cupping. Dr.

Hunter, who was called to him at the time, found him under great anxiety, complaining of præcordial uneasiness, and slight headache, with frequent sighing, cold skin, and pallid countenance. The pulse was frequent and small at first, but, after a while, it subsided in frequency and rose in strength. Blood was taken both from the temple and arm to a large extent, and active purging was pursued by the patient's desire. I need not, however, pursue the details of this attack, which have been given elsewhere,* farther than to state, that it was Dr. Abercrombie's decided impression that his illness was paralysis, connected with cerebral disease, and that impaired mind and enfeebled bodily power were to be the lasting consequences. It certainly never occurred to any of his medical advisers to connect the symptoms with deranged circulation, arising from a damaged heart. He did complain, I remember well, of præcordial uneasiness—it never amounted to pain—and of something more than uneasiness in the left arm and shoulder, and at the base of the scapula; but the circulation was regular, though feeble, and the feebleness might readily have been accounted for by the active measures which he himself employed, and the scanty fare to which he subjected himself,—treatment which no long time afterwards was found to have been entirely misplaced.

Dr. Abercrombie recovered from this attack, and in the course of a few weeks was able to resume his professional duties. He continued pallid, however, and carried about with him somewhat the air of an invalid, but his mind was as active and intelligent as ever. Previous to this attack, he had been observed to have become rather corpulent and fat. He continued to improve, and his health was considered completely re-established. He never had any threatening of return of similar symptoms during the three succeeding years, nor any indication of latent disease, beyond

* Edinburgh Medical and Surgical Journal, vol. lxiii. p. 227.

what was remarked by Dr. Alison, when, in accompanying him up stairs a few days before his death, he observed that he was breathless. On Thursday, the 14th November 1844, Dr. Abercrombie was in his usual health; he engaged with his family in the devotional duties of the morning; he breakfasted with appetite, and after visiting a domestic in the family, he retired to the water-closet. He was there sufficient time to justify the suspicion that some illness had overtaken him; and, on opening the door, he was found extended on the floor in the arms of death. A few convulsive sobs were heard—and life departed.

The body was examined on the following day by Mr. Good-sir, whose account of the morbid appearances I subjoin:—

Head.—The skull-cap was thick. The crista galli, the posterior clinoid processes, and the bones of the head generally, were powerfully developed. The brain was softer than might have been expected at the time of the examination (fifty hours after death). There were no traces of old or recent effusions of blood. The internal carotid, the circle of Willis, and all the arteries of the organ were studded with much atheromatous deposit; and the internal carotids, at their last curve, were slightly dilated. The organ, was of great size, and weighed sixty-three ounces avoirdupois. The ventricles were capacious, without an increased amount of serum, which appeared to correspond to the great size of the cavities.

Heart.—The pericardium contained a large clot of blood, enclosing the heart as a mould. On the posterior surface of the left ventricle, two-thirds from its base, and about an inch and a half from the septum, there was a fissure or rent, a quarter of an inch long, in the direction of the fibres of the ventricle, with ragged and ecchymotic edges. Towards this fissure a considerable branch of the left coronary artery passed but did not enter into it. In the fissure the ruptured

orifice of a vein was visible, and a bristle introduced into it passed on towards the base of the ventricle, and appeared on the cut surface of the posterior wall of the ventricle, made on opening the heart. In the neighbourhood of the rupture two irregular ecchymotic spots were situated, through which passed branches of the coronary artery. These spots consisted of effused blood, but their connection with ruptured vessels could not be distinctly made out. The serous membrane over them was quite entire. Both coronary arteries were much dilated as they passed off from the aorta. Throughout their course they contained in their walls much atheromatous matter, but were not ossified. The aorta and its semilunar valves also contained a considerable amount of the same deposit, but the former was not enlarged. The heart was slightly enlarged and dilated, rather loaded with fat, and remarkably soft, as if from interrupted nutrition. All the cavities of the heart were found empty. Extensive adhesions of the right pulmonary and costal pleuræ. The other viscera were healthy.

When the case of Dr. Abercrombie was originally brought under the notice of the profession, immediately after his death, comparatively little attention had been given to the peculiar lesion which terminated his life so suddenly and so unexpectedly; indeed, fatty degeneration, as now understood, had scarcely been recognised, though, on the occasion referred to, Mr. Goodsir distinctly announced his opinion, that the remarkably soft and flabby state of the heart, as if from interrupted nutrition, was owing to that morbid change. We are now better informed in regard to the history of the atheromatous deposits in the blood vessels,—which are only changes contemporaneous with the more serious lesion,—and with the rupture of the muscular fibres, which is now recognised as one of the most common terminations of fatty heart. Mr. Goodsir has kindly communicated to me the result of a

microscopic examination made subsequently to the drawing up of his report of the inspection of the body, from which it appears that the muscular fibres of the ruptured portion of the ventricle (alone examined) had undergone the fatty degeneration, being here and there interspersed with fatty granules, generally in transverse rows, and that there were masses of fat cells or globules at intervals, while some of the fibres were nearly empty.

Dr. Chalmers and Dr. Abercrombie were both of the age when the tendency to fatty degeneration has been shewn to be most prevalent. Among eighty-three cases collected by Dr. Quain, death occurred in fourteen between the ages of 50 and 60 ; in eighteen, between 60 and 70 ; and in fourteen, it occurred between 70 and 80. The eminent men referred to had also indicated a proclivity to the disease by a constitutional tendency to take on fat, and in doing so, to assume the pallid and sickly look of diseased nutrition,—facts which have been remarked by many observers. They terminated their lives in the manner most common to those who suffer from it, the one by rupture of the heart, the other in syncope. Of Dr. Quain's eighty-three cases, twenty-eight died by the former, and twenty-six in the latter mode.

It has been remarked by Mr. Paget, that the principal character which all the cases of fatty degeneration of the heart seem to present is, that they who labour under this disease are fit enough for all the ordinary events of calm and quiet life, but are wholly unable to resist the storm of a sickness, an accident, or an operation.* There may be much general

* I remember to have seen, with the late Dr. Richard Mackenzie, a respectable citizen, approaching the age of seventy-five, who had recently submitted to be cut for stone, and had a large calculus, weighing nearly two ounces, extracted by Mr. Syme ; and who, at the period I saw him, was labouring under an attack of pneumonia, from which he perfectly recovered ; while, during many previous years, he had manifested the signs of fatty degeneration of the heart, so far as these can be diagnosed during life, including the well-marked arcus senilis.

truth in the statement ; and in the cases just recorded, it is worthy of remark that, up to the hour of death, the distinguished individuals were actively engaged in the labours of two most arduous and onerous professions, and were overtaken, as in other recorded instances of this particular lesion, the one, it is believed, by the act of vomiting, the other, by an effort at stool.

I have purposely selected these two cases, because their previous history was well known ; the every-day life of the individuals for weeks, and months, and years, was noted, before the final event arrived : the clinical history of the disease is short, but it is complete. "It is not the manner of death that it is profitable to understand in this disease (says Dr. Latham, speaking of a closely allied affection of the heart), but the manner of life ; how life and the great organ of life are affected by it, at its beginning, and during its progress, and what indications they shew, enabling us to minister to it remedially." "The two cases which I have related (the context is still applicable to my present object) surely do not contain what we are in search of, in respect of the particular disease ; but they contain, nevertheless, matter for reflection. They convey, not a clear understanding, but some conceivable notion, how life itself, and the very attributes and conditions of life, in different organs, may interfere to prevent that perfect knowledge of diseases which we seek from their symptoms. They shew a disease so tardy and so gradual, as to convey no perception of what it is to the blood-vessels or to the nerves, and to awaken no sympathy in them, and call forth no signs from them of its existence. Its whole clinical history is comprised in its fatal event." *

Dr. Quain, however, in referring to the fact that fatty degeneration of the heart is said to be frequently found after death, where its existence had not been suspected during life,

* Lectures on Diseases of the Heart, vol. ii. p. 160.

has expressed the opinion that such cases would not often be met with, if a full inquiry could be made into their symptoms ; and proceeds to remark :—" I feel the truth of this observation, more particularly in those cases which occur in the progress of advancing life, when, whilst the system generally keeps up its powers tolerably well, the heart suffers from some local cause, such as diseased coronary vessels. In those cases the balance between the system and heart is lost, and phenomena as clear and as pointed as any that can indicate the nature and seat of disease are developed."*

What reply do the two cases which have now been related make to this unqualified statement ? The subjects of these cases had made considerable progress in advancing life. They expired in a sudden and unexpected manner ; and examination after death disclosed the hidden cause in the peculiar lesion of the heart, accompanied by the morbid condition of its vessels, to which Dr. Quain refers ; yet, during life, neither of them exhibited any of those clear and pointed phenomena to which he alludes. The testimony of Dr. Abercrombie is peculiarly valuable in relation to this matter : himself a careful and long-experienced observer of the phenomena of disease, and anxiously alive to all manifestations of it in his own person, he never acknowledged, as I firmly believe he never felt, any of those symptoms of degeneration of the heart indicated by Dr. Quain—symptoms which, I apprehend, will be found to be more intimately connected with those other morbid conditions and lesions of the organ which usually co-exist with fatty degeneration. Let us shortly inquire what are those signs, general and physical, which are said to denote this degeneration of the heart, with the view of discovering any modification of their features in the history of the cases now under consideration.

First in order have been mentioned symptoms of cerebral

* *Medico-Chirurgical Transactions*, vol. xxxiii. p. 160.

congestion, such as giddiness, drowsiness, coma. No symptoms of this kind were at any time witnessed ; and though manifestations of interrupted cerebral circulation might have been expected to arise from the want of muscular power in the heart to propel the blood brought by the veins from the head, yet never, if we except the paralytic attack which both Dr. Abercrombie and Dr. Chalmers experienced long before death, was there any evidence of cerebral congestion. It may, however, be a subject of interesting inquiry, how far these paralytic seizures, which we have noticed, were connected with early changes in the muscular fibres of the heart ; though, on the presumption that they stood in the relation of cause and effect, it is difficult to account for the exemption from future attacks which they both experienced, the one during the three, the other during the thirteen, remaining years of life.

The occasional occurrence of apoplexy and palsy, in connection with fatty degeneration of the heart, may, more readily, be traced to other morbid conditions of the organ, which co-exist with that particular degeneration, than to the degeneration itself, such as hypertrophy of the left, and dilatation of the right, ventricle ; more especially, when these again are associated with disease of the blood-vessels of the brain.

Faintness and syncope are next recorded as symptomatic of fatty degeneration of the heart ; but these were never observed in either of the cases now related ; though there is reason to believe, in the absence of other causes to account for death, that a fatal syncope at last overtook the distinguished individual, the subject of the first narrative. But syncope is not an uncommon symptom of other affections of the heart ; and may naturally be expected to arise where the left chambers of the organ are deficient in muscular power in transmitting the blood to the brain, whatever may be the immediate cause of this loss of power, whether the growth of fat upon the organ,

the degeneration of its muscular tissue, or the dilatation and thinning of its walls from other morbid changes. It has been observed that the peculiar lesion now under consideration is at times confined to one ventricle, and at other times to its fellow, and that often both are equally affected. May not the prevalence of head symptoms at one time, and of syncope and faintness at another, be accounted for by the part of the organ implicated? When the right ventricle is softened and wasted, comatose symptoms may be looked for, in consequence of the interruption to the free discharge of blood from the brain: when the left ventricle suffers, then syncope may be expected, from the want of full and free circulation within the head: while, when the chambers of both sides participate equally in the degeneration, the circulation may be feeble and slow, but it will not be liable to those disturbances which are likely to arise from the balance of power being lost between the two sides of the heart.

Shortness of breathing is another symptom frequently observed in those labouring under fatty heart; but it was not present in either of the cases now recorded. I have already remarked, that Dr. Chalmers continued to the last to ascend heights with wonderful facility; and Dr. Hunter informs me, on the best authority, that Dr. Abercrombie, during the autumn which preceded his death, was in the habit of ascending the hills in the neighbourhood of his summer residence, without experiencing any difficulty of breathing; and all, who were accustomed to meet him professionally, must remember the quick and alert manner in which he mounted to the bed-room floor, in cases of sickness. It has, however, been noticed, that an experienced observer had, on one occasion, and that a few days before his death, remarked that, in ascending the steps of his own house, Dr. Abercrombie was breathless. It was the first and the only remark of the kind; and perhaps it is right to mention, that it was made at a time when Dr. Aber-

crombie was recovering from a bronchial attack which had confined him for a day or two to the house. But we must expect dyspnœa in cases of softened and degenerated hearts ; it is not, however, a constant symptom, and, even when present, may be found to be connected with other co-existing hindrances to the free circulation through the lungs.

Præcordial pain is another of the characteristic symptoms of this disease of the heart ; and certainly has been acknowledged by many who have fallen victims to it. But it is a remarkable fact, that in the case both of Dr. Abercrombie and of Dr. Chalmers it was entirely wanting. The former was sensitively alive to every morbid feeling ; the latter was not indifferent to suffering, but, with the exception of the præcordial uneasiness which for several days affected Dr. Abercrombie during the illness which we have referred to as occurring three years before his death, he was never known to complain of pain, nor had he at any time the least suspicion that he was the subject of cardiac disease ; while, in the instance of Dr. Chalmers, I cannot call to recollection the smallest complaint of pain, anxiety, or distress in the region of the heart. Both had the coronary vessels extensively diseased ; but neither suffered the symptoms of angina pectoris, unless it were, perhaps, in the moments preceding dissolution.

Functional derangement of the liver and chylopoietic organs has been noticed as a constant attendant on this form of heart disease. Hasse informs us that, so far from being a merely local morbid condition, as some pathologists believe, it is the result of various affections in other organs ; and, though not manifested by any specific local symptoms, its presence may, nevertheless, be inferred with tolerable certainty from collective symptoms referable to other parts of the body. Thus he mentions that, in functional disturbance of the larger organs of secretion, and especially of those engaged in the elaboration of venous blood, we meet with fatty encumbrance of the

heart in its second stage ; the anormal condition being then conjoined with other changes, all dependent more or less directly upon hepatic or pulmonary disease, or, at any rate, indicative of venous plethora.* Various morbid conditions of the liver are noticed among the collected cases of Dr. Quain ; and in the instance of Dr. Chalmers its structure was also found diseased. It was the organ which was most readily disturbed, especially in his later years, being quickly influenced by errors in diet, or by stimulating beverages ; hence he was led to abandon the use of wine and fermented liquors, and to confine himself entirely to water. I may take the liberty of recording an interesting fact in his history, which he communicated to me, and which bears upon our present subject, namely, that the continued daily use, for a few weeks at a time, of a mixture of spirits and water, with sugar, was invariably attended with a manifest increase of fat, which subsided on the disuse of the stimulating drink ;—a fact which, taken in connection with the circumstance of fatty heart being frequently found in those addicted to the free use of spirits, may lead to the suggestion of prophylactic measures in the case of those who appear to labour under that form of disease.

The state of the pulse cannot be depended upon as a diagnostic mark of fatty heart. In some cases it has been found irregular, in some weak, in others slow ; but it is subject to much variety, according to the complications of cardiac disease which concur with this degeneration of the muscular fibre. In both Dr. Abercrombie and Dr. Chalmers, the natural pulse was soft and weak ; it was never irregular, nor at any time of such a character as to raise any apprehension of organic disease. Hence, in neither case was auscultation employed as a means of discovering the physical signs which are said to belong to fatty degeneration. Admitting, however, the discovery of a feeble impulse, a feeble first sound, and extended

* Pathological Anatomy, p. 169.

præcordial dulness,—signs which the state of the heart after death might have led us to infer existed during life,—still these, when combined with any general signs recognised during a long course of years, could not have led to a distinct and satisfactory diagnosis ; while I am willing to acknowledge that, taken in connection with the age of the individuals, their pallid complexion, and tendency to obesity, they give room for the conjecture, that the great organ of life in both was yielding, through the progress of time, to those organic changes, which mark the decay of its structure, and foretell the not distant cessation of its long-continued functions.

VII.

ON ERYSIPELAS.

(*Read before the Medico-Chirurgical Society of Edinburgh, July 7, 1852.*)

I. IN a remarkably well-aired and healthy locality in the New Town of Edinburgh, which it is unnecessary more fully to describe, there stands a double row of shops, the upper being on a level with the foot-pavement in front, the under occupying the area or sunk floor of the building. These shops were chiefly tenanted, at the time to which this notice refers, by several thriving tradesmen, whose occupation consisted in the sale of a great variety of animal and vegetable substances as articles of food. The debris of the stock in trade of these different shopmen was too often left to accumulate in, or around, their several offices, and the atmosphere of the vicinity was generally so deeply tainted with the noxious effluvia, arising from putrid animal and vegetable substances, as to call for the exercise of some sanitary regulation, or, more properly, of some stringent police application, to remove the offensive material, which, especially during the summer months, constituted a public nuisance.

In the winter of 1850-51, the floor immediately above this double tier of shops was occupied as a dwelling-house by a family from the north of Scotland, consisting of the head of the house—a landed proprietor, his wife, and two children of the ages of twelve and three years, together with one male and three female servants. During the early part of the winter,

and, indeed, throughout their occupation of the premises, the family suffered much from ill-health; the children became pallid and cachectic; the father dyspeptic and nervous to a high degree; while the mother suffered from severe headache, and almost constant diarrhoea. Accustomed, as they had been, to health promoted by their previous residence in one of the most salubrious counties in Scotland, the family had no difficulty in tracing to the impure and vitiated air, with which they were now surrounded, the origin of their different ailments, having had frequent occasion to complain of the direct effects of the noxious exhalations entering the windows, or penetrating the flooring of their dwelling. Towards the close of winter the father and mother, with the eldest boy, left home for a time, and thus escaped the contamination to which they had been exposed. Early in the ensuing spring the youngest child had become more than usually ailing, and in the beginning of March the manservant, generally remarkably healthy and robust, began to complain of more serious indisposition. After some days of excessive languor and sickness, he was seized with violent and oppressive headache and vomiting, succeeded by the characteristic features of erysipelas, which, appearing first on the right ear, rapidly spread over the cheek and neck of the same side, and accompanied by much febrile disturbance, quickly diffused itself over the whole face and head. It was at this stage that I was requested to see him; and finding the pulse firm and frequent, the headache unabated, and considerable delirium and occasional somnolency prevailing, I ordered the abstraction of blood by leeches to the temples, the administration of small and frequently-repeated doses of saline diaphoretics with antimonials, a mercurial purgative, and the regulation of the bowels afterwards, by means of rhubarb and the carbonate of potash. The tongue continued loaded with a creamy fur for many days, and the urine, scanty in quantity, deposited largely the lithates and lithic acid for a much longer time than I had anticipated.

The convalescence was slow and unsatisfactory ; so that four or five weeks elapsed before the patient was able to resume his duties.

The dwelling-house which had been the origin of so much sickness was now abandoned, and in the purer air, and more elevated situation of another street, the family by and by completely recovered from the injurious consequences of the foul air they had so long been allowed to breathe. It was not, however, before another of their number had passed through an attack similar to that just described, that they were allowed to enjoy this immunity. The nurse, a fine healthy woman, approaching the age of fifty, was, within a few days after the removal to the new residence, seized with symptoms of acute illness, commencing with violent headache, flushed face, severe pain in the lumbar region, great febrile excitement, and high delirium. With these symptoms the erysipelatous rash appeared on the right ear, and quickly spread over the same side of the face in the course of the night. The aspect of the case, at this early stage, indicated a severe and lengthened illness ; indeed, I do not remember to have seen, for a long time, one which, from the constitutional disturbance and local symptoms, threatened a more unfavourable issue. Having, at this time, become acquainted with the treatment of erysipelas by the muriated tincture of iron, recommended by Mr. Hamilton Bell, I felt disposed to give a trial to the remedy ; but, seeing that the case was of a severe character, I hesitated placing reliance on iron alone, and directed the abstraction of twelve ounces of blood from the nape of the neck by cupping, and the administration of a full dose of castor-oil. These means being premised, and having observed that the urine passed in the course of the day—the second of the illness—was of a deep red colour, and scanty in quantity, that it was loaded with biliary matter, and presented under the microscope numerous blood corpuscles, and many crystals of

the triple phosphate, I ordered the muriated tincture in the manner recommended by Mr. Bell, in doses of twenty drops every two hours, continued through the night and day. At the end of twenty-four hours there was a marked remission in all the more prominent symptoms; the erysipelas was arrested; the headache subdued; the delirium overcome; the pulse reduced in frequency and force; the skin covered with a gentle moisture, and bereft of its burning heat; the pain in the back removed; and the urine rendered more copious, and freed from much of the blood and bile of the previous day. The remedy was continued for twenty-four hours longer; and without experiencing any unpleasant effects, the patient was convalescent at the end of the fourth day, presenting a striking contrast to the case of her fellow-servant, who, with symptoms of a less severe character, suffered from his illness during as many weeks. In both cases the throat was red and swollen from the commencement of the attack; but neither the pharynx nor larynx were affected in the manner which is sometimes observed in severe cases of erysipelas, from the infiltration of serum into the sub-mucous tissues.

It adds greatly to the interest and importance of the history now related to learn, that the wife of one of the shopmen referred to, who was in the daily habit of attending her husband's place of business, and assisting him in conducting it, was, during the progress of the first of these cases of erysipelas, carried home in the pains of child-birth, and that she died on the fourth day after delivery, with obscure indications of puerperal peritonitis, and with rapid sinking.

II. The ancient village of the Water of Leith, well known to many as the seat of cholera, fever, and other epidemic diseases, was at the commencement of last winter visited by erysipelas. In the second week of November, and during the prevalence of cold and wet weather, four cases presented

themselves nearly simultaneously, in the narrow street called the Dam-side, lying between the river on the south and the steep bank on the north, at the foot of which runs the water of the mill-lead. Two of the cases lay in the same house, the sufferers being sisters ; but, though affected at the same time, and now living under the same roof, they had, apparently, caught the disease from different sources, having resided apart from each other for some time—the one occupying their present dwelling, the other residing in the family of a gentleman in a distant part of the town, and having no communication with her sister or her sister's household. The third case* was that of a man, living at the opposite end of the lane, and with whom no communication existed, either on the part of the sisters referred to, or the subject of the fourth case, to which I have now more particularly to refer :—

Mr. B., a cabinetmaker, aged 31, of stout build, and full habit of body, long in the enjoyment of good health, and active and industrious as a workman, though not of strictly temperate habits, had been five days under the care of Dr. Sibbald when I was called to see him early on the ninth day of the eruption of erysipelas. His face and head were at this time greatly swollen, and his features much distorted. He lay in a drowsy state, with muttering delirium, varied by fits of great excitement, which required the assistance of his male friends to control. His eyeballs were red and injected ; and his face and forehead covered with vesications. His pulse was rapid, firm, and full ; his tongue was parched and brown ; his skin was hot and dry ; and he passed his evacuations unconsciously in bed. The eruption first manifested itself on the left ear ; and from the commencement the patient had complained much of sore throat. The stools were dark and offensive, and the urine scanty and high-coloured, containing lithic acid and a small

* This patient was attended by Mr. J. T. Alexander, who informs me that three other cases occurred, in succession, in the same household.

quantity of blood. The case had resisted the treatment pursued by Dr. Sibbald, consisting of purgatives, nauseating doses of antimonials, and saline diaphoretics.

Though it was late in the disease, yet the pulse was firm and full, and the symptoms generally not contra-indicating it, I recommended eight ounces of blood to be taken from the nape of the neck, after which the administration of the muriated tincture of iron was commenced, and pursued as in the former case. On the following day we found him decidedly improved: he spoke and answered questions intelligently; his pulse had fallen in number and force; his skin was soft and moist; his tongue improved at the tip and edge; and there was a manifest diminution of the swelling of the face. The iron was continued till the close of the fourth day from the commencement of its employment, in the doses in which it was first prescribed, and afterwards administered at longer intervals. It produced no unpleasant effect, but on the contrary, all the symptoms gradually abated under its use. The urine, particularly, became copious and clear, and the skin soft and moist. Convalescence set in, and was only interrupted by the formation of matter under the scalp, and followed by a copious discharge, which continued for many days to irritate and exhaust him.

It is worthy of remark that a brother of this patient, residing in a distant part of the country, and with whom he had maintained no intercourse for years, was labouring under an attack of erysipelas at the same period as that now related. It also deserves notice that, during this time, a woman residing in his immediate neighbourhood, indeed, in the same lane, had died in childbed,—the death being attributed to phlegmasia dolens.

III. The month of December 1851 was not particularly noted for the prevalence of erysipelas; and the southern districts of the city, so far as could be ascertained, were not

visited by any epidemic fever beyond what is usual at that season of the year: puerperal fever was certainly not observed. On the 31st day of that month I was requested, by a practitioner in town of great experience, to visit with him a lady, aged twenty-eight, who had been confined, under his care, on the evening of the 24th, of her second child. The labour had been easy, and no manual interference had been required. Her recovery appeared, in all respects, to be going on well, when on the 27th rigors took place; and from that time, until within a few hours of her death, at mid-day of the 31st, the chief symptoms were alternate chills and hot fits, with excessive perspiration, great mental anxiety, and continued watchfulness. The pulse ranged from 96 to 110: there was an abundant lacteal secretion, rather sparing lochia, of unhealthy character, but no abdominal swelling or pain. Until within four hours of her death—the period when I was called to see her—no apprehension of danger was entertained. She had then, however, become rapidly worse; the countenance had assumed a leaden colour, and the lips a livid hue; the pulse became feeble, rapid, and intermitting; she was bathed in profuse and sickly perspiration, and vomited much. She became delirious; had frequent twitchings of the muscles of the face, followed by convulsions of an epileptic character, and died comatose. The whole aspect and character of the case conveyed to my mind the impression, that the patient was labouring under oppressed brain, the consequence of a morbid poison having entered the circulation, such as is seen in obscure cases of puerperal fever or uterine phlebitis. My first inquiry was in regard to the prevalence of erysipelas in the neighbourhood, or the circumstance of the practitioner, in attendance on the delivery, having visited any case of the kind, or any case of puerperal fever, scarlatina, or other contagious disease. I received a satisfactory reply in the negative, and relinquished any further investigation into the probable

cause of the illness, when on the evening of the day of the decease a circumstance was revealed which threw light on its hidden nature. An urgent message was then delivered, requesting the attendance of the professional attendant on the father of the deceased, an elderly gentleman, living on the floor below his daughter's house; and on visiting him he found that his patient, who had been under his care for upwards of a year with hemiplegia, was now suffering from erysipelas, and that the paralysed limb, on which was a large ulcer, was covered with a dark-coloured rash. No distinct account could be obtained of the precise period when the erysipelas appeared; but redness was observed at least four days previously, and at that time a shivering had taken place. This was, it will be observed, three days after his daughter's confinement, and on the same day on which she was seized with rigors. She had dressed the ulcer on the day she was taken in labour, as she had done regularly for some time before. The father recovered from this attack of erysipelas. No farther light was thrown on the daughter's death by examination of the body. This is perhaps less to be wondered at, seeing that numerous dissections, conducted by the most diligent and impartial inquirers, have done little to elucidate the pathology of such diseases. We have, perhaps, been led too much by our firm faith in the doctrines of solidism, and have held too lightly those of the humoral pathology. When careful microscopical and chemical examination of the diseased fluids shall have been conducted we may then be prepared with a rational explanation of the serous, and purulent, and sero-purulent effusions, found in the cavity of the abdomen, in that of the thorax, in the ventricles of the brain, in the blood-vessels, and in the joints of those who have died of puerperal fever, and find, perhaps, that these, and such like appearances, are not the products

of inflammation, commonly so called, but the results of chemical changes in the blood itself.

The narrative now closed appears to possess some points of interest as regards the etiology of erysipelas, on which we may venture a few remarks.

The first series of cases, those, namely, in the New Town, illustrate the connection of the disease with foul or vitiated air, and shew how powerful must have been the influence of this cause, even under circumstances calculated to deprive it somewhat of its virulence ; for we cannot doubt that, had the materials which operated so effectively in a well-aired and healthy part of the New Town, been called into exercise in some of the more densely populated and confined districts of the older part of the city, a much more extensive and potent malaria must have resulted. This is a question of grave importance to all who are interested in sanitary regulations, and especially to those of our own profession. "Of idiopathic erysipelas (says the learned author of the '*Inquiries on Constitutional Irritation*,') the causes are referred to sudden changes of temperature, a humid soil and atmosphere,—of which particular conditions, at certain periods of the year, render the disease more frequent. Especially also, an unchanged, and, therefore, as well as from other causes, a polluted atmosphere ; such as the ill-ventilated apartments of the poor, and even of many old parochial and eleemosynary institutions, manufactories in crowded cities, narrow alleys, and underground chambers, where running sores, and other uncleanlinesses, additionally contaminate the stagnant air." In the history now related there was no unchanged and stagnant, and, therefore, polluted atmosphere ; but there was a changing, and still polluted atmosphere ; for no one who is acquainted with the locality in question can, for a moment, doubt that it possesses advantages in point of ventilation so enviable as only to demonstrate how great must have been

the contamination they were called to overcome. It is a curious feature in the history of this polluted atmosphere, that it should so speedily, and so generally, have affected those who came under its baneful influence fresh from the salubrious air of the country, and have spared, apparently, the many who had long been accustomed to brave its dangers, till on one striking occasion it manifested its power in the trying and perilous hour of childbirth.

The second series of cases—those in the Water of Leith—illustrate the influence of atmospheric and telluric causes in the production of erysipelas; for it is, I apprehend, not through any contagious principle, that it affects so many at one time, among whom no intercourse can be traced. Among the five cases alluded to, there was one instance of two sisters suffering at the same time; and another of two brothers simultaneously labouring under the disease, while, in the former, communication by contagion was most improbable, and in the latter, impossible. We are, therefore, in such cases shut up to the conclusion, that an epidemic constitution was in operation, aided by predispositions derived both from personal and family taints.

I had lately an opportunity of seeing this marked family diathesis exemplified in a case which I visited with Dr. Burn. The patient was the mother of the family, and at that time suffering from a severe attack of erysipelas of the head and face: it proved fatal by coma on the eleventh day. A daughter was at the same time recovering from the disease; and some months afterwards had another attack, from which she also recovered; and subsequently a sister was similarly affected. Still, it cannot be denied that erysipelas may be communicated by contagion; the experience of Drs. Wells, Stevenson, Gibson, Mr. Arnott, and others, appears to be conclusive on this point; and the examples furnished by Drs. Watson and Elliotson admit of no other explanation.

The third history, taken in conjunction with the lying-in cases of the two former, appears to illustrate the association or connection of erysipelas with those obscure and rapidly fatal examples of uterine phlebitis, or puerperal fever, with which the records of midwifery abound. The first instance, that, namely, of the shopman's wife in the New Town, seems to illustrate the connection of such cases with one of the ordinary causes of erysipelas—the agency of foul or vitiated air, arising from animal and vegetable matter in a state of decay or decomposition; the second, that of the woman in the Water of Leith, their occasional dependence on, or connection with, an epidemic constitution, arising from atmospheric causes; and the third, or last history given, may, perhaps, serve to illustrate the doctrine of contagion as the link connecting the two diseases. Many will at once account for the fatal illness in that case, by the contagious principle being carried directly from father to daughter; but others will doubt this ready explanation, and ascribe it to a cause acting simultaneously on both—the puerperal condition of the one, and the ulcerated leg of the other, affording a predisposition for its operation. It is worthy of remark, that the rigors of both took place on the same day, and that the period which brought the erysipelas of the father to its full height witnessed the fatal termination of the puerperal malady of the daughter. It would not be unphilosophical, I apprehend, to conclude, that a common poison deteriorated the blood of both; and that it exerted its blighting influence on each, irrespective of any direct transmission from one to the other. This view, of course, leads to the conclusion, that the poison was absorbed during the last weeks of pregnancy, and that its operation was not confined to the period of delivery. Denman has remarked, that there are not wanting instances in which puerperal fever has been evidently forming before delivery, or during labour. Joseph Clark informs us, that he saw reason

to date the commencement of several cases from before delivery, and refers to two cases in which the speed of termination of life after labour, and the appearances on dissection, evidently led to this conclusion ; and Hey refers to two cases in which evident symptoms appeared previous to delivery, one was fatal.* Such a view, if found to be correct, would tend to modify the notion so generally entertained, that the cases of puerperal fever occurring in succession to the same practitioner, are instances of direct inoculation,—the morbid matter being brought into contact by the hand of the accoucheur, with the uterine fluids of the mother. In the case before us, had the attending practitioner dressed the ulcerated leg of the father before being called to the bed-side of the daughter, no question would ever have arisen in regard to the communication of the fatal illness. That the two patients imbibed the morbid poison simultaneously, or nearly at the same time, and from the same source, is an impression which it would be difficult to remove from my mind.

Before concluding, I beg to offer a few remarks in regard to treatment.

The remedies for erysipelas are as various as the forms and features of the disease ; and the judicious and skilful physician will select those which occur to him as best suited to the prevailing epidemic character, and the habit and constitution of his patient. The disease, at one time, partakes of a sthenic, at another, of an asthenic character ; it presents itself in one form among the luxurious and over-fed of the upper classes, and in another, among the half-starved inhabitants of the lanes and closes of large towns. Bleeding may be extolled by one class of practitioners, and wine and bark by another,—and both on perfectly legitimate grounds ; but no one remedy, or set of remedies, will be found equally available at all times, and in all places. The disease, in many instances,

* See Craigie's Practice of Physic, vol. ii. p. 231.

will run its course ; and the office of the physician should be, not so much to attempt to cut it short, as to guide and regulate nature in conducting it to a favourable termination.

Erysipelas is a blood disease ; and, though generally considered a specific inflammation, is not to be cured by antiphlogistic means. Bloodletting is, no doubt, frequently admissible, and often beneficial. It is not, however, I apprehend, so much by diminishing the force and frequency of the circulation, that it produces its beneficial effects, as by relieving the system, and particularly the brain and nervous system, from the full weight of the poison which has contaminated the blood, and thus restoring the powers of life, and enabling the depurating organs and emunctories to act and eliminate the offending matter. It is in this manner, I believe, that bloodletting is found useful in other cases of disease,—as, for instance, in small-pox, in scarlatina, and in rheumatic fever,—in all of which we must have noticed many examples of the remarkable effects of a well-timed and judicious loss of blood, in facilitating and promoting the action of other remedies, and so conducting the disease to a happy issue. The case of Mr. B., just related, shews that, even at an advanced stage of erysipelas, bloodletting may be employed with advantage.

Emetics are often useful at the onset of the disease, and purgatives throughout its course. In the early stage, mercurial and saline laxatives are required by the state of the stomach and liver ; and in the more advanced stages, the oppressed circulation in the head demands their employment, especially when the tendency to coma cannot be obviated by bloodletting. Both remedies, however, require to be used with caution and judgment. “The truth is (says Mr. Travers), that a hypercatharsis of a very short duration, or the loss of a few ounces of blood, has often proved fatal in an erysipelas ; and the disease is not unfrequently terminated on a sudden, or the patient narrowly saved from sinking by such volatiles and

cordials as could be got down." Such an experience as this is well calculated to recommend and enforce the practice of treating the disease by wine and brandy, ammonia and bark, and other stimulants, a plan which has its advocates among the best observers and most skilful physicians of the day. Dr. Williams gives wine in all cases, from the very beginning. Many trust entirely to quinine, and uphold the reputation which bark acquired under the prescription of the Fordycees, and Heberdens, and Wells', of a former day. What can be more satisfactory, for instance, than the following case, given by the last-named writer, who is justly entitled to the credit of being one of the most original observers of disease in this country?—"Mrs. Hunter, a large woman, of a florid complexion, with a constitution vigorous from nature, and unbroken by intemperance or disease. Though fifty-one years of age, she menstruated as regularly, with respect both to periods and quantity, as at any former time of her life. In short, she was altogether such a person as would have been deemed fit to bear large evacuations by those who attempt to cure erysipelas through means of them. I saw her a few hours after her face began to swell, and immediately prescribed for her the Peruvian bark. No other means of relief in the way of medicine were employed throughout the disease, except that from the second day linen rags, moistened with brandy, were kept constantly applied to the parts affected. Under this treatment, the disease gradually subsided, and on the fourth day it entirely disappeared."*

It is not my intention, however, to discuss the merits of opposite modes of cure, or to enlarge on the circumstances which ought to give a preference to one above another. I shall limit these remarks to a notice of the remedy which has recently been recommended to the profession by Mr.

* Transactions of a Society for the improvement of Medical and Chirurgical Knowledge, vol. ii. p. 226.

Bell. Besides the two cases related in the foregoing histories, I have employed the muriated tincture of iron on several other occasions ; and, in all, with marked benefit and success. In the case of a lady, whom I saw lately with Dr. Taylor, it was administered on the fourth or fifth day, when the swelling of the face was great, the fever high, the tongue loaded, the urine scanty and high-coloured, together with much restless anxiety, severe headache, and tendency to somnolence. Its exhibition was quickly accompanied by a remission of all the symptoms, particularly by diminution of headache, by gentle perspiration, increased flow of urine, and reduction of fever. On the occasion of a relapse, the patient was so satisfied with the benefit derived from the remedy, that she begged that the administration of it might be resumed. So, in the case of another lady, seen within the last few weeks, its curative powers were so manifest to herself, that, though in considerable danger during two previous attacks of the disease, she hesitated not to have recourse to the remedy before summoning her medical attendant. So, also, in the case of an elderly lady, recently seen with Mr. Syme, on the occasion of the thirty-first attack of erysipelas in the face, the exhibition of the iron for the first time was so beneficial, that she intimated her fixed resolution to resume its use on the occurrence of any future attack of her persevering enemy, in preference to any plan from which a long and painful experience had taught her to expect benefit. The last case in which I have witnessed its efficacy was that of a female servant, under the care of Dr. Warburton Begbie. She was a woman of stout habit of body, and healthy appearance, of the age of forty-five, who, after exposure to cold and fatigue, had a second attack of erysipelas in the head and face, with great swelling and redness, accompanied by severe headache, preceded by rigors, and followed by high fever, hot dry skin, foul tongue, and quick pulse, and altogether presenting the appearance of the commencement of a

severe attack. She was seen on the second day of her illness, and, after the exhibition of an active purgative, was placed under the use of the muriated tincture of iron, in doses of twenty drops every third hour. On the following day she was considerably relieved, the fever was diminished, and the swelling reduced. She continued the iron, without any other remedy, for two more days, when the swelling subsided and convalescence commenced. As in other cases, the patient expressed herself sensible of the benefit derived from the remedy, and contrasted favourably the plan of treatment with that adopted on a former occasion. It appeared to act, as in other examples, particularly on the skin and on the kidney.

The employment of the muriated tincture of iron is not contraindicated by the presence of fever, or by symptoms of derangement of the digestive functions. I have seen it useful in scarlatina, when the skin was hot and dry, the pulse rapid, and the urine scanty and bloody. The effect appeared to be to lower the pulse, to relax the skin, and to increase the urinary discharge, while it diminished the blood in the urine. In chronic hematuria, I have noticed the same effects from the medicine; and in one instance particularly, where well-marked anæmia had resulted from the long continuance of the hæmorrhage, the persistent use of the iron gradually arrested the discharge of blood, restored colour to the exsanguined countenance, and, for the first time for many months, induced a soft and perspirable state of skin.

The state of the urinary secretion, during the febrile stage of erysipelas, still requires careful investigation. Many have remarked that this secretion, as well as that of the bile, are highly morbid; and that their improvement in this respect is sometimes critical of the decline of the disease; but there are still wanting-carefully instituted experiments in regard to the daily characters of the urine in this, as in many other diseases. Becquerel has made an examination of the secretion passed in

the morning, in five cases of erysipelas, from which it appears, that it invariably presented the characters of febrile urine, very well marked, being diminished in quantity, of a very rich colour, and high density. In four of the five cases there were almost constantly deposits of lithic acid, and these frequently of a red colour. In two of the five a small quantity of albumen was detected.* I have lately examined, from time to time, the urine of six patients labouring under severe erysipelas of the face and head, and have found a general correspondence in the results with those quoted; particularly as regards quantity, density, and colour. In five of the six, the lithates and lithic acid were largely deposited; in one, and that the most severe, crystals of the triple phosphate were discovered in large numbers.† In this last, also, numerous blood corpuscles were found; and in two others they presented themselves in a less copious form. In one other case albumen was present; in two, neither blood nor albumen were found. These six cases were all treated with the muriated tincture of iron, and the quality of the urine was tested, in each, before the remedy was administered. The blood and albumen sensibly diminished, from day to day, as the remedy was employed; and the quantity of urine, as well as of perspiration, was invariably increased under its use. In eleven cases, then, of erysipelas, in which the urine has been tested at the height of the disease, we find three in which blood corpuscles were seen, and three in which albumen was present; and, taking these in connection with results obtained during the desquamative stage, we may conclude that a very considerable amount of renal disorder exists during the progress of this affection.‡

* *Séméiotique des Urines, ou Traité des altérations de l'Urine dans les Maladies*, p. 410.

† Dr. Parkes has found, in one case of erysipelas of the head and face, the amount of uric acid greatly deficient, contrary to what usually obtains in the *Pyrexia*. See his *Treatise on Urine*, p. 265.

‡ *Monthly Journal of Medical Science* for July 1852, p. 92.

It may be premature to hazard a conjecture in regard to the operation of iron in erysipelas. Many may be disposed to consider its efficacy as dependent on its general tonic qualities; and its mode of operation as identical with that of quinine or wine. Others may regard its remedial powers as connected with its diuretic or diaphoretic properties, and particularly its influence in promoting elimination. Some, having respect to the congested state of the kidney, or the hæmorrhagic condition of the vascular system, may attribute its beneficial effects to its action directly on the renal apparatus, or more indirectly through the general circulation.* Many will call to mind its long-maintained specific properties in almost all urinary affections; and none should forget its wonderful efficacy in restoring the red particles of impoverished blood. Whatever may be its *modus operandi*, it may be well to cherish a hope that, since it has proved useful in erysipelas itself, it may not be found unavailing as a resource in those puerperal disorders, hitherto irremediable, with which that disease is, in some mysterious manner, so intimately associated.

* Some believe it exerts a special astringent action on the capillaries in inflamed parts, and hence it has been styled a capillary styptic.

VIII.

ON DIPHTHERIA AND ITS SEQUELS.

(*Read before the Medico-Chirurgical Society of Edinburgh, 2d April 1862.*)

DIPHTHERIA, as it is now called, was prevalent in Edinburgh and its neighbourhood during the year 1826. It was fatal in a large proportion of cases ; and by its alarming rapidity, and resistance to the means of treatment employed, as well as by its numbering amongst its victims some of the younger members of distinguished families, produced a great sensation.

It was at once regarded as a new disease : the sudden sinking of the vital powers under which so many succumbed, and the laryngeal complication which was equally terrible and scarcely less frequent, had hitherto been unknown in the history of sore-throat.

Dr. Hamilton jun., then Professor of Midwifery in the University, in his Hints for the Treatment of the Principal Diseases of Infancy and Childhood, and, subsequently, in the second volume of the Edinburgh Journal of Medical Science, described the disease as it had fallen under his notice, as a peculiar modification of sore-throat which occasionally affects children. Dr. Abercrombie also (who had seen the disease during the year of its prevalence), in his work on the Diseases of the Stomach and Intestinal Canal, refers to it as a modification of disease of the mucous membrane of the mouth and throat, and recognizes it as the affection which had been

described by Bretonneau and other French writers, under the name of Diphtherite, and whose history had been communicated for the first time in memoirs read to the Academy of Medicine of Paris in 1821.*

Dr. Abercrombie has recorded that in the epidemic of 1826, he saw no case fatal except when the disease extended to the larynx; but that, of those in whom the larynx was distinctly affected, very few recovered. Dr. Hamilton has left on record, that, with one exception, the disease had proved mortal in every case in which he had been consulted, and that no mode of treatment hitherto discovered seemed to have any influence in checking the progress of the disease.

I remember well the first occasion of this form of disease coming under my notice. It was in the summer of 1826. The subject was a child of six years of age, the youngest of a family of five, residing with their parents in a remarkably healthy locality, situated on a rising ground, about a mile and a half from the confines of the city. The house they occupied was large and airy, surrounded by pasture lands, and in every way favoured as to the means of securing freedom from sickness. Diphtherite, however, had entered, but in what way it was not discovered. The patient, a little girl, previously enjoying good health, had been confined to bed for a few days before my first visit. She was suffering from a febrile attack, accompanied with slight sore-throat. I found her

* Whilst it must be acknowledged that to Bretonneau and Guersant we are indebted for the earliest and most complete description of the disease as now recognized, it is due to Dr. Mackenzie and Dr. Thomas Brown of Glasgow to state, that they had each separately, and in ignorance of the French memoirs, observed the disease, and recorded their views of its pathology, corresponding in a remarkable manner with those of Bretonneau. The literary history of the disease has been well written by Dr. Greenhow in his recent work on Diphtheria; and an excellent bibliographical appendix to Dr. Semple's selected memoirs, published by the New Sydenham Society, has been added by Mr. Chatto. To these and to Dr. Jenner's two admirable Lectures I beg to refer; my object at present being confined to a notice of the disease as it has fallen under my own observation.

pallid and sickly : her skin was warm, but not hot ; her pulse was frequent and feeble ; her tongue loaded ; her mouth and throat red and swollen, and on the centre of the left tonsil, there was a pale, ash-coloured patch—a thin film or pellicle—about the size and shape of a horse-bean. It had well defined edges all round, and no appearance of ulceration could be detected. The external glands were not affected, and only slight difficulty of swallowing was experienced. I pronounced, too readily, a favourable prognosis, and prescribed the usual febrifuge remedies, together with the free use of acid gargles for the throat, and milk and farinaceous food as diet. No marked change was perceptible in the symptoms during the two following days, saving that the little patient appeared daily more exhausted. The pellicle on the tonsil did not extend its boundaries, and the general redness and tumefaction of the fauces did not increase. No foetor of the breath, no huskiness of the voice, attracted notice. No vital organ appeared to participate in the general disorder, till on the morning of the fourth day—the seventh from the invasion of the disease—symptoms of exhaustion occurred and the heart was found to labour. The pulse became more and more unsteady, the breathing slow, the extremities cold, the countenance livid ; and in spite of wine, ammonia, and other stimulants, the little patient, who, during her illness, had scarcely acknowledged suffering of any kind, passed unconsciously into the sleep of death—death, the result of the general disease of the system, not of any complication, exhaustion of the vital powers, the work of some hidden poison exerting its influence on the blood or on the nerves.

Some weeks passed before I was again summoned to witness the progress of diphtherite. It was under altered features, and in somewhat different circumstances. The subject was a girl of the age of four years, residing with her parents in a humble dwelling situated in one of the dirty and

overcrowded streets now swept away through the operations of the railway engineer. In a low dark room, in a confined and airless bed, in this abode of poverty lying at the base of the Calton Hill, there lay this child who had sickened some days before, and beside her, a sister a year older who had just succumbed to a similar fate. Both these children were plump and well nourished, and by those around them regarded as very healthy. The younger, who first claimed my attention, was restless and hot ; her pulse was frequent ; and she complained of sore-throat, of sickness, and thirst. Her tongue was coated with a whitish fur ; the uvula, palate, and tonsils were swollen, and discoloured by a dark rosy congestion ; and on both sides, and extending into the fauces, there was a large patch of the ash-coloured pellicle, obscured by a copious secretion of mucus issuing from the posterior nares. Deglutition was painful and difficult, and the voice low and whispering. The larynx became more involved ; and in the course of the following day, all the symptoms which characterise ordinary croup were fairly developed. It was a sthenic case, and admitted of active treatment. Leeches were accordingly applied to the neck, and followed by warm poultices. Emetics were administered from time to time, and calomel, the great remedy of the day, prescribed in oft-repeated doses. Caustic was also applied to the tonsils and fauces, but all unavailingly. No effort of vomiting, no frequency of cough, dislodged the false membrane, whose extrication we then regarded as symptomatic of the arrest of death. The voice became more and more stridulous, the breathing more and more rapid and impeded. The countenance assumed a livid hue, the pulse a feebler character ; and death by asphyxia closed the scene on the third day of my attendance.

Before that day arrived, the elder sister and bed-fellow of this poor child had become an object of much anxiety. The disease, as manifested in the younger, rapidly developed itself

in the elder sister, in all its virulence, save in the laryngeal complication. The voice was not affected. The fever rose high ; vomiting was urgent ; the pulse was rapid ; the pain and difficulty of swallowing extreme. The leathery pellicle occupied the tonsils, the uvula, palate, and posterior wall of the pharynx ; and, dreading its extension from the fauces to the glottis, the child was rapidly brought under the influence of calomel. I cannot affirm that to this mode of treatment can be ascribed the exemption from croup which she experienced ; but I cannot but fear that the mercurial played a part—a mischievous part—in the diarrhœa which supervened, and under which, with rapid sinking of the strength, such as is too often seen in diphtheria, with no adequate cause to account for it, the little patient breathed her last.

Permission was given to examine both bodies after death. In the former case, the mucous membrane of the pharynx was red and thickened, and covered with a thin layer of soft membraniform lymph. In the larynx and trachea this had acquired a greater consistence, and could be peeled off from the subjacent mucous surface, leaving it red and raw-like. The upper part of the bronchial mucous membrane was inflamed, and covered here and there with thin lymph. The extreme bronchial tubes were loaded with mucus, and the substance of the lung partially solidified from recent pneumonia. In the latter case, the only appearances discovered were those of inflammation and ulceration of the mucous membrane of the smaller intestines, particularly the ileum ; but no sign of pellicular exudation was anywhere discoverable, save on the mucous surface of the mouth and pharynx.

A quarter of a century and upwards passed away, and I saw no other case of the disease which had then proved so formidable and so fatal. During the prevalence of many protracted epidemics of scarlatina, and with frequent oppor-

tunities of watching the progress of sore-throat in various forms in the interval, I saw no instance of the pure pellicular affection. I could speak of diphtherite only as I had witnessed its features in 1826. About four years ago, however, the disease became epidemic in the south of England, and has since visited in that form various other parts both of England and Scotland. It has not assumed the epidemic character in Edinburgh or its neighbourhood. Many of the practitioners here are still unacquainted with it from personal observation. Some remember it only as it exhibited itself in 1826.

I renewed my acquaintance with the disease in the spring of 1858, when I was requested by Dr. Paterson to visit along with him, in North Leith, a child who had recently arrived there from London. I learned that another child of the same family had lately been affected with diphtheria in the same house, and that the disease had terminated fatally through the laryngeal complication. The child, then ill, presented the well-marked features of the pellicular disease, such as I had previously observed it. The pellicle was confined to the tonsils and uvula; there was no fœtor of the breath, or discharge from the nostrils, and deglutition was not much affected. The child was pallid and sickly, its expression was that of exhaustion. It was treated by the free exhibition of wine and other stimulants, and by chlorine water as a wash for the mouth and throat, as well as for internal use, and made a good recovery, being considered safe about the eighth day of the attack. One child in the family, a boy of two years of age, remained at this time unaffected, and circumstances rendered it desirable that he should be sent to friends in the north of England. On his arrival there, symptoms which had raised some suspicion while in Leith developed themselves in the form of severe diphtheria. He struggled through it, however, and made a slow recovery. Both these

children were affected during their convalescence with disordered vision, apparently of an amaurotic character, which continued for nearly three months. They perfectly recovered. Some time afterwards I was asked by Dr. Finlay to see a boy of seven years of age, who had recently arrived from Fife on a visit to friends in Newhaven. In this case the distinctive character of the disease was also well marked ; the pellicle extended over the palate and posterior wall of the pharynx ; there was great difficulty in swallowing ; the voice became hoarse and croupy ; and the boy sank rapidly on the fifth or sixth day, chiefly through the virulence of the general disease, but not before the larynx had shewn signs that the inflammatory exudation had spread, and involved its lining membrane.

In the spring of 1859 I was called to visit, with Dr. Wylie of Errol, the daughter of a gentleman residing in that district. She was suffering from the disease in an aggravated form. The larynx had then become affected, and all the distressing symptoms of croup were endured. She quickly sank, asphyxiated. Dr. Wylie informed me that for some time the disease had been very prevalent in the district in which he resided, and that scarlatina of a malignant type had at the same time been very fatal. I was struck by the remark of an aged relative of the young lady whom I was called to see, to the effect that she had not seen such a sore-throat for nearly thirty years, when she had witnessed the same "white leather spot" with all its terrors in the case of an aunt of the patient then expiring.

In the autumn of that year the disease was more prevalent in the neighbourhood of Edinburgh. I saw, with Dr. Graham Weir, on the 24th September, the daughter of a gentleman residing in the northern part of the town, a well-marked case of the disease. The little girl, aged six, had been seized on the evening of the 21st with a distinct rigor, followed soon after by severe and urgent vomiting. The sickness continued

during the 22d, accompanied by drowsiness, heat of skin, thirst, and sore-throat. She became restless on the following day, and on examining the mouth and throat, the ash-coloured pellicle was found on the tonsils and on the arch of the palate. In the course of the 24th she had become cold, with sinking pulse and strength. She rallied, and for some hours the skin was covered with a scarlet rash, which quickly passed away. The voice now became husky and croupy. Under a liberal use of wine, the internal administration of chlorine in water, and its inhalation by means of impregnating the air of her chamber with it, in the form of gas, she improved. The disease ran its course without further complication, and the child recovered. On the day on which I took my leave I was asked to visit, with Dr. Renton of Dalkeith, a child in that town, who had sickened immediately after the death of a brother from sore-throat. Vomiting was an early and urgent symptom, accompanied by drowsiness and febrile reaction. On examining the mouth and throat, the tonsils, uvula, and fauces were found red and inflamed, and patches of considerable size of thick, ash-coloured, exudation were distributed over them. The voice was husky and weak, and deglutition painful and difficult. No remedy availed, and the child rapidly sank, apparently from the specific poison of the disease. In the first week of November I saw with Dr. Peddie, in the south side of the city, a little girl who had sickened soon after the death of a sister from diphtheria. The larynx was not affected in either case, but the general disease was severe, and the local affection in the mouth and pharynx well marked. The second case recovered.

In the autumn of 1860 the disease was prevalent to a considerable extent in a district of East Lothian, adjoining the coast. I saw, with Dr. Lorimer of Haddington, a fine healthy boy of fourteen, residing in a remarkably salubrious locality, who had been seized with the disease when fresh

from the recreation of the harvest-field. When first seen by Dr. Lorimer on the 30th of September, there were patches of whitish exudation on the tonsils and fauces, with a good deal of febrile excitement. These symptoms increased from day to day, accompanied by considerable swelling of the tonsils, and difficulty of deglutition. I saw him on the 4th of October. He was still feverish; the pulse was rapid and feeble; the skin was warm and moist; the exudation had not extended; the larynx was unaffected. Notwithstanding the persistent employment of chlorine, iron, wine, and other stimulants and antiseptics, he sank, rather suddenly, on the 6th—the seventh day from the invasion of the disease. A sister of this boy, of the age of three years, after shewing symptoms of deranged health for eight or ten days, had been affected with sore-throat, and was seen by Dr. Lorimer on the 8th September—three weeks before her brother's seizure. There was in her case considerable swelling of the tonsils, and of the submaxillary glands, but no pellicular exudation could be detected. The febrile excitement, and general indisposition, however, were greater than could be accounted for by the local ailment. No marked change was perceptible from day to day. The pharyngeal affection did not extend, but she sank exhausted on the 13th—about a fortnight preceding her brother's seizure. Within a quarter of a mile of the dwelling-house of these children, two girls of the ages of fourteen and fifteen were affected with sore-throat at the same time as the boy. In both there was considerable febrile derangement, and slight patches of whitish exudation on the fauces. The disease was of mild character, and ran its course, terminating in recovery. Within a mile or two of the residence of the children first referred to, and within a week after the death of the last, Dr. Lorimer was called to a boy of the same age, in whom the symptoms remarkably corresponded, and in whom they ran a similar fatal course within eight

days. In neither house, in neither locality, was there any ground for suspecting the want of sanitary care or precaution; and no cause whatever could be assigned for the appearance of the disease in the district.

I have now seen twenty-five cases of diphtheria, of which fourteen have proved fatal. This large proportion of deaths, however, must not be considered as indicating the average mortality from the disease. The number of the whole is too small to enable us to draw any accurate conclusion; while it must be kept in mind that my attendance in almost all the cases was requested only on account of their more than usual severity. Of these fourteen deaths, six occurred in children under five years of age, four between five and ten, two between ten and fifteen, and two in adults, aged forty-nine and fifty-three, respectively. Five of the number died from the laryngeal complication, the remainder from the gravity of the general disease. Of the five who perished by the former, three were under five years of age, and two a little above it. Of the two adults, one died rapidly, another more gradually, of the general disease. Of the eleven who recovered, six were known to have suffered from the diphtherial palsy in some form or other, the remaining five were not known to have manifested any such consequences. In eleven of the twenty-five the disease was traced distinctly to infection from a blood-relative or friend residing in the same house. In fourteen the origin was not ascertained.

The cases I have recently visited differ in no essential character from those I observed in 1826, and it would be needless to relate them in detail, even had my means of doing so been more accurate and extensive than they necessarily have been. I shall content myself by a notice of one or two family groups, in order to bring out the chief features of the disease.

Miss A., aged fifteen, the eldest of a family of ten children, residing in an airy situation in the vicinity of Leith, had been observed to be languid and listless for some days, when she began to complain of sore-throat. On the 1st of March 1861 she was seen by Dr. Paterson. On examination, he found the fauces generally red and swollen, with patches of a whitish-yellow colour of considerable size over the tonsils, uvula, and back of the pharynx. This condition of the throat was accompanied by a soft, feeble, rapid pulse, vomiting, and great depression of the vital powers. I saw her with Dr. Paterson on the 4th. She was much prostrated. The exudation had extended, deglutition was painful and difficult, and the voice was low and whispering. There was also much somnolence. Under the free use of wine, and the regular administration of the muriated tincture of iron, together with the frequent employment of Condyl's fluid to the mouth and throat, an improvement took place, and continued from day to day. The larynx was not involved, and the general disease ran its course to convalescence. A brother, aged ten, had sickened at an early period of his sister's illness, and on the first day of my attendance presented the well-marked features of the disease, but in a mild form. The diphtheritic pellicle was confined to the tonsils, and the general febrile disturbance was slight. His convalescence was coincident with that of his sister; his seizure had been four or five days subsequent to hers. At an early stage of their illness, Dr. Paterson had recommended the removal of the younger members of the family from home. They had been strictly kept apart from the sick from the commencement of the illness, and were now sent in two parties—one of two and the other of six—the former to friends in the immediate neighbourhood, the latter to Musselburgh, a distance of six miles. They were both considered to have remained unaffected by the disease. The larger party, after a residence of fourteen days

at Musselburgh, were permitted to visit some relatives in the neighbourhood of Stirling. On the sixth day after their arrival, the youngest child of the family resident there sickened of the disease, and in succession two others,—the second, fourteen days after the first; and the third, fourteen days after the second. The first of this family died about the fifth week of the disease, having recovered from the immediate effects of his illness, but sank under what was considered whooping-cough and paralysis of the lower limbs. These paralytic symptoms were preceded by the nasal voice and mumbling articulation which characterise the palsy of the velum palati. The second, a boy of fifteen, appeared to make a good recovery, but was afterwards affected by symptoms which I shall immediately describe. The third, a young lady of twenty, whose illness was slight, made a perfect recovery, and had no nervous or other sequelæ.

Meantime their relative, Miss A., whose case I first recorded, during her convalescence was affected with palsy of the velum, and with imperfect vision, which gradually increased, assuming the character of amaurosis, and complicated with depraved sensation and diminished power of the right hand, and with want of command of the lower limbs, so as to give the character of paralysis to the impaired motor power, especially below the knee. Her general health, however, was not affected; her voice, her deglutition, and her vision gradually improved; the power of command over her limbs by degrees returned, and in three months she had perfectly recovered.

We return to the second case of the family near Stirling, to whose house Miss A.'s six brothers and sisters, who were believed to have escaped the disease, had gone during her illness. On the 16th of July I was called to Musselburgh to see a young gentleman who had been brought there for the benefit of sea-bathing after a tedious illness, and discovered in him the subject of that case. More than three months had

passed since he had recovered from the attack of diphtheria, but during his convalescence he had been affected with loss of power over the lower limbs, gradually increasing, and now amounting to almost complete paraplegia. He was unable to leave his seat or walk across the room without assistance, and his best efforts resulted in his dragging his limbs in a shuffling, jactitating manner. There was also partial loss of power and sensation in the upper extremities. Yet he looked well, perhaps a little anæmic, he felt well, he ate well, and he made no complaint but of the loss of power of his limbs. These symptoms had been preceded by snuffling voice and impaired vision. He perfectly recovered under the use of iron and of *nux vomica*.

And here I must mention a remarkable coincidence in connection with this family group, if, indeed, it be not a link—an important link—in the chain of events I am now recording. On the 25th of March 1861, just three weeks after I had been called to Miss A., I was requested by Dr. Coldstream to visit with him a little girl, aged four years, living with a family in the immediate vicinity of the residence of Mr. A., and maintaining with his family a friendly intercourse. This child was affected with some remarkable paralytic symptoms. She had lost the use of her lower limbs, was unable to support herself or to make one step in advance. She had also lost in a great measure the command of her arms, was unable to use her hands or lift them to her head. On being raised from the sofa on which she always reclined, and on which she appeared motionless, her head fell to one side or other, and always required the support of the person in whose arms she was placed for the time. She had previously, and as an early symptom, been affected with difficulty of articulation. She made a snuffling noise, and mumbled in her talk. Deglutition was difficult, and in attempting to swallow fluids especially, they were partially lost, escaping

from the angles of the mouth. Her intellect was unaffected, and she was otherwise in good health. Under the persistent use of *nux vomica* she made a gradual recovery, and is now quite well. Now this child, I have learned, had sickened a short time before Miss A. was seized with diphtheria. Her illness commenced with vomiting and gastric irritation. The tongue was much furred. She complained of sore-throat and difficulty of swallowing, referable to the gullet, but no pelticular exudation was discovered within the mouth, and the disease ran its course under the name of gastric fever. It was during her convalescence from this illness, and about a month from the period of her seizure, that I found her with the symptoms first described. These paralytic or pseudo-paralytic symptoms were not at the time suspected of being in any way connected with the febrile attack which preceded them: they were considered independent of it, and that illness was never supposed to be of the nature of diphtheria. Nevertheless, I incline to the belief that such was its essence, and such the connection between it and those disordered functions of the nervous system just described. In this opinion I am joined by Dr. Coldstream, who had early recognized the peculiarity of the disordered innervation of the child, and along with myself felt the difficulty of accounting for it.

In the development and progress of such a disease as diphtheria, a general or constitutional disorder, we are not to expect in every case a manifestation of its anatomical character. We every now and then meet with cases of scarlatina without eruption, and of rheumatic fever without the affection of the joints. In the one case, we are taught for the first time the true nature of the malady by the occurrence, by and by, of albuminous urine, and œdematous feet and eyelids; and in the other, we are left in no doubt as to its real character by the peril in which our patient is involved when the heart participates in the general disorder. So may we ex-

pect to find, during an epidemic of diphtheria, cases of the true disease, though no wash-leather-like spot appears upon the fauces, and only form a late diagnosis when the paralytic symptoms have removed all doubt.

Diphtheria is a blood-disorder which manifests a predilection for the mucous membrane of the pharynx, on which to display its anatomical character; but that character may be demonstrated on other parts and other textures of the body, still constituting a true diphtheria. The exudation of lymph may be trifling, and yet the general disease may be severe. The pellicle may exist on some part of the mucous membrane not visible to the eye, and the patient, all the while, be the victim of an unseen and dangerous diphtheria.

Mr. Spence has recently communicated to me an interesting case, which bears on this subject. Being called upon by Dr. Menzies to operate on a child affected with croup, tracheotomy was performed under the impression that the disease was primary, and of a local nature, examination having failed to discover any affection of the fauces. Some days after the operation, a second examination revealed the true nature of the disease. The posterior wall of the pharynx was then found to be the seat of diphtheritic exudation, which, in all probability, had spread from the larynx to the membranes of the pharynx, reversing the usual order, and proclaiming the constitutional origin of the disease. The child survived till the sixth day after the operation, and died, apparently, of the general disease.

More recently a parallel case has come under my own observation. William C., a fine healthy boy, of eight years of age, was seen by Dr. Graham Weir on Friday the 25th of April. On the previous day he had been fully engaged in play, and in running about had over-heated himself. He was suffering from what appeared to be a slight attack of tonsillitis, for which confinement to the house, aperient and febrifuge re-

medies, and wet applications to the neck, were prescribed. His illness appeared to yield, and on the Tuesday following he was considered convalescent. On the evening of that day, however, he became restless and uneasy, and during the night was hot and feverish. On the following day he was seen by Dr. Inglis, in the absence of Dr. Weir. He found him suffering from smart fever, with swelling and redness of the fauces, slight hoarseness of voice, and frequent, short, dry, croupy cough. He was placed under antimonials, and small doses of calomel. The symptoms did not yield; the tonsils and uvula were much inflamed, but free from any appearance of exudation; the voice was rough; and the cough and inspiration more decidedly laryngeal. In the evening I saw him with Dr. Inglis. He was covered with perspiration; his pulse was rapid but of good strength; his face was turgid; his breathing hurried; the laryngeal obstruction manifestly on the increase. Leeches and poultices were applied to the neck, and the antimonial solution, aided by ipecacuan, and conjoined with calomel and opium prescribed, but no abatement of the symptoms followed. On Thursday the 1st of May, early in the morning, the distress in breathing was very great, the chest expanding imperfectly; the face was deeply flushed and covered with perspiration; the voice was nearly lost; the cough was frequent, short, and ringing; the pulse rapid, 110, moderately full and strong. It was resolved to open the windpipe. The operation was performed by Mr. Spence, and gave immediate and perfect relief to the breathing; and a piece of false membrane, nearly half an inch in length, was coughed up before the introduction of the tube. He soon fell into a quiet sleep, and on waking up expressed himself as feeling very comfortable. There was slight mucous expectoration. On the 2d May he appeared to be going on well. About seven in the evening he became restless, his face was again much flushed, and his breathing laborious. On removing the double tube,

a piece of hardened mucus was coughed up, and the breathing was relieved. The pulse at the time was 120, and feeble in beat. On examining the throat a well-defined circular patch of exudation of greyish colour was now seen on the right tonsil. It was about the size of a sixpenny-piece. Wine was ordered, which he swallowed readily. Early on the morning of the 3d he experienced a suffocative spasm similar to that of the previous evening. The cough was frequent and dry, a little thickened mucus only occasionally coughed up. The wound in the neck had assumed a dry and glazed appearance, and on removing the tube, the deeper part was found covered by a greyish diphtheritic layer. The breathing was laborious; the countenance congested; the pulse became smaller and weaker. The little fellow appeared to breathe more freely without the tube. It was removed for a time, and again introduced. He coughed up one or two little masses of thickened mucus. At nine A.M. the tube was again taken out, and not again introduced for several hours, when suffocation took place. His face and neck became perfectly livid, the breathing completely ceased, and insensibility supervened. A feather was immediately passed into the trachea and the tube replaced, when consciousness gradually returned, and the lividity disappeared. He became restless and delirious, and made frequent efforts to speak; the breathing became slower; the brain more and more oppressed, and he died soon after mid-day—fifty-four hours after the operation. No *post-mortem* examination was allowed. The case was assiduously watched by Dr. Pow, to whom I am indebted for these notes. Within a week after the death, a sister of this boy, who had been removed from home during his illness, suffered from a smart attack of sore-throat, which appeared to run its course favourably, when, like as in her brother's case, an aggravation of the symptoms occurred, and on examining the mouth one

or two patches of exudation were found on the tonsils. The larynx was not affected, and she recovered perfectly.

We may hazard the conjecture that, in the case of the child supposed to labour under gastric fever, the gullet and stomach were the parts on which the exudative inflammation was spread; a conjecture which gains strength from the fact, that these parts have been found in other cases, after death, to be the seat of this peculiar deposit of lymph.

One link in the chain of sequences in the family history of Miss A. is still wanting; the one, namely, which connects the infection of the family in Stirlingshire by means of the children from Musselburgh. At first sight, the contagion was supposed to have been conveyed by clothes, carried directly from the house in the vicinity of Leith, where the disease first appeared, to the residence of the family in Stirlingshire. There is no ground, however, for believing that the contagion of diphtheria can be so transmitted, and we must seek another clue. It has been already stated that the six children left Musselburgh, and arrived at their relative's house, supposed to have remained in good health. One of their number, however, it now appears, was observed before leaving his father's house to be dull and dispirited. He was ailing while in Musselburgh, but the character of his illness has not been noted or remembered correctly. This, however, is known of him, that before he left that place, the early indications of disordered innervation betrayed themselves in feeble, unsteady walking, that they increased while in Stirlingshire, and on his return home, presented the form of paraplegia, now known as the sequel of diphtheria. He remained under the care of Dr. Paterson for a month, and perfectly recovered.

I take another family history. Miss D., aged fourteen, living in one of the healthiest parts of Edinburgh, was seen by Dr. Warburton Begbie for the first time on the 21st of January, presenting the well-marked features of diphtheria,

in a copious exudation of lymph over the tonsils and posterior wall of the pharynx, accompanied with considerable constitutional disturbance. The disease pursued its course favourably, and on the eighth day there occurred the nearly complete separation of the pellicle from the left tonsil and palate, and the throat was left very tender. A marked improvement in deglutition followed. The voice, however, continued nasal, and fluids were occasionally rejected through the nostrils. On the 10th of February, the twentieth day from the first occurrence of sore-throat, the difficulty of swallowing, which had considerably abated, returned, and great care was required, in order to guard against the rejection of food, especially of fluids, by the nose. The velum palati was now free of lymph, but hung loose and immobile. Numbness, prinkling, sleeping of the toes, feet, and legs came on, and to these succeeded difficulty of moving the lower limbs. In a day or two there followed indistinct vision, and inability to read even large type print. At this stage she was placed under quinine and nux vomica, and, by and by, was sent into the country. She soon improved in all respects, with the exception of sight, which still continued weak and imperfect. On lifting, perchance, a pair of spectacles suited for aged sight, and placing them before her eyes, she was surprised to find vision considerably aided. She is now (March 15) free from all ailment, and the only inconvenience she experiences is that arising from impaired vision, which is also gradually abating. No albumen was at any time discovered in the urine.

On the third day of Miss D.'s illness, she was joined by Miss F., a lady of fifty-three years of age, who occupied towards her the responsible position of guardian, and discharged the duties of her office with remarkable fidelity. She was much by the bed-side of her ward, and underwent great fatigue. On the sixth day of watching, she complained of slight sore-throat. On examination, the fauces were found red

and swollen, and on the left tonsil there appeared a small but distinct patch of exudation. There was scarcely any febrile disturbance, and it was with difficulty Miss F. was persuaded to retire to her bedroom. On the following day the pellicular exudation had greatly extended. The tongue was furred, and the odour of the breath very offensive, while the constitutional disturbance had become considerable. The voice assumed the nasal sound, deglutition became more difficult, and pain stretching to the ears gave much discomfort. Cough from time to time was observed, but no abnormal physical sign on examination of the chest. For some days there was little change in the condition of the throat; a considerable discharge, however, of dirty shredly matter was brought off by the operation of gargling. The voice became whispering, and the cough sharp and somewhat stridulous. On the eighth day of her illness the countenance became more anxious, and the face somewhat turgid and swollen, and Miss F. complained of oppression over the chest, but she expressed herself hopefully regarding the issue of her illness. No indication of pulmonary affection, on exploring the chest, was discovered. The throat had at this time assumed a cleaner and more healthy appearance, the constitutional symptoms were less grave in character, and hopes were entertained that she was progressing towards recovery. On the following day, however, the ninth of her illness, without any aggravation of the local symptoms, there was observed, from an early hour in the morning, a decided failure of the vital powers. She sank into a semi-comatose state, and died soon after mid-day. At the commencement of the illness the throat was freely touched with nitrate of silver; and Condyl's fluid, as a wash, was used throughout. Poultices were freely employed, particularly in the early stage of the disease. The strength was supported by wine and beef-tea in liberal measure, and the tincture of the muriate of iron persistently administered every third hour. These two

patients were members of a family ten in number, and the only two who had not passed through scarlatina.*

These illustrations will be found to contain some of the chief points in the history of diphtheria. The cases first recorded bearing on the symptoms and appearances which characterise its febrile stages, and the two family histories touching the manner of its transmission, and the disorders of the nervous system which so frequently supervene during convalescence. In regard to the latter phenomena, however, it must be noted that they have been observed to present themselves in characters much more formidable than any I have recorded. The heart itself has been found to suffer what may be called a paralytic stroke, and death has followed with awful rapidity. I have not witnessed such a termination; nor have I witnessed the slower, but not less sure, dissolution preceded by failure of the heart's action; the great organ of life giving out its solemn pulsations at the unwonted rate of 24 per minute.† Dr. Munro of Moffat, however, has communicated to me the following interesting case in which the termination was widely different from what might have been expected from the extreme gravity of the symptoms:—

Isabella J., aged fourteen, residing in a healthy locality, occupying a clean kept cottage, and previously enjoying

* The occurrence at the same time of scarlatina and diphtheria as epidemics has led to the notion that these diseases are essentially the same. If the fact stated in the text is calculated to strengthen in any degree this opinion, the following gives no such support. It has been communicated to me by Dr. Munro of Moffat:—"A family living on the top of the hills in this neighbourhood suffered from scarlet fever in March and April last, every member of the family being affected. They all recovered, and in June last I was called to see one of the number, and found him labouring under a pretty severe attack of diphtheria. Two more of the family were seized in succession, and in one case it nearly proved fatal. He recovered, however, after suffering from partial paralysis and impaired vision.

† Jenner on Diphtheria, p. 44. Greenhow on Diphtheria, p. 219.

good health, was seized with sore-throat on the 20th September 1860. She was seen by Dr. Munro on the 23d, when the throat was found generally red and swollen. A dirty yellowish pellicle was seen on the right tonsil, extending to the velum and soft palate, and into the pharynx. There was a peculiar guttural voice, some difficulty of swallowing, and a sensation of choking on laying the head down on the pillow. This last sensation was always aggravated between the hours of two and three in the morning. Accompanying these symptoms there was more or less of febrile disturbance; the pulse was rapid, soft, and feeble; the tongue loaded with a creamy fur; the urine scanty and albuminous. On the 24th the local symptoms had undergone no change; the pulse had fallen to 58, and was feeble; the urine highly albuminous. The suffocative feeling very distressing, especially at the hours mentioned. On the 24th the pellicle had spread over the uvula and left tonsil; the pulse was 48 and feeble. The breathing was laborious and croupy, and the patient complained that she was like to be choked when her head was not erect. On the 26th the exudation was peeling off on the right side; on the left it was still spreading. The breathing was easier; pulse 40. The symptoms became aggravated in the course of the day, and towards night she was unable to swallow, and could only speak in a whisper. Pulse 28, and very feeble; urine highly albuminous, becoming nearly solid when exposed to heat. She had swallowed nothing for many hours, every attempt to do so being followed by the return of the food from the angles of the mouth. She was now fed by the cesophagus tube, and rallied under the use of wine and beef-tea. On the 27th the exudation had not spread; swallowing was a little easier; pulse 30 and not so feeble; urine less albuminous. On the 28th the throat looked better; the suffocating sensation less distressing; swallowing easier; pulse 32; urine less albuminous. 29th. Throat improved;

still swallows with difficulty; voice snuffling; pulse 34; urine not so highly albuminous.

On the 1st of October the throat was nearly well; pulse 38; urine still less albuminous. She continued to convalesce, and on the 7th the throat was quite well; the pulse had risen to 60; the albumen had disappeared from the urine; the appetite had returned; she slept well, and complained only of weakness. From this time Dr. Munro did not see her till twelve days after, when her father called to say he feared his daughter was becoming blind and deaf. He stated that she was fond of reading, and that within the last few days she could not see to read even large-type print without the aid of the spectacles in use by him—a man of sixty. On the following day Dr. Munro saw her, and found the vision very much impaired; every object was seen indistinctly; the sense of hearing was also very obtuse, so that in order to be heard the voice of those addressing her required to be raised very loud. The senses of smell and taste were also greatly impaired—indeed nearly gone. Sensation in the hands and fingers was greatly blunted; and the patient found it impossible to lay hold of minute objects placed before her. She complained of tingling feeling in the hands and legs. The urine was again slightly albuminous; the pulse ranged about 60. On the third day from this time she had a slight epistaxis, after which the sense of smell returned. She was ordered quinine, with iron and *nux vomica*, the use of which she continued for three weeks, during which she gradually improved; the symptoms of disordered innervation yielding slowly, and the albumen disappearing, coincidently, from the urine.

It deserves notice that this girl was again affected with diphtheritic sore-throat in the month of February—two months after her recovery from the illness just described. “The day before I saw her (writes Dr. Munro), she had com-

plained of great lassitude and depression, with vomiting and sore-throat. She was then found with a feeble, rapid pulse; and general febrile symptoms. The left tonsil had a small dirty white pellicle on its surface, which gradually increased in size, but no severe indisposition accompanied the attack, and she again recovered. During her convalescence the urine became slightly albuminous; and squinting and imperfect vision supervened. Numbness and tingling of the hands and fingers followed; but they all speedily gave way under the employment of the tincture of the muriate of iron and nuxvomica." In the first illness the throat was freely touched with the lunar caustic, and afterwards gargles of chlorine water, and of Condyl's fluid were employed, alternately with diluted phosphoric acid, and a solution of borax. Ammonia and chlorate of potass were administered from time to time, and the muriated tincture of iron was persistently given throughout the disease, nux vomica being added on the appearance of the paralytic symptoms. The strength was supported by a liberal allowance of wine and beef-tea, which were, for many days, administered by the tube, when the power of swallowing was lost.

The eyesight, during convalescence from diphtheria, often suffers in a variety of ways, from the mere indistinctness, to the almost total loss, of vision,—from a paralysis of the moving and accommodating muscles, to the loss of sensibility in the retina itself. Squinting and double vision sometimes occur, and give to the case, especially when combined with other cerebral symptoms, a character of suspicious gravity. I saw last summer, with Dr. Traill of Arbroath, an example of this kind, in a young gentleman recently returned from school in the south of England, where he had suffered a severe attack of diphtheria. His convalescence was progressing at home when he began to complain of indistinct vision, with giddiness and slight headache. These were soon followed by double vision, with

squinting, and irregular and slightly dilated pupils, and, at times, with intense intolerance of light. The double vision was of a peculiar character. He described a person as having two heads, one above the other; sometimes one on the side of the other; and sometimes he could only see half the head. On looking at an object directly in front, and near him, he saw distinctly and correctly, but if the object was at a greater distance, or to one side of him, then vision was double. Along with these symptoms there was some difficulty of swallowing, apparently from loss of power in the pharyngeal muscles and œsophagus, and on attempting to stand or walk the want of command over the muscles of the limbs was greatest on the left side. The previous attack of diphtheria enabled us to give a more favourable prognosis than we otherwise could have done. The symptoms gradually subsided, and perfect recovery took place. No trace of albumen was discovered on examination of the urine.

I have recently been consulted by Dr. Lorimer of Dunscore regarding the case of a young man under his care. He had suffered from a very severe attack of diphtheria, at that time very prevalent in the neighbourhood. In his case deglutition was very painful and difficult, till in the end the power was lost, and nothing was swallowed for days. When restored, it was in a very imperfect manner, a great part of the food or drink being regurgitated by the nose. The voice became snuffling, and the vision impaired. Double vision occurred, and by and by he was unable to distinguish one object from another. These symptoms subsided gradually, when he was seized with numbness of the lower limbs extended to the loins, and inducing complete paraplegia. The upper extremities next became affected, and chiefly the left side, he being still able to move the right arm to some extent. Sensation in the legs was so depraved that he could not tell in what position, or how, his limbs were resting, except by the

sight. Under the use of strychnine, with preparations of iron, he gradually recovered.

Two views have been propounded in explanation of these morbid phenomena presented by the nervous system during the convalescence from diphtheria,—one, namely, that they are of reflex origin ; the other, that they are essentially toxæmic. The variety of shades, and the changing aspects of these cases of disordered innervation, as well as their amenability to treatment, and frequent and speedy termination in health (though in some instances death has unexpectedly occurred), forbid the notion that they are connected with any serious lesion of the nervous centres ; while their analogy to the nervous disorders occasionally seen after small-pox, typhus fever, cholera, syphilis, gout, and rheumatism, point in a marked manner to their dependance on a specific poison. We cannot fail to acknowledge the fever-poison of diphtheria, to recognise its contagion, to observe its period of incubation, its general and local manifestations, the efforts of nature to dislodge it from the system, and its successful or unsuccessful elimination. Neither can we lose sight of the serious blood changes which take place in the course of the disease, as manifested by the albuminuria which frequently attends it from the beginning, disappearing during convalescence, and reappearing in connection with the paralytic symptoms.

It may be asked, if there is a diphtherial poison in operation, how is it that the nervous system is so late in affording evidence of its existence ? It is during convalescence, often after recovery, from diphtheria, that these paralytic symptoms manifest themselves. The poisonous excrement has surely by this time been thrown out by the great emunctories. I point to the kindred disease of scarlatina and its secondary disorders in order to shew that it is precisely at the same stage, namely, from the twentieth day and onwards, that the specific poison of that disease still demonstrates itself in

bloody and albuminous urine, and in dropsy. One poison still lingering in the system has an affinity in one direction, and the other in an opposite. They each appear to exert their influence at the same period, but on different tissues, the one selecting the capillary, the other the nervous structure. They have each, in their own manner, manifested their character in the production of a special disease ; and before their complete elimination, and probably after undergoing changes which we shall one day be able to demonstrate, they have shewn that they are still capable of influencing the functions and structure of the body in a manner scarcely less fatal than when first implanted.*

Diphtheria, like scarlatina, is sometimes rapidly fatal from the severity of the general disease. Dr. Jenner has recorded a case in which it proved fatal in a few hours. The most rapid case which has come under my notice was that of A. S., a retired butler, aged forty-nine, whom I saw, with Dr. Thomson of Teviot Row, on the evening of the 5th of January last. He was in the enjoyment of perfect health, when, on the morning of the 3d, he was seized with rigor, followed by vomiting and febrile symptoms, so slight, however, as not to prevent him keeping an appointment he had made for the evening. He then passed a restless night, complained of sore-throat and urgent thirst. He was unable to leave his bed on the following morning, and throughout the day felt increasingly worse. Pain and difficulty of swallowing succeeded, and the voice became feeble and whispering. It was not till towards evening that he requested the attendance of Dr. Thomson, who, recognizing the gravity of the case, begged me to be conjoined with him. At 9 P.M., when I first saw him, he was sinking ; his pulse was rapid and feeble ; his voice husky ;

* This toxæmic, anæmic, or spanæmic condition, resulting from special blood-disease, operates, I apprehend, on the nervous fibre, through means of impaired nutrition.

his countenance pallid and anxious ; his extremities cold ; his breathing was somewhat laborious, and performed with a wheezing sound, heard all over his chest ; his intellect was unclouded. On examining the throat, the surface of the tonsils, the arch of the palate, uvula, and pharynx, as far as the eye could reach, were found covered with a thin ash-coloured pellicle, which, here and there, also appeared in patches inside the cheeks. The exhibition of large and oft-repeated doses of stimulants failed to produce the smallest effect on the circulation, which rapidly declined, and he died a little before midnight.

The most protracted case I have seen before terminating fatally was that of a young lady, aged fourteen. She was seen by Dr. Peddie on the 7th January last, having sickened twelve days before. When first seen by Dr. Peddie the entire fauces were covered with a thick yellow pellicle ; the pulse was rapid and weak ; the stomach was irritable, and frequent vomiting took place—the ejecta being very copious and of a watery character. There was little or no suffering, and no complaint but of exhaustion. She became weaker from day to day, in spite of every effort to sustain her strength, and died on the 14th, the twentieth day of her illness.

No improvement in the treatment of diphtheria appears to have been introduced during the last quarter of a century. The free use of calomel recommended by Bretonneau, and considered by Abercrombie as the only practice capable of arresting the disease, has now been all but abandoned. The internal administration of the acetate of lead, and its employment in the form of gargle for the throat, as practised by Dr. Hamilton, has been forgotten. Quinine, at one time recommended, and now deserving of a fair trial on the faith of its febrifuge properties, is too much neglected. There is no specific remedy ; and the disease must be treated on the principles which regulate our practice in affections of a kindred nature.

The opinion is entertained by some that the general disease may be arrested by topical applications to the throat, hence the assiduous employment of caustics and disinfectants. Trousseau is decided on this point. He teaches that by interposing energetically to combat the first manifestation in the throat, we may sometimes arrest the progress, and prevent the ulterior manifestation, of the general disease. "It is in the use (says he), of topical remedies, which are so powerful in most external diseases, that the practitioner must confide, in order to effect the cure of diphtherite. In the first rank must be placed caustics, nitrate of silver, the acid nitrate of mercury, sulphate of copper, hydrochloric acid; after these come alum, mercurial sublimate, and the chlorides of potassium, sodium, and calcium."* I cannot concur in these views. I agree with Dr. Jenner, that all we are to expect from the use of such active means is the arrest of the exudative process before it reaches the larynx, and the prevention of the absorption of foetid matters. I have seen no satisfactory case of the arrestment of the exudation by means of nitrate of silver or mineral acids. I have sometimes satisfied myself that good has been obtained from the employment of chlorine in vapour, and in solution as a drink and wash for the mouth and throat. The same may be said of Condyl's fluid, which has the advantage of being more palatable to children.

My experience leads me in the treatment of the general disease to place most reliance on remedies calculated to sustain the system during the currency of a disease of asthenic character. The free use of wine and brandy has been clearly indicated in all the cases I have seen, even in an early stage of the disease; quinine I have also seen employed with advantage; and recognizing the value of iron, in the form of the muriated tincture, in erysipelas and in some forms of scarlatina, I have satisfied myself that its persistent use, during

* *Memoirs on Diphtheria*, New Sydenham Society, p. 241.

what may be called the poisoning stage of diphtheria, has had a salutary influence. As a remedy also in those peculiar paralytic affections which so frequently supervene during the convalescence from the disease, or even after recovery from it has been established, it is equally valuable. Hitherto I have seen no case of diphtherial paralysis which has not completely recovered under the administration of this preparation of iron, either singly or in combination with *nux vomica*.

In regard to the aid which surgery affords in those terrible cases of threatened suffocation, where the larynx has become involved in the diphtheritic exudation, I am not prepared to speak with confidence. I have seen too little of the operation of tracheotomy in such circumstances to enable me to form a decided opinion of its value. The opening of the windpipe has, no doubt, in some cases, rescued the victims of diphtheria from the immediate grasp of death, prolonged existence, and even saved life ; but it has often failed to secure more than a temporary respite from the threatened doom ; while in some cases, from the irritation produced by the mechanical means employed for supporting respiration, the facilities given to the passage of poisonous matters into the bronchi, and the difficulties imposed at the same time to the free expectoration of morbid secretions from the air-tubes, sources of distress and danger have arisen which render it doubtful how far the operation has proved a blessing. If, however, it has saved one life—and there is no doubt that it has—it is the duty of the practitioner to offer the chance of its success in every case where not debarred from doing so by utter hopelessness. The only object for which it is to be undertaken is to arrest threatened suffocation, and so afford time to the general disease to run its course in safety, if happily it had been the design and effort of nature so to conduct it, when a new but not unlooked for element in the progress of the disorder had unhappily intervened to embarrass and counteract her.

A fine chubby boy, scarcely two years of age, had been from the previous day under the care of Dr. William Zeigler for a smart attack of diphtheria of some days' standing, when, on Sunday the 12th of January last, I was requested to see him. The exudative inflammation, previously confined to the tonsils, uvula, palate, and posterior wall of the pharynx, had now extended to the larynx, and the child suffered all the agonies of croup. Before evening asphyxia had nearly done its work, when it was arrested by the timely aid of Mr. Spence. Tracheotomy lengthened out the life of the little sufferer, and placed him in comparative ease. He breathed; he slept; he took nourishment; he passed a tranquil night; and on the morrow we found him cheerful and happy, surrounded by his toys, in which he took a full interest, and little disturbed by the simple mechanism which science had interposed between him and death. The respite, alas! was very short. As the day advanced he was seized with vomiting; he became restless and oppressed; his pulse rose in frequency and fell in strength; his breathing became hurried; the obstructed air-cells obtained no adequate relief; and, before the evening closed, he expired, exactly twenty-four hours after the operation. It was a tranquil death compared to that with which he was threatened; and in justice to the operation of tracheotomy, and to those who advocate its performance, it may be allowed that, if it secured nothing more than relief from the agonies of slow suffocation, by substituting a less painful and distressing mode of dying, it is surely entitled to our grateful consideration.

That it can accomplish much more than this, however, we are happily not left to doubt. Mary Y., aged five, a fine healthy child, residing in the vicinity of Leith, was seen by Dr. Paterson on Sunday the 8th of June, having been observed to be drooping for a day or two previously. She was then hot and feverish, restless and uneasy. Her face was

flushed, her tongue loaded, and her throat red and swollen. The tonsils were enlarged, their mucous surface studded with small points of ulceration, and there was much difficulty of swallowing. The disease progressed as a smart attack of tonsillitis. The small points coalesced, and formed a patch of ulceration, superficial, but decided, with well-defined edges. On the 16th she first manifested symptoms of laryngeal irritation. Her cough and inspiration were suspicious. On the 17th, when I saw her, they were characteristic of croup. In spite of treatment they became more urgent, and on the 18th suffocation was imminent. The windpipe was opened by Mr. Spence, and the child was rescued from death. On the following day, after a severe fit of coughing, a membranous cast of the trachea of considerable size was brought up, and great relief was obtained. On the next day the ulcerated surface of the tonsils was found covered by a greyish pellicle, which maintained its place for nearly a week, and then kindly separated, leaving the subjacent surface tender and raw. This, however, healed over quickly. The constitutional symptoms subsided; the tube was removed from the windpipe on the tenth day; and the child lives to tell what tracheotomy accomplished for her.

Within a fortnight of her seizure, her mother, and sister aged three, together with a female servant, suffered from the disease. It manifested itself in each of them as it had done in the early stages of this child's illness—viz., with smart febrile symptoms, great swelling of the tonsils, with numerous points of ulceration coalescing and forming one considerable patch over the centre of the tonsils. This, in its turn, became the seat of pellicular exudation, which, in the case of the mother and servant, separated kindly after a week, and left the parts to heal. While these pages are going through the press, the child, aged three, still labours under sore-throat, with well-defined edges of superficial ulceration, covered by the

distinctive pellicle of diphtheria. The voice has become husky, and a laryngeal cough has raised apprehensions of coming mischief. The history, which I cannot now supply, will, I trust, be given, along with that of other cases of a similar kind, by Dr. Paterson, who has had many opportunities of watching the progress of this intractable affection.

The histories now recorded tend to confirm the views generally entertained in regard to the nature of diphtheria, and go to establish—

1st, That it is a constitutional disorder having the character of fever, running a definite course, and bearing a closer affinity to scarlatina and typhoid fever than to any other specific disease.

2d, That its local manifestation is chiefly observed on the mucous membrane of the mouth and throat; the tonsils, uvula, and palate, with the pharynx, being first affected; but that it has a tendency to spread to the adjoining passages, and is particularly prone to invade the larynx.

3d, That this local disease is of the nature of inflammation of asthenic character, with exudation of lymph in the form of pellicle.

4th, That the disease is contagious, and that youth and consanguinity powerfully predispose to it.

5th, That it is fatal from the severity of the general disorder, or from the exudative inflammation invading the larynx, and causing suffocation; or that death may result from the nervous disorder supervening in the form of paralysis.

And, lastly, that as we have no specific remedy for diphtheria, the disease and its sequels must be treated on the general principles which regulate our practice in fever, and in inflammation, and in nervous disorders, of asthenic character.

IX.

ARSENIC : ITS PHYSIOLOGICAL AND THERAPEUTICAL EFFECTS.

(Read before the Medico-Chirurgical Society of Edinburgh, April 7, 1858.)

IN a communication on the humoral pathology of chorea, which I had the honour of laying before this Society in 1847, I was led to remark that, "after extensive trials of the arsenical solution in periodic affections, in psoriasis and other affections of the skin, in epilepsy and other convulsive diseases, and particularly in chronic rheumatism and chorea, I had been equally gratified by its efficacy as a powerful therapeutic agent, as by its freedom, under judicious management, from all poisonous or injurious consequences."

The interval of time that has elapsed since the publication of that memoir has afforded fresh opportunities of testing the truth and the value of these observations, and has tended to strengthen and confirm the experience of former years.

Arsenic, I believe, is now much more extensively employed in the treatment of disease than it was at the period to which I refer ; and much of the dread and apprehension of its poisonous effects, which deterred many from its use altogether, or suffered its exhibition to be so limited as to cause it to fall short of the production of its physiological operation, have happily been overcome ; and the profession now generally regards it as one of the most useful and available of its therapeutic agents—powerful in many intractable affections—

and exercising a commanding influence over ailments hitherto considered incurable.

"No medicine (says Romberg) has met with so much prejudice as arsenic: many practitioners object to one-fortieth of a grain—about the quantity contained in three drops of Fowler's solution, whilst they exhibit no fear of the deleterious effects of strychnine. The injurious influence of arsenic on the reproductive system has been made a bugbear: the English reckon it among the tonic metals; and my own experience leads me to assert, that, in the numerous and various diseases in which I have of late years employed arsenic, I have invariably seen an improved digestion as marked by a better appetite, and have never observed any injurious consequences result from its use."*

We are indebted to Mr. Hunt for the publication of the results of his experience in the treatment of skin diseases, in which he has proved remarkably successful: demonstrating the efficacy of arsenic in a variety of the most obstinate and unmanageable of this class of ailments; whilst he has furnished us also with some valuable instructions for the successful administration of the remedy, by adhering to which the risk of its deleterious effects may be entirely avoided.†

* On Nervous Diseases. Vol. i., p. 54.—(Sydenham Society Transl., 1852.)

† Mr. Hunt attaches great importance to the mode of administering arsenic by *diminishing* doses, after the physiological effects have presented themselves; and speaks of his plan as in one or two particulars entirely new, and as originating with himself. He states that all writers whom he has had an opportunity of consulting, both British and foreign, direct arsenic to be given in *gradually increasing doses*; and that this, as it is the most common, often proves to be the most serious error.—(Hunt On Diseases of the Skin, p. 10.) Mr. Hunt, however, has neglected to inform us, that all writers who have given such instructions have limited them to the interval between the commencement of the remedy and the period of its first effects upon the system. Thus Dr. Bardsley, writing fifty years ago, tells us that "the arsenical solution has increased the urinary discharge, and at the same time brought on some degree of heat in the fauces, with a slight soreness of the gums, and in-

Other writers have also recently contributed notices of the beneficial effects of arsenic in various diseases, to which I shall have occasion to refer in the sequel.

It is not my intention, in the following remarks, to enter on the early history of arsenic as a remedy in disease, to notice the subject of arsenic-eating, or to refer to the external use of the mineral as a means of curing cancerous or other malignant sores ; I shall confine myself to some practical observations on its internal administration in doses strictly medicinal, so as to illustrate the properties it is acknowledged to possess as a general tonic, as an anti-periodic and febrifuge, and more particularly as a powerful alterative.

In fulfilling these purposes, it is scarcely necessary to say that arsenic acts directly through the blood ; that it is absorbed into and circulated with that fluid ; and that it is found in the urine, as well as in the blood, of those who have taken it, and discovered in the viscera of those who have perished under its destructive influence.

The liquor arsenicalis of the pharmacopœia is the preparation I have chiefly employed for securing the remedial effects of arsenic ; occasionally it has been prescribed in the solid state, in the form of pill ; and not unfrequently in combination with iodine and mercury. The arsenious acid, in the dose of one-fortieth to one-twentieth of a grain, mixed with bread crumb, is a convenient form of administration, and appears to be most suitable in affections of the bowels, and in uterine complaints.

The curative properties of arsenic may be obtained, in creased flow of saliva. As these symptoms were moderate, it was thought better to restrict the exhibition of the remedy to once a day, than to omit it altogether."—(Bardsley's Medical Reports, p. 30.) And Dr. Hunt, twenty years ago, told us that, "instead of increasing, it is often necessary to lessen the quantity, after it has been taken some little time, or even to discontinue it for a week or two, and then resume it."—(Medico-Chirurgical Transactions, vol. xxi., p. 289.)

some instances, before its physiological effects present themselves ; but, in order to secure its virtues as an alterative in the large class of chronic diseases which yield to its influence, it will be necessary to push the medicine to the full development of the phenomena which first indicate its peculiar action on the system. Arsenic, as a remedy, is too often suspended, or altogether abandoned, at the very moment when its curative powers are coming into play. The earliest manifestation of its physiological action is looked upon as its poisonous operation ; the patient declares that the medicine has disagreed with him ; forthwith the physician shares his fears ; the prescription is changed ; and another case is added to the many in which arsenic is said to have failed after a fair trial of its efficacy. The result, I apprehend, would have been different under a cautious and judicious continuance of the remedy—securing its alterative effects on the blood by diminishing doses, or by longer intervals of administration, or by suspending it only for a little, to resume again when the symptoms which awakened suspicion or alarm have disappeared.

Arsenic, when given continuously in moderate doses—say five drops of the liquor arsenicalis, diluted largely with water, twice or thrice a day—will, sooner or later, generally within eight or ten days, produce increase of heat and dryness of skin, together with acceleration of pulse, followed by a sense of heat and itchiness of the eyelids, to which succeed swelling and tenderness ; the conjunctiva becomes inflamed, the eye sensitive to light, and the orbit surrounded by a dark discoloration. The tongue at this time will be found finely coated with a white silvery film, resembling that produced by touching its surface with a weak solution of the lunar caustic—a phenomenon, which, I believe, I first noticed and described in the paper already referred to. The throat becomes dry and sore, the gums swollen and tender ; and, if the medicine is still further persisted in, salivation ensues. Nausea, vomit-

ing, diarrhœa, nervous depression, faintness, and tremor, are added to the catalogue of ills ; but the judicious practitioner will suspend the drug long before these symptoms shew themselves ; indeed, the earlier manifestation of its physiological action will attract his attention, and, by diminishing the dose, or lengthening the intervals of administration, he will keep in check the poisonous action of the mineral, so as to obtain its healing virtues over some obstinate and inveterate disease. Together with the earlier signs of its operation, a marked increase in the quantity of urine will be observed ; and this occurs not unfrequently along with a free deposit of lithates. All who have paid any attention to the physiological action of arsenic must have observed, in numerous instances, as one of the earlier signs, a minute papular rash, which by and by assumes the form of delicate scales, having a brownish colour, and giving to the skin an unwashed appearance. This has been remarked to be most observed over those parts of the skin that are protected from light by clothing. Mr. Hunt regards this arsenical affection of the skin as a faint form of pityriasis, common among those of fair complexion and delicate skin, and remarks, that when the dose of arsenic is diminished on the appearance of conjunctivitis, the eyelids may be allowed to get well ; yet, if the patient's skin be kept *brown*, the disease will vanish just as rapidly as though the conjunctiva were kept sore. I have not been able to verify this observation.

Along with these earlier manifestations of arsenical action, there is generally a marked improvement in the general health ; the appetite improves, the countenance assumes the look of health and vigour, and the muscular energy and activity are increased. The somewhat fabulous experience of the Styrian peasant may now be realized, and the increased power of limb, noticed by Masselot, Trousseau, and others, as resulting from the use of arsenic, may actually be ac-

quired.* Valleix and other French writers remark a contraction of the extensor muscles of the legs as the result of the continued use of arsenic ; but I have never witnessed such effect, and believe that the occurrence is unusual in any case where the remedy is given in moderate doses, and its action carefully watched.

It is unnecessary to attempt any description of the symptoms which follow the persistent use of arsenic, when once these primary phenomena have presented themselves. A fuller development of its action is altogether uncalled for, in order to obtain any curative object ; and it will be the duty of the physician to limit the exhibition of the drug on the earliest manifestation of these symptoms, so as to avoid all risk of poisonous consequences. It may even be found, that the therapeutic virtue may reside in the silent and unobserved action of the mineral. Some have gone so far as to state, that, instead of being favourable to, or necessary for cure, the production of the physiological phenomena is antagonistic to the aim of the physician. I have witnessed the postponement and ultimate cessation of a periodic headache, through the influence of arsenic, before the prickling eyelid or silvered tongue demonstrated its agency. I have seen an infant at the breast, oppressed and feverish, suffering from a diffused eczematous rash, in due time relieved through the same agent administered to the mother, at the time in perfect health,—her eye and tongue proclaiming the power of the remedy which had passed through her system,—her milk the vehicle for conveying it to her child,—the mother alone demonstrating its physiological action,—the child, through her, deriving the therapeutic benefit. But I have never seen the loathsome scales of lepra or psoriasis drop

* "J'insiste sur ce phénomène éprouvé également par M. Masselot, et signalé par lui en ces termes : 'très grande aptitude à la marche.'" *Traité de Therapeutique* par A. Trousseau et H. Pidoux. Vol. i. p. 312.

from the skin and leave a healthy cuticle, till the eye or tongue manifested that the system was under the influence of the mineral, and that for days or weeks together. I have never seen the jactitations of chorea, or the convulsions of epilepsy, subdued and overcome by the power of the same agent, till it revealed its operation in the manner already described. The alterative and tonic effects of arsenic may be obtained by the use of minute doses, in cases where the morbid action is feeble and temporary, without the development of any physiological signs ; but the graver ills and the more serious mischief of lasting neuralgia and chronic rheumatism, will not be subjugated till these signs are not only evoked, but persistently maintained. It must be borne in mind that arsenic is by no means uniform in its action ; that peculiar idiosyncrasy in some cases renders even a small dose apparently inadmissible, in consequence of the nausea and nervous depression it occasions ; that a great tolerance of the drug characterises other cases, in which all the watchful care required in the administration of a cumulative poison is necessary ; that the repetition of minute doses, in one case, fulfils our object, while the exhibition of larger and more frequently repeated quantities often disappoints our expectations. It has appeared to me, that the more obstinate and intractable any disease has proved, so in proportion is the difficulty of bringing the patient under the influence of the remedy. It is only, however, in the long-standing cases of inveterate skin affections, or of chronic nodosity of the joints, so far as my experience goes, that perseverance in its use is required from week to week or month to month.

The arsenical action having been once set up, it is surprising how rapidly certain morbid conditions yield to its influence. The jactitations of chorea and the paroxysms of tic are often arrested, sometimes at once and for ever, so soon as the first faint signs of itching eyelids or the silvered

tongue present themselves: nor is it less gratifying to find in the same indications the harbingers of relief to the nodosities of the joints—the painful deformities of chronic rheumatism. In all cases where the remedy has proved efficacious, it will be well to continue its use in diminishing doses, or in moderate doses at longer intervals, maintaining for a time, in the mildest form, the exhibition of the earliest signs of its physiological action. In more obstinate cases, which have at length succumbed to its power, the rule is more imperative; and a longer season is requisite during which it is necessary to continue its daily administration.

The employment of arsenic is said to be contra-indicated in certain conditions of the system. The state of plethora and of fever are said to belong to these; and, particularly, an irritable condition of the alimentary passages. I have not found its use forbidden in the plethoric habit, the usual care being taken at the time to moderate or subdue such a tendency. It is certainly not incompatible with the febrile condition: arsenic is a febrifuge; it is a powerful remedy in ague; it is useful in some acute forms of cutaneous disease; and, on the supervention of fever in the course of the more chronic ailments, its exhibition may be continued, under ordinary caution, without any untoward consequences. As to an irritable condition of the gastro-intestinal membrane being a bar to its employment, late experience has proved, that in many such cases arsenic is the most valuable remedy we possess for allaying, and ultimately removing this morbid condition. An intimate sympathy exists between the skin and the mucous membrane of the bowels; and it has been remarked, that in many cutaneous affections diarrhoea is apt to occur, and to keep pace with the progress of the primary disease. It is certain that, in such cases, arsenic can be employed, not only with advantage to the skin affection, but with a corresponding improvement in the condition of the bowels; the relief and cure of the two

disorders being coincident with the development of the earliest symptoms of arsenical operation. But, apart altogether from this class of cases, there is another, where no skin affection complicates the disease of the bowels, and where the continued irritation, with frequent dejections of vitiated secretions and bloody mucus, gives rise to the suspicion that ulceration of the inner coat has taken place ; or where the evacuations are of such a character as to lead to the belief, that a process of eruption and desquamation analogous to that observed on the skin is going on. In such cases, small doses of arsenic, cautiously administered, have been found highly serviceable—correcting the excretions—checking the diarrhoea—and restoring a healthy character to the mucous membrane. Arsenic has lately been extolled in the highest terms as a remedy in cholera, having been employed, in full and frequently repeated doses, during the vomiting, purging, and collapse of the disease.*

We are sometimes disappointed in our expectations of the effects of arsenic. We prescribe it in one case with marked success ; but it proves inefficacious in another which presents itself to us as its counterpart. We are puzzled for the time to account for the discrepancy ; but inquiry leads to the discovery that another element is at work—that a taint of syphilis, or of mercury, or of gout, or of some other poison, lurks in the constitution, and frustrates our endeavour to cure by arsenic single-handed. We do not, however, renounce our remedy ; we combine it with another agent, and doubly armed with arsenic and quinine, or with arsenic and iodine, or with the triple compound of arsenic, iodine, and mercury, or with some extemporaneous admixture of one or other of these potent remedies with colchicum, quinine, or other adjuvant, by their united influence we achieve success. We are called to one labouring under excruciating headache,

* Black. *Lancet*, Oct. 3, 1857.

which attacks him at an early hour in the day, and regularly takes its departure in the afternoon. Day after day the attack is renewed, and the same hours witness the return and departure of the paroxysm. It has defied all ordinary methods of treating headache; the physician has pronounced it brow-ague, and has promised that it shall yield to quinine or bebeerine; he is disappointed; it has resisted both; he betakes himself to Fowler's solution, and after two or three days the attack is postponed, or it comes in a less severe form, and takes its leave at an earlier hour. After another day or two it ceases altogether. We are gratified by this exhibition of the power of arsenic over periodic headache, and resolve to test it again on the first opportunity. The occasion arrives; with confidence we prescribe our remedy: we persist, day after day, in its use, but we are doomed to disappointment. We return to quinine, which has seldom failed on former occasions, but without success. We betake ourselves to bebeerine, and supplement its powers with the alterative effects of depurants, diuretics, and laxatives, but all to no avail. We try a combination of arsenic and quinine, and in a short time the wished-for cure is obtained. In like manner, we are sometimes baffled and perplexed in the treatment of skin diseases. We have seen numerous instances of the extraordinary power of arsenic in psoriasis, and have prescribed it in all with never-failing success. A case at last presents itself, in no feature apparently differing from those that have gone before. We administer the antidote as formerly; we watch its physiological effects; we observe no improvement in the condition of the skin; and at length are compelled to admit that arsenic has failed. Unwilling, however, to come to such a conclusion, we still hold by the favourite remedy; and supplementing it by another agent, we find a successful combination in Donovan's drops. In like manner we have exhausted all the multiform modes of treating

a long-standing neuralgia, and at last, almost despairing of success, have hit upon arsenic. Its use has disappointed our fears, and we cherish the hope that we shall be equally successful in the treatment of some vexatious sciatica to which we may be called by-and-by. The sufferer arrives; his history is not unlike the last, and we almost promise that we shall cure him, on the faith of our former experience; but it is not so. Nevertheless arsenic is a powerful alterative; we maintain the tender eyelid, and the whitened tongue, and we add to the few drops of the arsenical solution, taken after meals, an evening dose of the extract or wine of colchicum, and the free use of the salts of potash through the day. We have hit the mark; and in the combined action of the three we find an effectual remedy. So have we seen, in many instances, the lameness and deformities of chronic rheumatism—the nodosities of the joints—gradually relax and disappear under a well-conducted course of arsenic; but we are called to acknowledge the aid which, in many cases, we have seen afforded by the addition of iodine, quinine, or cod-liver oil. In no protracted case are we disposed to rest on arsenic alone, though, in conducting the treatment of the disease, we may look confidently to its operation for our chief hope of success; it is a powerful alterative; but the performance of that function, however perfect, may not be sufficient to cure. Contemporaneously with its action, indeed antecedently to it, we may find it necessary to employ laxatives and diuretics, and depurants, and such articles of the *materia medica* as experience has shewn to be useful in fulfilling certain indications of cure.

The limits assigned to such a paper as this forbid the illustration of the subject at any length; but I crave the indulgence of the Society, while I shortly narrate a few cases of successful or unsuccessful treatment by means of arsenic, in detailing which, additional light may, perhaps, be thrown on its physiological as well as on its therapeutic action.

It was at the close of the last century that cod-liver oil was accidentally introduced into practice, in the wards of the Manchester Infirmary, as a remedy in chronic rheumatism. It was in the same place, and in a similar manner, some years subsequently, that arsenic was first administered for the cure of that disease. In the writings of Haygarth and the elder Bardsley, will be found many cases illustrating its efficacy. In more recent times it has not disappointed expectation. Speaking of the use of arsenic in chronic rheumatism, Dr. Christison says, "I have known several cases of this nodosity of the joints, as some authors term it, get well under the continuous administration of arsenic for some weeks ; and it appeared to me that the commencement of the cure concurred with the first development of the physiological effects." "Arsenic (says Dr. Fuller), judiciously administered, and carefully watched in its effects, is one of the most valuable remedies in the chronic forms of rheumatism."

I. Many years ago, an industrious workman, approaching the decline of life, applied to me for the relief or cure of the crippling and painful swellings of the small joints of his hands, and particularly of his feet, under which he had long laboured, and by which he had been rendered utterly unfit to pursue his usual avocations. The pains became aggravated at night, and under vicissitudes of temperature, and the patient was sensitively alive to changes of weather. It was with great difficulty and considerable suffering that he had been able to hobble to my door. When I speak of his case as one of chronic rheumatism, I sufficiently describe it. Under remedies external and internal, orthodox and empirical, he had derived no benefit ; and seemed almost hopeless of relief. He was ordered to take five drops of the liquor arsenicalis after each meal, and to add one drop every third day till the eyelids became affected. He faithfully followed the prescription for many weeks, and underwent

the trifling disorder which characterises the operation of the drug. He continued his attendance for several months. The knobbiness, and stiffness, and pain of his joints gradually subsided and disappeared; he walked repeatedly to my house, a distance of a mile and a half, with ease and comfort; he improved in general health; at last he ceased his attendance, he returned to his workshop, and I saw no more of him.

II. A married lady, in the prime of life, the mother of several children, the descendant of gouty ancestors, and a sufferer in earlier years from painful and disordered menstruation, consulted me last autumn for symptoms corresponding in some measure with those exhibited by this workman. She was very lame from the stiffness, swelling, and deformities of her toes, and ankle-joints, and quite incapable of holding a needle, or directing a pen, from the painful nodosities of her fingers and hands, the distorted appearance of which presented a remarkable uniformity on both sides of the body—symmetrical, in obedience to the law of blood diseases, as noticed by Dr. Budd. She had feverish, restless nights; a worn-out, emaciated look; a tendency to hectic paroxysms; a depraved appetite; a loaded tongue; along with copious lithates in the urine, and considerable derangement of the biliary secretions. These symptoms had supervened on a miscarriage she had suffered in the spring, followed by a protracted and anxious attendance on a near relative during a dangerous illness. The severity of the attack had, in a great measure, subsided before she came under my care. She had been judiciously treated in the North of England, where she usually resided: colchicum, iodine, and various other remedies had been employed; but her disorder went on. After it had been corrected to some extent by depurants and laxatives, without any relief to the local disease, she was ordered to take the liquor arsenicalis in the usual dose, and with the usual instructions. She continued two months under my care; the medicine was taken regularly

during that time ; no well marked physiological effects ensued ; but a gradual improvement in the condition of the feet and hands took place ; she was able to walk with comparative comfort, and to handle her knife and fork, with ease. Her general health had improved, the secretions of the kidney and liver had assumed a normal character ; she added to her usual remedy the free use of lemon juice, and an occasional warm bath. She left Edinburgh, with instructions to continue the arsenic, and begin the use of cod-liver oil. I learned, in the course of a month, that she had made progress towards ultimate cure ; that the pains, and swellings, and stiffness, were gradually subsiding ; that a fulness of the eyelids had been observed, along with a dryness of the mouth and tongue ; that she had intermitted the use of the arsenic for ten days, in consequence of these symptoms concurring with uneasiness and slight pain in the stomach ; but that she had failed to witness any of the other phenomena for which she had been directed to watch. I subsequently learned, that with the exception of the short interval referred to, she had persistently taken the arsenic for three months, without any other unpleasant consequences than those alluded to ; and had, on the contrary, during the time it was suspended, experienced some increase of the pain, and stiffness of the small joints, which had, however, given way on her resuming the medicine. She was directed to continue the use of the mineral in diminished doses, and to adhere to that of the cod-liver oil. The last accounts bear that she is greatly improved in health, and able to walk with ease to a considerable distance.

The case of the lady differs in some respects from that of the workman. His presented the true characters of chronic rheumatism ; hers manifested those of rheumatic gout, as it is called, a painful and obstinate affection to which females suffering from uterine disorder are peculiarly liable. It will be remarked, that in the former case the mineral acted quickly

and successfully ; in the latter its effects, both physiological and curative, were slowly and imperfectly developed. The cases together, bear witness to the correct observation of Dr. Bardsley, and the earlier exhibitors of arsenic in chronic rheumatism,—that while in the one form of disease the medicine will be found to cure without assistance, in the other form it will be necessary to call in the aid of other remedies. Still, in the language of Dr. Fuller, it will be found “a faithful ally.”

Closely allied to rheumatism, we might expect that neuralgia in some of its forms would be found to yield to arsenic ; accordingly we have the high authority of Romberg in its favour. Speaking of the remedies for neuralgia, he says, “The united testimony of various observers agrees in according to arsenic the chief place among metallic preparations ; but it will not do to rest contented with such timid doses as might be worthy of a homœopathic quack. It must be exhibited in increasing doses, from three to ten drops of Fowler’s solution, two or three times daily ; it should be persevered in until the toxic effects shew themselves, in sickness, a sense of fainting, formication in the toes and fingers, dryness of the fauces, and white tongue ; then a pause should be allowed, and the solution be resumed as soon as those symptoms have subsided.”*

III. A gentleman, aged forty, consulted me lately for severe headache, from which he had suffered for many months, and for relief from which he had used many remedies unavailingly. The pain was chiefly seated over the right side of the face and head, and was subject to exacerbations occurring chiefly in the early part of the day. Its periodicity, however, was not well marked, but its paroxysmal character was well defined. Under the use of large doses of quinine, some modification of its severity was obtained, and under aconite a

* A Manual of the Nervous Diseases of Man.—Sydenham Society’s Translation. Vol. i. p. 53.

mitigation of suffering was procured. The effect, however, was transient, and was soon altogether lost. No other remedy or application had been attended with better results. He was placed under the use of arsenic. Five drops of the liquor arsenicalis were prescribed; the dose to be taken three times a day, along with twenty drops of the liquor cinchonæ. In ten days he returned to report progress. He was considerably relieved; the pain was less acute, and there were longer intervals of comparative relief from suffering. The conjunctiva was slightly congested, and the eyelids were hot and itchy. He was directed to continue the medicine for a few days in the dose at first prescribed, and in the event of the eyeball becoming influenced, or of sickness supervening, to diminish the dose to the extent of one half. He continued the use of the remedy for some days longer; the pain gradually diminished, and he ceased his attendance.

There is much truth in the remark made by Dr. Hunt, in his recent work on *tic douloureux*, that "few medicines act more powerfully and beneficially upon disease than arsenic does over some kinds of neuralgia; whilst upon others its influence is not only useless, but prejudicial. The uncertain result (he continues) depends either on some difference in the disease itself, or in the cause of the disease, or in the injudicious administration of the medicine." Dr. Hunt has recorded several cases illustrative of the beneficial effects of arsenic in neuralgia; and bearing, at the same time, on another point to which I purpose to call the attention of the Society,—I mean the connection of the nervous disease with uterine disorder; but I can only refer at present to these cases in the twenty-first volume of the *Medico-Chirurgical Transactions*, and in the separate volume more recently published, as illustrating the beneficial effects of arsenic in both disorders. I beg, however, to quote, in a somewhat abridged form, the following case :—

IV. Mrs. V——, a lady of nervous temperament, had a very protracted and difficult labour with her second child, in 1822, which was followed by considerable hæmorrhage. She very slowly recovered from the effects of it, never, indeed, perfectly; and from that time her health has been delicate. She has ever since been subject to menorrhagia and leucorrhœa. In 1830 she was attacked with pains in the nerves of the left cheek, at first not severely, but it soon increased in violence. She had been under the superintendence of various medical men, and had taken a great variety of remedies. The carbonate of iron was resorted to, in the doses recommended by Mr. Hutchinson, for many months, without relief. The menorrhagia, during its exhibition, was more violent than usual. With the hope of finding relief, many teeth, both decayed and sound, have been extracted, but unsuccessfully. In July 1835 (says Dr. Hunt) I first saw her: she was pale, weak, and exhausted, by her sufferings and uterine discharges. The paroxysms of pain returned frequently during the day and night, shooting through the branches of the second division of the fifth pair, more particularly the inferior maxillary branch. The tongue was moist, and covered with a yellowish coat. The lining membrane of the mouth and fauces was pale and bloodless. The bowels were regular, excepting a few days previous to menstruation, when they were irritable and relaxed. The catamenia returned regularly, for the first two days very profusely; but continued in a more moderate degree for ten days or a fortnight. The *tic-doloureux* was more severe during these periods, particularly at night. On examination the uterus was found to be of natural size, and not tender to the touch. After some mild aperients, I gave her the liquor arsenicalis, commencing with five minims, three times a day, with thirty of paregoric, gradually augmenting the dose, until she felt its effect decidedly on the system, which she did when the quantity in each dose amounted to ten minims.

This sensibly moderated the pain ; she then discontinued it. As soon as the peculiar feelings from the arsenic abated, she recommenced taking it in smaller doses. At the next period, the pain was very severe, and the bowels were as irritable as they had usually been in the previous months. Immediately before the following period, in addition to the arsenic, I gave her a grain of the extract of belladonna four nights successively, which allayed the general irritability of the system, kept the bowels quiet, and, together with the arsenic, diminished the menstrual discharge. The pain was also decidedly lessened. The leucorrhœa continuing profuse ; an injection per vaginam was used twice a day, of the sulphate of alum and zinc. I also recommended the free use of cold water every morning and evening, and strict rest on a sofa for a few days before the appearance and during the time the catamenia continued. I steadily followed up this plan for more than twelve months, omitting the arsenic from time to time, taking care, however, that it was always taken a few days previous to the menstrual period. The uterus gradually recovered its tone, and performed its functions properly ; the leucorrhœa ceased, and the tic-doloureux abated in proportion as the uterine disorder was remedied, until it ceased altogether.*

I shall have occasion to refer to this class of cases in connection with the effects of arsenic in disorders of the uterus.

Among the various remedies employed for the cure of chorea, arsenic holds the foremost place. In a previous communication I have detailed the history of several cases in which its administration was speedily attended by complete relief to all the symptoms. I now beg to subjoin the following :—

V. On the 6th of May 1856, I was requested by Dr. Finlay to visit, along with him, a boy of the age of sixteen,

* Hunt on Tic-Doloureux, p. 93.

who had, for the ten previous days, been labouring under chorea, in a very aggravated form. The boy was the son of healthy parents, and one of a family of ten, among whom no particular form of disease had manifested itself. He himself, at the age of fourteen, had suffered from a rheumatic attack, of three weeks' duration; but, during the period intervening, had enjoyed perfect health. When seen, on the tenth day of his illness, he was in bed, unable to rest in any posture—the muscles of the trunk and extremities being affected by constant and violent jactitations; those of the neck, head, and face participating in the general spasmodic movements. The limbs were sometimes so violently convulsed, and the writhings and agitations of the body so strong, as to render it necessary to impose the whole weight of a grown-up person in order to retain him in bed. He was unable to articulate, except in monosyllables, emitted with a forcible sound, and in an unnatural manner. He was unable to swallow except to a limited extent, generally losing by the choreic movements, a large portion of his food and drink. In the attempts to take food, the jaws frequently closed on the spoon or vessel offered to him, and the glass or earthenware were fractured at times between his teeth. The general choreic movements were incessant, except during sleep, when perfect stillness of the muscles prevailed; but this was of short duration, according to his mother's account, never longer than half an hour at a time, when the agitations were resumed with their wonted force, along with the peculiar gesticulations and grimaces which characterize the disease. On one occasion, it was remarked that there was a temporary lull to these involuntary muscular movements, from a cause acting powerfully on the mind: the patient, in attempting to drink from a wine-glass offered to him, convulsively seized the vessel between his teeth, and broke it, wounding his tongue, from which blood flowed freely, the sight of which alarmed him,—

calming his agitated frame, and placing his muscles for a time under the government of the will. The mind was throughout the illness undisturbed, and the natural functions were duly performed. No remission of the symptoms had attended the remedies hitherto prescribed. He was ordered the arsenical solution, in the usual dose of five drops, thrice a day, which he continued under the observation of Dr. Finlay. On seeing him again together on the 17th—ten days after our last visit—there was a marked remission in all the choreic contortions. The eyeball was suffused, and the tongue, which was still suddenly thrust out, and as suddenly drawn back, was swollen and whitened. He was ordered to continue the drops. On the 28th he was nearly well; all the symptoms having gradually abated in the interval. He was able to maintain himself in a state of rest, to articulate plainly without grimaces, and to swallow without snapping. The arsenic had been followed by a full development of its physiological effects, to which was added a copious crop of boils. He was permitted to discontinue the medicine, at the end of three weeks from the time of its commencement, when every symptom of his malady had disappeared. Dr. Finlay informs me, that a slight attack of the same character, occurring about a twelvemonth afterwards, was speedily arrested by a return to the same mode of treatment. The case illustrates the remark made in a former paper in regard to the value of arsenic as a remedy in chorea, and, along with others, still enables me to say that in this disease I have never seen it fail. The sequel of one of those, formerly recorded, however, is worthy of notice.

VI. The little girl, whose choreic illness in connection with her father's second rheumatic fever, I formerly detailed to the Society, after her recovery under the use of arsenic, continued in good health for several years; her father, meantime suffering a third attack of rheumatic fever. Without a return of chorea, and uncomplicated with any affection of the

joints, the daughter, three years ago, was found to be labouring under cardiac disease. Its advent had been slow and insidious, and unmarked by any symptoms calculated to attract attention or point out its precise origin. It then existed in the form of disease of the mitral valve, with hypertrophy of the heart. It made rapid progress, embarrassing more and more the circulation, and involving the lungs and liver in the general mischief. Breathless and dropsical—the closing fate of many a choreic patient—the poor child was removed from suffering. No opportunity, I regret to say, was afforded of examining the body after death, but numerous examples are on record of the diagnosis made during life, in such cases, being verified by dissection.

I may here be permitted to remark, that if it is the province of the physician, during the progress of a rheumatic fever, daily to watch the sounds and actions of the heart, so as to discover the earliest signs of endocardial or pericardial participation, it is no less required of him that, during the progress of chorea, and long after it has ceased, he should exercise the same vigilance in regard to the cardiac symptoms which so frequently accompany or follow the nervous disorder. The younger victims, especially, of chorea, are often pallid and spanemic, hence the abnormal cardiac sounds which not unfrequently coexist with, or supervene upon, the nervous affection, have too often been considered inorganic, till signs of obstructed circulation have told that they were of more serious import.

VII. A girl of eleven years, whose case is recorded by Romberg, had been affected for eight years with intense chorea, especially of the right half of the body. All remedies applied for a series of years had proved ineffectual. On the 22d November 1842, Fowler's solution was ordered for the first time, but was omitted again for a time, when, after a week, slight toxic symptoms were manifested. It was then

again given in increasing doses ; a marked improvement was manifested at the end of January 1843, and in March the patient had entirely recovered from the chorea of eight years' duration ; she continued free from it, as she assured Romberg, on applying for relief, in 1849, for a paralytic affection of the face caused by rheumatism. In another patient, a girl of ten years, the chorea had continued for two years. Purgatives, preparations of iron, and cold effusion had been employed in vain by other medical men. Fowler's solution was ordered on the 29th of January 1844 ; on the 19th of February the symptoms presented a marked abatement, and on the 5th of May the patient was discharged cured. I am tempted to give just one other of Romberg's cures. In the spring of 1850, he was called to a case of chorea of extreme intensity, which had lasted six months. The patient, a girl of eight years, after a previous attack of articular rheumatism, had for half a year been afflicted with chorea, to such an extent that she could neither walk nor stand, nor speak articulately ; when awake, her violent movements rendered it necessary for several persons to hold her ; and she was much emaciated. All the remedies tried had failed. The use of Fowler's solution, continued for eight weeks, and taken in doses of four drops three times a day, established the cure.

If arsenic is capable of arresting the ordinary manifestations of chorea, may it not be available in checking the progress of the more obscure disorder with which chorea is often associated ? If arsenic can so influence the blood, whose abnormal condition is the cause of so much nervous disorder, may it not also prevent the deposition of those tender bead-like warts on the edge of the mitral or aortic valves, which, though small in themselves, are the immediate cause of so much subsequent disaster ? Some observing physician, who enjoys the privilege of watching the progress and effects of the rheumatic poison will, I anticipate, one day announce

that, already armed with the means of subduing the severest forms of rheumatic fever in a few days, and in the possession of remedies capable of arresting the progress of recent cardiac effusions, he has also succeeded in silencing the organic murmurs, and calming the unnatural impulse, which, in other cases, under less successful treatment, have declared, perhaps after months and years, that the heart had suffered in the blood disorder. If arsenic possesses the power of promoting the absorption of the nodosities of chronic rheumatism, may it not also effect the removal of the puckerings and vegetations which, by a similar process of deposition, have overtaken the valvular structure of the heart?

If arsenic has proved successful as a remedy in chronic rheumatism, in neuralgia, and in chorea, it has been no less useful in certain forms of skin disease connected with the rheumatic diathesis. The papular, pustular, vesicular, and squamous affections, in their chronic and non-contagious forms, are especially amenable to its influence. Mr. Hunt has extended its application to other varieties, in the treatment of which I have had little or no experience.

VIII. A gentleman, aged forty, whose father had suffered from rheumatism, and whose grandfather had long laboured under a chronic affection of the skin of a scaly kind, consulted me for a rheumatic affection of the hands and feet, under which he had suffered for five years. The finger-joints were swollen, painful, and stiff, so that he was unable to use his hands but very imperfectly. The joints of the toes were equally swollen and painful, and his power of walking was so very limited and imperfect that he was obliged to have recourse to a carriage as the means of overtaking his professional duties. While suffering from this painful affection of the joints, he was also enduring the annoyance and distress arising from a copious eruption of psoriasis distributed over the trunk of the body, over the thighs and legs, and over the

forearms. This last affection had maintained its place undisturbed and unmitigated for the long period of ten years. The combined ailments were such as to render life very burdensome, and he had despaired of any mitigation or relief from the complicated disorder. In the midst of his sufferings it was some consolation, however, to be assured that the apparently dissimilar diseases had a common origin, and that, if one of them was found subject to a remedy, the other would in all likelihood also acknowledge its power. The materia-medica had been well-nigh exhausted, but arsenic had never been administered, or if prescribed, had never been employed in such a manner as to secure its remedial effects. He was strongly urged to give the medicine a fair and persistent trial. He commenced with five minims of the liquor arsenicalis taken after meals, and found that he had a great tolerance of the remedy. Weeks passed before the eyes became red and tender, and a still longer period before the tongue assumed its silvery whiteness. Some remission of pain and stiffness of the joints was now acknowledged. Hopeful of further benefit, the remedy was continued. A second attack of conjunctivitis caused its suspension for a time. Its renewal was accompanied with still more decided benefit. The feet and ankle-joints became less painful and stiff, the swelling gradually subsided, and locomotion was greatly extended. Simultaneously the hands and fingers derived benefit; the act of writing, which had been suspended, was resumed, and all manual exertions were found practicable. In six months from the commencement of the arsenic, the rheumatic affection was overcome. The cutaneous disease, more chronic in its nature, and less amenable to treatment, still resisted the power of the great anti-arthritic remedy. Nevertheless it was persistently taken—course after course, each in its turn rooting out more and more the inveterate disorder, till, in 1859, after four years of patient perseverance, the disease was entirely eradicated, and health

completely re-established. The quantity of the arsenical solution taken during these years must have been very large ; but the patient assures me that, with the exception of the two attacks of conjunctivitis, he suffered no inconvenience from the medicine, while his general health was greatly promoted.

IX. A baker, aged forty, who had for twenty years laboured under a scaly eruption affecting chiefly the arms and hands, applied to me, many years ago, for the means of its removal. It presented the character of lepra, and had proved obstinate and intractable ; on one occasion only, during the long period referred to, yielding temporarily to remedies prescribed by the late Mr. Liston. The patient was of sallow complexion and somewhat unhealthy appearance ; but he made no complaint of any disorder except his inveterate skin disease. He was of rheumatic habit. After a short trial of aperient and depurant remedies, assisted by sulphureous baths, and sponging with diluted vinegar, he was ordered to commence the Fowler's solution in the usual manner, and continue till the constitutional effects presented themselves. In a fortnight he applied for instructions ; the eye-lids were swollen, red, and itchy ; the tongue was coated with the silvery whiteness ; the eruption manifested little or no change ; he was recommended to persevere in the use of the arsenic in diminished doses. He persistently used the medicine for three weeks longer, during which time the eruption gradually faded, the scales fell from the skin, leaving a healthy surface, his general health improved, and he was pronounced well in three months from the commencement of the treatment. I saw him a short time ago, when he continued free from all complaint.

X. Some years ago a young lady, apparently in perfect health, judging from the freshness and bloom of her countenance, consulted me regarding a cutaneous eruption, having the well marked characters of psoriasis, with intervening patches having more those of lepra vulgaris. It had lasted

many months, resisting many applications ; and was distributed in numerous patches over the trunk of the body as well as over the extremities. It was the source more of irritation and annoyance than of pain. She had suffered from dysmenorrhœa and general uterine disorder, but was otherwise in good health. Her family had manifested a predisposition to rheumatic ailments. After a few doses of saline aperients and depurants, the liquor arsenicalis was administered in doses of five drops three times a day, immediately after food, and the skin ordered to be bathed once or twice a day with vinegar diluted largely with warm water. On her next visit, at the end of a week, the arsenical action was faintly developed, but the scaly patches had undergone no change. She was ordered to persevere in the use of the drops. At the end of the second week, the eyelids and tongue presented the distinctive characters of the operation of arsenic. The eruption was checked in its progress, and in one or two patches the separation of the scales had disclosed a healthy surface. She was enjoined to continue the use of the drops. In the course of another week, the disease was shorn of its strength, and the medicine was intermitted, with instructions to resume its use in the event of any reappearance of the eruption. Before many months were over it had regained its place, but again yielded and disappeared under the influence of the arsenic. This alternation was repeated again and again, till tired and disappointed, the patient transferred her confidence to another physician ; and on meeting her many months afterwards, I learned that her malady had entirely disappeared under the influence of tar. Subsequent observation has led me to see the error committed in this instance by withdrawing the remedy too early, in place of persisting in its use for some time after every vestige of the disease had disappeared.*

* Attention to this rule cannot be too strongly insisted on in the case of all chronic affections.

How far the tar, to which the cure was attributed, was assisted by the previous exhibition of arsenic, I can only conjecture. We know, however, that from the days of Cullen, tar has been deservedly a favourite remedy in the chronic cutaneous eruptions. I saw lately a young lady, under the care of Dr. Simpson, who had long suffered from lepra, and had been for nearly a year under treatment by arsenic. She was then recovering, under the use of tar, which Dr. Simpson had prescribed in consequence of understanding that arsenic had failed to effect a cure. To what extent, or in what manner, the mineral had been employed, I was unable to learn. The patient, in obtaining the cure of her leprous disorder, secured also relief from uterine derangement, under which she had long laboured.

XI. A young lady, in her twentieth year, applied to me for relief of a skin affection, which assumed the form of psoriasis, in patches scattered over the limbs. The complaint had existed during several months, accompanied by considerable irritation; but, from unwillingness to disclose a disorder looked upon as loathsome, she had not been subjected to any treatment which gave promise of removing it. The invasion of the temples and forehead at length compelled her to seek advice. She was in excellent health, apparently, and no constitutional derangement was acknowledged. Her family were rheumatic. I had recently attended her brother, while labouring under a severe attack of pleurisy. A saline aperient was prescribed daily, together with the liquor arsenicalis, in five drop doses, after meals. In three or four days the eyelids and face became suffused and swollen, the skin dry and febrile, and the tongue covered with a fine silvery film. Considerable alarm was created by the first of these manifestations, and much unwillingness was expressed in regard to the continuance of the treatment. The arsenic was accordingly discontinued for a time, and resumed in smaller doses; the

eruption having undergone only a partial improvement. The effects of the medicine were kept up in a modified form ; the disease was arrested, and ultimately disappeared in the course of a few weeks. In this case the arsenical action was speedily demonstrated, and in a degree somewhat more severe than usual. The practice of diminishing the dose, and persevering in a reduced form, was attended by the best results.

XII. The infant referred to in a previous part of this paper, was in his fourth month, and being suckled by his mother, then in perfect health, but partaking deeply, with her family, in the rheumatic diathesis. He was a fine healthy-looking child, and had escaped all sickness save that produced by vaccination, in the usual form, two months previously. At the time I saw him, he had been restless and feverish ; and on examining the skin it was found covered with minute vesicles bearing the character of eczema. The febrifuge and aperient remedies, suited for his tender age, were prescribed with no advantage to the eruption ; but the febrile condition subsided to some extent. The face and head were covered with copious crops of vesicles, some declining, others maturing, and I feared the affection assuming the chronic form, and occasioning all the annoyances of the crusta lactea. Desirous of influencing the disease through the medium of the mother, I placed her under small doses of the liquor arsenicalis, which were continued thrice a day for five or six days, when the prickling itchy eyelid, and tender eyeball, with silvery tongue, indicated its operation on her system. Coincident with these phenomena in the parent, came relief to her offspring ; the eczema faded and died away ; the child manifested no physiological effects of the remedy, but, through the vicarious illness of the mother, he derived the full benefit of its therapeutic virtue.

It is worthy of remark that, in treating skin diseases with arsenic, on the development of the first signs of its physiologi-

cal operation, there is not unfrequently an aggravation of the eruption for a short time. This circumstance should not deter, but, on the contrary, encourage us, persistently to maintain its use.

Differing widely, apparently, in their nature, yet frequently and intimately associated together, are the chronic affections of the skin, with some of the most obstinate and intractable disorders of the uterus, and over them, conjunctly or separately, arsenic exercises a powerful control. In the twenty-first volume of the *Medico-Chirurgical Transactions*, we are told that Sir Charles Locock cured a lady of menorrhagia by arsenic, having recommended it to her for a disorder of the nose, being ignorant at the time that she was subject to the former disorder, she having neglected to mention it, considering it quite irremediable, as it had baffled the skill of every physician she had hitherto consulted. In the same volume, we learn that Eliza Fox consulted Mr. Hunt, in 1836, for a leprous eruption on the knees and elbows, for which he prescribed three drops of the liquor arsenicalis three times a day. At the end of three months her mother called upon him to thank him for not only curing her daughter of the eruption, but for making her regular, then mentioning, for the first time, that previously to taking the medicine her daughter had menstruated much too frequently and profusely, which had gradually abated since she had commenced taking the drops, and that she was then quite well.

In this manner, it appears, arsenic was introduced as a remedy in uterine disorders. Dr. Hunt, it is true, had previously prescribed it in a case of cancer of the womb, and had been forcibly struck with the fact, that the pain in the diseased part was relieved as soon as the medicine affected the system ; and recollecting that inflammation of the genitals occasionally follows the administration of arsenic as a poison, he was led to hope that it might be useful in some disorders of these

parts. Accordingly, he prescribed it in a great variety of uterine affections, and published the results of his experience of its use in menorrhagia, dysmenorrhœa, leucorrhœa, and other disorders, in which he has recorded many interesting cases of successful treatment, one of which I detailed in a former part of this paper. Sir Charles Locock confirms the value of the remedy; and states, that he has employed it, with great success, in certain forms of menorrhagia, and in many other uterine affections.

Dr. Simpson informs me that he has used it extensively and successfully in amenorrhœa and other disorders of the uterus, where iron appeared to be contra-indicated; as well as in that peculiar affection of the bowels which he has described to this Society as prevalent among females, and characterized by copious discharge of membranous shreds, and accompanied by great emaciation, and a long train of neuralgic and other nervous symptoms. This pellicular affection of the mucous membrane of the bowels occasionally co-exists with dysmenorrhœa or other uterine disorder, the membranous shreds being discharged from the bowels and the uterus at the same time, and is found to yield to the same treatment as that adopted in chronic cutaneous eruptions. "Most reliance (Dr. Simpson tells us) ought to be placed on small and very long continued doses of arsenic, as two drops of Fowler's solution, or a pill containing the sixtieth of a grain of the arsenite of potass, taken three or four times a day."*

Arsenic has been employed as a remedy in the remittent fevers of this country. "Towards the end of autumn (says the late Dr. Ferriar of Manchester), we are generally visited by remittent fevers; and I scarcely recollect a season in which some obstinate cases of this nature have not occurred, which resisted all the usual methods of cure. A succession of melancholy events of this kind induced me to look for a

* Simpson's Obstetric Works, vol. i., p. 311.

more powerful tonic than bark or steel, and from the analogy between intermittents and remittent fever, I turned my thoughts to the employment of the arsenicum album, for the revival of which, as a medicine, the public are indebted to the late Dr. Fowler. I soon had occasion to employ it in some very dangerous and tedious remittents, and I found it a safe and certain remedy. It generally lessens, if it does not suspend, the second paroxysm after it is exhibited, and it effects the purpose without producing the slightest disturbance in the habit. I have generally given to an adult five drops of the saturated solution every four hours, and I have seldom found it necessary to exceed this dose.”*

Arsenic has long been successfully employed in ague, and still holds its place, competing with quinine for rank and preference. “I have been able (says M. Boudin, the late Physician-General of the French troops in Algeria), in a great number of cases, and by very small doses of arsenious acid, to put an end, in a short time, to quotidian, tertian, and quartan fevers, contracted in latitudes the most various, often complicated with chronic enlargements of the abdominal viscera, which were incurable by sulphate of quinine.”† In correspondence with this experience we find that Mr. Turner has employed arsenious acid for twenty years in the treatment of Indian intermittents. His opinion is that it is of equal, if not of greater, value than quinine in these diseases, and that the fear of danger, or inconvenience from the remedy, is much exaggerated.‡

Arsenic has been employed successfully in many affections of the bronchial tubes, in bronchitis, in hay-fever, and in other forms of asthma. In bronchitis and in hay-fever I have found it useful, especially when these affections were

* Ferriar's Medical Histories and Reflections, vol. i., p. 184.

† *Traité des Fièvres Intermittents*, p. 276.

‡ Proceedings of the Royal Medical and Chirurgical Society, June 25, 1861.

associated with such skin affections as are seen in connection with the rheumatic or gouty diathesis. It has been found useful in cancer and in indolent ulcers ; in the former, subduing pain and arresting the progress of the disease ; in the latter, securing a healthy granulating surface, and effecting a complete cure when other means have failed. It has proved useful in rheumatic ophthalmia, and other affections of the eye. Lastly, it has been employed successfully in some forms of paralysis, and in other disorders of the nervous system.

I have thus cursorily referred to several diseases, and attempted a somewhat fuller illustration of others, in which arsenic has been found to exercise a powerful influence as a curative agent. I have left untouched its application in many diseases where that appeared to be of doubtful character ; but enough, I apprehend, has been done to shew how wide is the field over which its therapeutic virtues extend.

It becomes an interesting question how far these multifarious forms of disorder have a common origin and a mutual relation one with another, so as to render them amenable to the operation of the same therapeutic agent.

Setting aside for the present its mode of operation in ague and remittent fever, I believe it will be found that the efficacy of arsenic resides in its powerful alterative effects upon the blood. It cannot have escaped notice, that the diseases over which it has been observed to claim such a mastery are all of them manifestations of a very prevalent blood disease—that which is exhibited in the rheumatic diathesis, and fully developed in the paroxysm of rheumatic fever. This blood disorder, in its rise, and progress, and decline,—in its more or less acute, and in its chronic forms,—exhibits features more or less resembling those of other blood-diseases, and particularly, in common with them, manifests a proneness to select particular organs and particular structures in which to fix the morbid element which is its essence, there to continue its per-

noxious or destructive influence till eliminated from the system. The secondary diseases thus engendered have characters in common with those of other blood-diseases, but they differ in this respect, that they are subject to different therapeutic agents. The chronic cutaneous diseases, for instance, which follow in the course of the gouty diathesis, are amenable to a plan of treatment which is resisted, more or less, by the same class of ailments originating in the rheumatic habit ; the neuralgia of the latter constitution will yield to, and be overcome by, a curative agent which is in vain administered in that of the former ; while the skin affections and neuralgic pains of the victims of diabetes and Bright's disease, will defy the remedies which may be called specific in the corresponding class of diseases of the gouty or rheumatic constitution.

The remedies which have proved themselves most efficacious in any special blood-disorder when fully developed, will, in general, be found most serviceable in the various forms of morbid action which arise from it. Thus, colchicum, which may be regarded as a specific for gout, will be found indispensable in all the various forms of disease which originate in the gouty habit, whether these take the character of an affection of the heart, of the kidney, or of the uterus ; or appear in palsy, or bronchitis, or *tic douloureux*, or in any other of the many ways in which gout manifests itself. It will be remarked, however, that, as the disease becomes more chronic, and the habit more inveterate, it will be necessary to call in the aid of other remedies. The blood-depurants, which in the earliest development of gout or rheumatic fever were powerful in promoting the elimination of the *materies morbi*, may perhaps be found unequal to the task of curing unaided the secondary affections to which it has given rise ; but they will always afford assistance of the most valuable kind, in conjunction with alteratives, for removing the more lingering forms of such disorder. Colchicum, judiciously ad-

ministered, may, single-handed, by its eliminating power, cure a fit of gout of the acute form, and, by persistent use, may free the system from all the symptoms of the gouty poison ; but the remedy alone will not cure the many forms of the chronic disorder, without the aid of iodine, or cod-liver oil, or some other alterative. The acetate of potash, in large and repeated doses, will, in the manner so well described by Dr. Golding Bird, speedily bring to a close a paroxysm of rheumatic fever, and free the internal organs from all risk of mischief ; it may even alone, as Dr. Easton has demonstrated, prove sufficient for the cure of those obstinate skin affections which arise in the progress of the rheumatic diathesis, and will always afford material aid to other remedies for the relief or cure of many of the disorders of that condition ; but, in the large number of the chronic secondary affections, it will be necessary to have recourse to some powerful alterative in order to overcome the disease. Such an alterative it has been the object of this paper to shew we possess in arsenic. Arsenic is specially an alterative in the rheumatic diathesis. It has been designated and recognised as an anti-arthritic.

I am aware that it may be said by some, that the various forms of disease, in which we have just seen that the mineral exercises so much power, are not intimately connected with the rheumatic diathesis ; and that it is too readily assumed that it is in virtue of that relation that they are amenable to the operation of the remedy. It surely will be conceded, however, that in chronic rheumatism we have an instance of the secondary effects of the rheumatic poison, and that here the remedy has established its claim to superior efficacy. It surely will be admitted that neuralgia is often associated with, or originates in, rheumatism, and that it is known to affect, in some of its severest forms, those who are acknowledged to inherit the rheumatic diathesis ; while it has been seen that, in such

cases, arsenic has proved a useful remedy when other means have failed. It must now be acknowledged that chorea is intimately associated with the rheumatic condition, alternating and co-existing with it,—the two affections occurring separately or conjunctly in different individuals of the same family again and again,—the same internal affections occurring in the progress of both diseases alike,—and the same remedy—arsenic—exercising control over the nervous as well as the other form of the disease. Though we cannot connect epilepsy with the rheumatic diathesis, in the same unbroken link as is established with chorea, yet the association frequently exists. Dr. Copland tells us that epileptic seizures from the metastasis of gout or rheumatism, or in persons of the gouty or rheumatic diathesis, may not return, if these diseases fix themselves in the extremities. Dr. Cheyne has remarked, that the convulsive disease is most inveterate when it is accompanied with the chronic cutaneous affections. It is in such circumstances that arsenic may be looked to as a remedy in epilepsy. In like manner, palsy is sometimes associated with the rheumatic diathesis, more particularly palsy of the lower limbs, and some forms of partial paralysis. Arsenic, in such cases, is clearly indicated, and in practice I have seen it completely successful. It is deserving of trial in many cases where it is excluded, from an overdue appreciation of the virtues of mercury and iodine as alterative remedies. It cannot be denied that the bronchial mucous membrane is very liable to be affected in the progress of blood-disorders; witness the bronchitis of gout and that of Bright's disease; and, though perhaps less common, that which accompanies or alternates with rheumatism. As colchicum is serviceable for the relief of the former, so is arsenic for that of the latter. The poison of Bright's disease, as affecting the bronchial mucous membrane, has, as yet, found no corresponding antidote; but iron, which sensibly affects the more prominent symptoms of the renal, acts also bene-

ficially on those of the bronchial, disorder. In connection with this concurrence of bronchitis and asthma with the rheumatic diathesis, there falls to be noticed the frequent co-existence of the bronchial disease with the chronic scaly affection of the skin, and the fact of the one yielding simultaneously with the other, under the operation of the same alterative remedies.

I know a young married lady who has been from childhood a sufferer from asthma. The disease first occurred in the form of bronchitis on the recession of an eczematous rash, which shewed itself in mere infancy. The affections have alternated again and again, and are subject to the same treatment, the exhibition of the liquor arsenicalis. I need scarcely say that, in childhood and in womanhood, she has manifested the signs of the rheumatic diathesis.

The pathology of skin diseases, particularly those of the scaly variety, has been much neglected. We are too much in the habit of looking upon these cutaneous diseases as local affections, instead of regarding them as manifestations of a disorder of the circulating fluids, arising from mal-assimilation ; and hence the want of success in so frequently treating them alone by local applications. All who have studied the characters and progress of the rheumatic diathesis must have observed, among the subjects of it, a great tendency to skin diseases, particularly of the papular, vesicular, and squamous varieties. So common is the relation of the two affections, that I seldom fail, in examining those suffering from such cutaneous diseases, to find that they have laboured under some rheumatic ailments themselves, or that they inherit a predisposition to this blood disease. Dr. Parry tells us that rheumatism often alternates with cutaneous eruptions ; and, therefore, in such cases, formerly obtained the name of scorbutic rheumatism.* It is no less remarkable, that these eruptions are most successfully treated

* Elements of Pathology, p. 386.

by the remedies which are most useful in subduing the acute and chronic forms of rheumatism. I endeavoured, not long ago, in this place, I believe successfully, to establish the connection between erythema nodosum and the blood-disease. The other varieties of erythema, as well as those of urticaria and similar skin affections, yield most readily to depurating remedies, and such alteratives as quinine, arsenic, and colchicum, and occurring so commonly, as they do, in the course of rheumatism and gout, point out, I think, their humoral origin.

I have recently had an opportunity of witnessing the repetition of the experiments performed by Dr. Garrod, as applied to the contents of the large bullæ of the pompholix diutinus, in a case in which I was consulted by Dr. John Brown. As in the gouty blood, under Dr. Garrod's analysis, so in the serum of the skin eruption, under the application of the same chemical agents, were demonstrated on numerous threads, the slender crystals of uric acid. The aged nobleman, who was the subject of this cutaneous eruption, had long laboured under gout, and had suffered from some of its associated evils. On the appearance of the bullæ, which were of a large size, in some instances containing from eight to ten drachms of fluid, it was remarked that the urinary secretion was scanty and loaded with lithates. The kidneys by and by refused their office, and though urged by the most powerful depurants and diuretics, continued obstinately immovable, leaving, as it were, to the numerous little bladders on the skin, the task of eliminating the gouty matter. When the renal functions were at last restored, it was under the use of remedies calculated to subdue the gouty disorder, including colchicum and the hydriodate of potass.

Lastly, the views which have been advanced in regard to the therapeutic agency of arsenic, receive additional confirmation from the acknowledged efficacy of the mineral in uterine disorders. So intimate is the relation, and so frequent

the concurrence, of rheumatism with an unhealthy condition of the uterus, that Dr. Todd has seriously proposed the question,—"Whether, under certain circumstances, the uterus may not be regarded as a source of rheumatic or arthritic matter?" and has devoted one of his interesting Croonian lectures to the illustration of the subject. An able writer, in noticing this view, says, "I believe that in no circumstances is the uterus productive of such matter, but that it is a most influential agent in depurating the blood, when it fully discharges its functions; and that it thus may prove, in the full exercise of these functions, the means of preventing attacks of both rheumatism and gout; whilst the imperfect discharge of the catamenial function, and of the depurating process thereby produced, may favour the development of either rheumatism or gout; the former especially before the forty-eighth or fiftieth year, especially in the rheumatic diathesis, or when the hereditary predisposition to either of these diseases exists. Hence interrupted, scanty, imperfect, or otherwise disordered states of the catamenia, may be an efficient or a concurrent cause of rheumatism; and the catamenial disorder may be complicated with either of the forms of this disease."* In reply to these suggestions, I beg to observe, that this theory will not account for one of the most common complications of rheumatism with uterine disorder, that in which menstruation is excessive; nor will it account for another uterine disorder as associated with the rheumatic diathesis, that in which the depurating process of menstruation is performed, but performed with intense suffering, the uterus on this occasion eliminating, I apprehend, not only the normal menstrual elements, but also the rheumatic or arthritic matter. I incline, therefore, much more to another view, which must present itself in explanation of the connection of the two disorders concurring in the same person, namely, that the

* Copland, Medical Dictionary, Art. "Rheumatism," vol. iii., p. 620.

uterus is affected in its functions and structure through the rheumatic blood. We know that it suffers through gout, and that the affections thus engendered are relieved and overcome through colchicum and such other means as favour the elimination of the gouty matter. I cannot doubt that it is similarly affected through the rheumatic element, hence the relief obtained in so many of its disorders, through arsenic and other remedies, which are known to influence that particular constitution. I have seen cases of peritonitis in intimate relation with rheumatism, and cannot doubt the accurate observation of those who have diagnosed rheumatic inflammation of the womb. Dr. Churchill has described rheumatism of the uterus, and referred to several French and German authorities on the subject. Wigand, one of the latter, informs us that rheumatism may attack the fibres of the uterus as well as the muscles and their sheaths; that along with rheumatism of the uterus, there sometimes exists a general affection of the same nature; but, that more frequently the uterus, its appendages, and the organs immediately surrounding it, are affected, owing to its great irritability during gestation.*

The connection between rheumatism and dysmenorrhœa has long been recognised. Sir Charles Locock, in speaking of the uterine disorder, says, in a few cases, there has been a remarkable connection between the existence of this disease and rheumatism in the same person; and the medicines, such as guaiacum and colchicum, given to relieve the rheumatic symptoms, have at the same time cured the dysmenorrhœa. This fact, he tells us, was accidentally noticed by Dr. Gooch with regard to guaiacum, and consequently he was induced to try that medicine where the painful menstruation existed without the rheumatism, and sometimes with success. Further trials have confirmed the observation in the experience of Sir Charles Locock, and guaiacum is now one of the most approved

* See Churchill on Diseases of Women, p. 505.

remedies in dysmenorrhœa. Dr. Rigby, writing to Dr. Todd, says, "I have been for several years aware that many common derangements of the uterine organs are frequently connected with a state of the system analogous to what, when it attacks the limbs, is known by the name of rheumatic gout, arthritis, etc. This is more especially the case with certain forms of dysmenorrhœa, inflammation of the os, and cervix uteri, with albuminous discharge, and the early stage of scirrhus uteri." Dr. Rigby has elsewhere observed, in treating of dysmenorrhœa, that, "if the patient has a constitutional tendency to rheumatism or rheumatic gout, or circumstances have combined to give it that direction, this diathesis, or taint in the system will, in all probability, be attended with dysmenorrhœal suffering; the increased congestion and irritability of the uterus at the menstrual periods strongly tending to localise it here. We shall generally be led (he adds) to suspect the presence of this condition by the rheumatic pains in one or more of the larger joints, the stiffness and swelling in some of the smaller ones, the disposition to frequent flushing, the high-coloured and loaded state of the urine, and the occasional appearance of uterine flatulence."*

Craving the indulgence of the obstetric physician, I am inclined to hazard the conjecture, that this intimate alliance of the rheumatic and gouty habits with disorder of the uterine functions, may be the occasional cause of miscarriage, and account for those affections of the joints which are occasionally seen in connection with that event. I would still further take leave to suggest that, in cases of pregnant women manifesting the signs and indications of these diatheses, and threatened with abortion, the employment of colchicum, arsenic, and such like remedies, as alteratives and prophylactics, might not be unavailing.

Additional light is thrown upon the nature of this connec-

* On the Constitutional Treatment of Female Diseases, p. 32.

tion, by the knowledge of the fact that females suffering from dysmenorrhœa, menorrhagia, and other uterine disorders, are peculiarly liable to lepra, psoriasis, and other chronic cutaneous eruptions, to discharge of the membranous shreds from the bowels, as well as to neuralgia and other secondary rheumatic ailments. We have seen, in the experience of Sir Charles Locock, Dr. Hunt, and others, how beneficial the use of arsenic has proved in all these complicated affections ; and seeing also how useful colchicum, guaiacum, and other remedies of the same class have been in these disorders, we cannot resist the conclusion that the uterus participates in the rheumatic, as it does in the gouty, diathesis, and that the diseases arising from this influence are relieved and overcome by such remedies in virtue of the alterative effects they possess over that particular blood disorder.

I trust I shall not be understood as limiting the curative power of arsenic to one single disorder of the circulating fluids. I have attempted to shew its influence over a numerous class of diseases, originating, as I believe, in the rheumatic diathesis ; but we know, and have long known its almost, if not altogether, specific virtues in another class of blood disorder—that arising from malaria. In ague and in remittent fever, as well as in other disorders originating in the same source, arsenic and quinine are our chief remedies ; and I apprehend that in intermittent and periodic affections these medicines exercise their healing power, not from any inherent virtue as antiperiodics, but simply as blood alteratives ; the circumstance of periodicity, however one may attempt to explain it, being only a character of the special blood disorder over which these remedies exercise so powerful a control. It deserves remark, that the chief, if not the only, periodic affections which come under our observation, are those connected with malaria and the rheumatic poison, and that quinine and arsenic have long held their place as curative agents of the

highest character, both in the one disorder and the other. The mode of administering these remedies in ague, irrespective of remission or exacerbation, which has of late years been practised with success, tends to confirm the view that it is by their alterative and hence febrifuge qualities, and not by any mere antiperiodic virtue, that they obtain dominion over disease.

If these views of the therapeutic operation of arsenic be found to be correct, and correspond with our experience of its employment in the various diseases in which its efficacy has hitherto been tested, we shall be able to prescribe it with more confidence and success than we have yet done, to rescue it from the rank of empirical remedies, and ourselves from the charge of too often administering it on no better than empirical principles. We shall be able to point to two classes at least of blood disorder, and the various diseases which result from them, as the legitimate sphere for inviting the operation of arsenic. We may not be able to include in these two classes some disorders in which it has occasionally proved useful ; but the study of the *modus operandi* of the remedy in such affections may lead to more correct views of their pathology, or reveal to us some other special morbid condition over which arsenic and such like alteratives exercise a healing power.

X.

ON THE SEDATIVE POWERS OF THE DATURA
STRAMONIUM.*

THE attention of the profession in this country was not, I believe, particularly called to the medicinal properties of the *Datura Stramonium* till Dr. Marcet, in an interesting paper read before the Medical and Chirurgical Society of London, in June 1816, and published in the seventh volume of their Transactions, detailed the results of his experience of its use. Störek, it is true, so early as 1762, in a pamphlet published at Vienna, gave an account of its virtues, and the results of its administration in some cases of maniacal, epileptic, and convulsive affections, which were favourable to its employment. Dr. Wedenberg of Upsal, and some other Swedish physicians, following his example, exhibited it in the same class of diseases with some degree of success. More recently, in America, it has been employed to a considerable extent, and highly extolled as a powerful narcotic remedy. The inhalation of the smoke of the herb has long been resorted to in this country in the paroxysms of spasmodic asthma, and frequently with decided benefit; yet, its internal administration was little, if at all, attended to, before the publication of Dr. Marcet's cases, nor has much been added to our knowledge of its virtues since that time—a circumstance the more remarkable, as they certainly appear to be very satisfactory.

* From the Transactions of the Medico-Chirurgical Society of Edinburgh, vol. i.

The cases which follow are the only instances in which I have had an opportunity of exhibiting the remedy. They decidedly illustrate its active narcotic property, and its superiority in some respects to other medicines of that class.

In no instance was any bad effect produced from its use. In the first case, after being employed for some time, there was a degree of that unpleasant nervous sensation referred to the throat, which has been mentioned by authors. It was not, however, lasting.

The extract from the seeds, prepared according to Mr. Hudson's formula, was the preparation always employed. The dose was one-fourth of a grain, repeated every third or fourth hour during the day, and in no instance increased beyond half a grain.

Some of the cases, I apprehend, may be considered valuable in themselves, independent of any interest they may have in connection with the subject of this communication. The nature of the first it is difficult to determine. The early treatment was adopted under the impression, that the symptoms originated from congestion, and consequent effusion in the base of the cranium, but the subsequent history of the case sets aside that idea. The symptoms point out a resemblance to those affections termed neuralgic, or hysteric, though the present is more extensive and severe in its character than any I have seen described. Of the nature of the second case there can remain no doubt; it must be regarded as one of acute idiopathic tetanus, assuming a chronic form, and ultimately terminating favourably.

I. Mrs. W., aged forty-three, of a spare and delicate habit, had retired to bed on the evening of the 14th March 1821, in perfect health, but was soon seized with violent pain in the occiput, followed by flashing of light, tinnitus aurium, and strong pulsation extending down the neck. She was obliged to get out of bed, and when visited was found in a state of

great agitation, pacing from one end of the room to the other, and constantly exclaiming, Oh! my head. She soon became very faint and sick, and vomited once or twice; the surface was cold, and the face pale; pulse 80, and moderately firm; pupil natural; bowels open. Ten ounces of blood were taken from the arm, under which operation she nearly fainted; a brisk purgative was afterwards administered, and cold applied to the head. On the 15th, the symptoms continuing unabated, another vein was opened in the arm, but syncope threatening, no more than six ounces were abstracted; the pain and throbbing continued undiminished. Towards noon, there being considerable tendency to stupor, and the pulse being firm, eight ounces were taken from the temporal artery, which she bore well, but the symptoms continuing unabated, sixteen ounces more were taken from the arm, in the evening, with some relief. 16th, Had a restless night; pain very violent, and extending all over the head, with strong pulsation at intervals; no stupor; pulse 84, and easily compressed. During the three following days there was no remission; she had sleepless nights, with severe headache, occasional violent pain over the arch of the nose and at the back of the orbit, producing the sensation of something pushing out the eye, which appeared protruded, its vessels were much distended, but the pupil was natural; pulse varying from 80 to 90 and weak; much vomiting.

From the 19th to the 25th, Mrs. W.'s sufferings were very severe; the pain had in a great measure left the head, but it was equally violent for two days in the neck, shooting along the spine, and attended with strong pulsation; it afterwards affected chiefly the upper part of the back, and then the patient complained of the most painful feelings of anxiety about the chest, accompanied by constant and loud yawning, and violent but not irregular action of the heart: the pain descended the spine, and these symptoms subsided. On the 22d

and 23d, she screamed violently, on account of pain shooting from the thigh and leg, to the back and loins; there were then frequent slight convulsions of the limbs, and at times a paroxysm so severe, as to raise her, as if by a convulsive effort, into the erect posture; the pulse during this time continued to beat between 80 and 90, and was generally weak. Towards the evening of the 23d, and during the 24th, she had several intervals of comparative ease; the pain had left the neck and head, with the exception of an occasional feeling of acute constricting pain across the forehead. She chiefly complained of burning heat in both thighs, and a prickling sensation extending down the limbs; these symptoms increased so that she could not bear the slightest pressure, but had the parts almost completely exposed, or covered with iced water—the only application from which she experienced relief; pulse continuing to range between 70 and 80. The symptoms gradually subsided about the 29th, and there was reason to hope that the disease had run its course.

During its progress, a variety of practice had been adopted, with the occasional advice of Dr. Abercrombie; bleeding general and topical, cold applications, blisters, sinapisms, all had frequent trials; antimonials and purgatives were also administered; but cold, and large opiates were the only remedies from which the patient derived advantage.

On the 29th, Mrs. W. again experienced the most acute suffering. She was suddenly seized with a return of the pain in the head and neck, which was soon followed by the distressing symptoms in the back, chest, and extremities, as formerly experienced. The usual remedies were had recourse to, and persevered in for several days without success.

On the 3d of April, while the symptoms continued unabated, the extract of stramonium was first administered, in doses of one-fourth of a grain, and repeated every three hours. During the first day of its exhibition, little or no relief was

apparent, and the patient anxiously expressed her wish to have recourse to opium, from large quantities of which she had been enjoying a temporary abatement of pain; but desirous of giving a fair trial to the stramonium, the opiates were carefully withheld, and the extract of stramonium increased to one-third of a grain every three hours. After a few doses, evident benefit was derived, and a diminution of pain followed every subsequent exhibition. It was increased to half a grain, and after a few doses the symptoms were completely subdued. Its use was then discontinued, but the symptoms again returned. One dose, of half a grain, mitigated the sufferings, and three or four more, at the interval of three hours, completely arrested their progress. In this way, it was found necessary for the patient to be more or less under the influence of the stramonium for two weeks, as by discontinuing it, the symptoms never failed to return. At the end of that time the remedy was at last abandoned; the patient recovered health and strength; and a short time ago I was informed that there had been no return of her complaints.

II. William Balcarras, æt. 14, August 1, 1821., has been complaining for several days of stiffness and rigidity of the inferior extremities, more especially the left, without any other symptom. He can assign no cause; but mentions his having struggled much some days ago, in order to escape from punishment, and thinks he twisted his back. The symptoms increased, so that he was obliged to desist from attempts at walking; presently the abdomen became hard and rigid; then the muscles of the back, neck, and jaw, were similarly affected, and in three or four days from the first appearance of the stiffness in the limbs, he exhibited all the characters of well-marked opisthotonos. Bleeding, purging, calomel with opium, and the warm bath, were employed with some relief. It was not, however, lasting; the symptoms increased, and on the 6th seemed to be at their height. At

this time he was visited by Dr. Abercrombie and Dr. Duncan junior. His appearance was remarkable—resting almost on the occiput and heels, unable to perform the slightest motion for himself—the jaw nearly shut, and immovably fixed—the abdomen hard as a board, and the extremities perfectly rigid. On turning him to examine the spine, he was lifted, or rolled over, like a piece of inert matter, resting his chin upon the pillow, the abdomen and toes alone touching the bed. He complained of fixed pain in the situation of the fifth dorsal vertebra, and a sense of constriction at the ensiform cartilage. The irritability of the muscles of the neck was excessive, the least noise, or touch, or even speaking to him unexpectedly, never failed to produce a paroxysm, in which the head was suddenly, and, for an instant, drawn back with great force. The face was much flushed; the features expressive of suffering and apprehension; there was strong pulsation over the neck, especially when one of the spasmodic contractions of the head occurred, and then, for a minute, it appeared as if every vessel in the neck were pulsating violently; the pulse continued to beat above 100, and was small; the skin was disagreeably dry; the bowels torpid. At this time the most active measures were resorted to; repeated bleeding—general and topical, blisters, sinapisms, opium, calomel, etc., were all fully tried, and about the 9th the symptoms seemed to yield; the relief was but partial, however, as next day they returned with nearly equal severity, though the trismus had in some measure abated, and the patient was able to swallow with some degree of ease.

The extract of stramonium was now administered in doses of one-fourth of a grain three times a day, at first with no apparent benefit, but afterwards, by increasing the dose to one-third of a grain, and exhibiting it more frequently, evident advantage was obtained. The pain became less severe, the spasms less frequent, and the patient was sensible of the relief, after almost every dose. The rigi-

dity of the muscles still continued nearly as much as ever, though the disease had now continued nearly three weeks. The urgent symptoms were, however, subdued, and by a cautious use of the stramonium, and the daily employment of the warm bath and friction, in three weeks longer, the patient recovered so much as to be able to walk, though still with difficulty, into an adjoining room. In eight weeks from the commencement of the attack, he was free from complaint. The blood drawn never assumed a buffy coat, but it was remarkably florid.

III. A woman, aged 50, had complained for several days of acute pain, extending from a little below the knee to the upper part of the foot, more particularly along the lower half of the tibia; it was deep seated, and referred to the bone. A variety of remedies had been employed, such as leeches, blisters, sinapisms, opium, etc., but without effect. The extract of stramonium, in doses of one-fourth of a grain every three hours, was recommended, but, impatient for relief, she discontinued its use before any benefit could be expected, and persevered, for several days, in the use of large doses of the carbonate of iron with some advantage; the pain gradually lessened, and disappeared. In a second and more severe attack some weeks after, the iron and other remedies failed, and recourse was again had to the stramonium in doses of one-third of a grain. The relief was remarkable before many doses were taken, and, in the course of a few days, the symptoms entirely disappeared. The patient went to the country soon afterwards, and requested a supply of the medicine, so sensible was she of the benefit derived from its use.

IV. A young man had laboured for several days under severe sciatica, which resisted all the usual remedies. After the application of numerous leeches along the affected limb, and blisters to the hip, it seemed to be alleviated, but extended farther down the limb. After eight days of severe

suffering, the extract of stramonium was exhibited in doses of one-third of a grain every four hours. During the first two days little relief was obtained; on the third day the symptoms were evidently mitigated, and his sleep restored. In a few days longer, by continuing the remedy, he was enabled to be out of bed, and soon returned to his employment.

V. A coachman, in the act of cleaning his carriage, was seized with sharp pain in the hip, which soon extended down the limb, in the course of the sciatic nerve, and became so severe as to interrupt all motion. The application of twelve leeches to the hip and thigh mitigated the pain, and it was completely subdued in four days, by the use of the stramonium, in the dose of a quarter of a grain given every third hour. The patient expressed himself relieved regularly after each dose.

VI. Miss M., for many years a martyr to *tic douloureux* of the lower jaw, after undergoing every species of treatment adopted for the relief of that distressing disease, with little or no benefit, received from Dr. Marcet, to whom her case had been made known, a box of pills containing the extract of stramonium, by the use of which, after some time, she seemed to obtain some relief. It was not, however, constant, and, latterly, the remedy completely failed. Miss M., after years of most painful suffering, died, I understand, rather suddenly of some other disease.

It is now several years since these cases, illustrative of the sedative powers of stramonium, were given to the profession. The interval has furnished many additional examples of the therapeutic virtue of the remedy; and notwithstanding the claims of belladonna, to which it bears, in many respects, a remarkable similarity, and the deservedly prized properties of aconite, as powerful anodynes; notwithstanding, also, the marvellous effects of chloroform as an anæsthetic, there are

still occasions on which these cannot be brought into competition with stramonium. Sir James Clark and Dr. Williams have borne testimony to its efficacy in the dyspnœa of phthisis and of emphysema ; and we have all resorted to it in certain forms and conditions of asthma, upon finding that every other palliative had failed to soothe. It appears to be particularly useful in circumstances where the combined effects of an anodyne and antispasmodic are called for ; hence I have often found it a valuable remedy in the distressing paroxysms of dysmenorrhœa, in the violent and long-continued fits of hysteria, and in the agonizing spasm of locked-jaw. But it is chiefly in tic douloureux, and such like painful nervous affections, that it appears to exert an influence superior to most of the remedies we are in the habit of employing as sedative and anodyne. In enteralgia Dr. Elliotson has found it a most useful remedy.

With all the light which has been shed of late years on the pathology of nervous diseases, it would be unreasonable to look to any one remedy, or set of remedies, as offering in every circumstance relief or cure in so proteiform and fluctuating a disease as neuralgia. The experienced physician traces its connection with many morbid conditions of the body dissimilar in their nature ; he regards its existence as a symptom only of one or other of these conditions ; he seeks its relief or cure through the removal of the general disorder from which it has taken its rise ; and in the remedies for gout or rheumatism, for syphilis or malaria, for albuminuria or spanæmia, or for some blood poison whose existence may be suspected or proved, he seeks the relief of the symptom which, before all others, has been brought prominently before him by the suffering of the patient. To attempt the cure of neuralgia in all circumstances by the exhibition of an anodyne, however powerful, were a hopeless task ; but to seek its removal, through the elimination of the poison which produced it, is an aim worthy

of the physician. How often he is rewarded by taking this comprehensive view of the pathology of neuralgia, the records of public hospitals and of private practice, during the last quarter of a century, compared with those of fifty years ago, sufficiently prove.

There are many forms of neuralgia, however, whose pathology is still obscure ; many cases which baffle all our endeavours to mitigate or subdue. When we have brought colchicum and quinine, iodine and arsenic, iron and zinc, and other remedies, to bear upon the large proportion of the neuralgic affections which come under our notice, we are still left to battle with many obstinate and seemingly incurable cases, and to lament the inefficacy of all our best means to heal or to alleviate. It is in such circumstances that stramonium may occasionally be found applicable. It may not, it cannot, always cure ; but it will sometimes afford a wonderful measure of relief, and will generally prove a useful ally to more potent, and apparently more successful remedies ; and even, in those terrible cases where the nerve itself is exposed to the constant irritation of a cause which cannot be removed, stramonium, as having many advantages, and few if any drawbacks, in its physiological and therapeutical operation, may yet be considered a valuable remedy both by the patient and the physician.



