VASOMOTOR ATAXIA: A CONTRIBUTION TO THE SUBJECT OF IDIOSYNCRASIES.¹

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THE present paper is intended merely as a record of personal observations, and presentation of conclusions based thereon; it will not, therefore, refer to facts and theories in literature, though many observations parallel with, and confirmatory of, the views expressed have been found. The exigencies of time necessitate citation of a few only of the cases studied, which, excluding the more numerous instances of slight departure from the norm, altogether number sixty odd, accumulated in hospital and private practice during the course of some eight years; and such reports as are made must be brief. I would request, therefore, that it be assumed, in discussion, that despite brevity of account these cases have been investigated from all standpoints with as much thoroughness as I am capable of, or as the opportunities permitted.

The varying susceptibilities of different individuals, and of the same individual at different times, to the same influences has long been a matter of every-day observation. Of a number of persons exposed to cold and wet at the same time and place, one may have articular rheumatism, another pneumonia; one may contract tonsillitis, another nephritis; others may escape apparently unharmed. Evidently there is something at work in addition to inclement weather and specific microbes; and this something, which is the determining and therefore the principal etiological factor, is special to the individual—is a physical personal equation. We call it, whether exhibited in relation to the exciting causes of disease or to the action of drugs, individual liability, predisposition, idiosyncrasy; and though our terms are singular in type, we recognize that the singularity is relative and may be exhibited by several persons.

For every idiosyncrasy there must be a physiological basis. By comparing the phenomena, special and general, exhibited by a group of persons presenting similar or identical idiosyncrasies, we take a step toward the recognition of the basic physiological conditions.

I would invite attention to an idiosyncrasy of the circulatory mechanism, which, in its extreme degrees, manifests itself in the form of well-recognized symptom-complexes; in its minor degrees gives rise to puzzling manifestations of great variety of detail; and in its least-

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developed forms often passes unnoticed. For this condition—which seems to depend upon a feebleness in the co-ordinating mechanisms in consequence of which the balance of the cardio vascular action becomes disturbed by influences that in the great majority of persons have no such effect, and greatly disturbed by influences that normally have slight effect, while the restoration of equilibrium is slow and imperfect—I would propose the self explanatory name of *vasomotor ataxia*: ataxia rather than hyperkinesis, or hypokinesis, because excessive vascular dilatation and excessive vascular constriction may be either spasmodic or parietic, or both spasmodic and parietic, as dilator or constrictor nerves, or both, are affected; and even in the extreme and opposite types of vasomotor ataxia, the phenomena, while always more or less paroxysmal, are neither exclusively those of dilatation nor exclusively those of constriction, but both abnormal dilatation and abnormal constriction are usually present in varying degree in the same patient. The influences under which these phenomena are displayed are, more especially, temperature—and cold more than heat—emotion, visceral or internal reflex excitation, and the action of toxic agents formed in the organism or introduced from without.

The most striking and easily recognized phenomena are those exhibited by the heart and by the peripheral vessels (arterioles, capillaries, and venules); but analogy indicates that similar manifestations occur in the vessels of glands and viscera, while certain symptoms are only to be explained by disturbance of cerebral circulation. The stimulus that results in cardiac and vascular disorder may be applied centrally or peripherally, but the defective inhibition upon which the phenomena depend must be relatively central, and is probably the expression of functional or nutritional defect in the great ganglia of the sympathetic system, or in the medullary centres, or in both.

Functional and nutritional disturbance may result in structural, and finally in organic change; but the discovery of gross anatomical change at necropsy would not prove that it had existed from the first. It is likewise to be borne in mind that functional, nutritional, or structural defect in the sympathetic ganglia or nerves may be primary, or the result of primary or secondary disease elsewhere. The phenomena of vasomotor ataxia may thus occur independently, or be merely a part of the symptomatology of functional and organic diseases of various kinds. In either event the mechanism is essentially the same, and it will facilitate study to consider the circulatory symptoms apart from other complicating conditions.

With the pronounced types of vasomotor ataxia, to which are the one extreme—that of vascular relaxation—the name of Graves's disease or exophthalmic goitre, and the other extreme—that of vascular tetany—the name of Raynaud's disease, local syncope, local asphyxia, acro-asphyxia, symmetrical gangrene, acrosphinctus, etc., have been given, all

are familiar. All are familiar, too, with the association of other phenomena of vasomotor paresis or vasomotor spasm with Graves's disease and with Raynaud's disease. For example, angina pectoris occurs in both, and angioneurotic oedema and spontaneous gangrene have been observed in Graves's disease. As pointing toward more than a superficial or accidental resemblance in such association of the two affections, the following two cases are submitted:

CASE I.¹ *Acro-asphyxia, with intermittent enlargement of thyroid gland, and paroxysmal tachycardia.*—Sarah O'N., unmarried; seamstress; aged twenty-five years; native of Ireland; having fair skin, brown eyes, black hair; was seen at the Philadelphia Polyclinic, April 11, 1892. For three or four months she has had almost constant headache, with occasional dizziness. Vision at times misty. The feet sometimes swell. At times she has pain in the precordium, with cardiac palpitation. These attacks occur paroxysmally. For about two years she has noticed that several times a day, especially if exposed to cold, either by immersion in cold water or otherwise, the fingers suddenly become discolored—purplish. Both extremities are affected at once. The discoloration begins in the palm of the hand, and extends downward. It lasts but a few minutes, and disappears quickly. The first phalanx of the middle finger of the right hand is thickened, the skin glossy, the veins much distended. There is a depressed cicatrix on its inner aspect. The patient states that twelve years ago there was a swelling at this place, which was lanced, and kept on discharging until within a few months, when the sinus finally closed. The bowels are constipated. The patient does not rise at night to micturite. Menstruation is irregular. Examination shows all over the arms mottled areas of irregular distribution, indicating by their varying color, and by the appearance of the distended vessels, both capillary and venous congestion. Over the upper part of the chest, anteriorly and in the back, especially beneath the scapulae, are congeries of distended superficial venules. The legs and feet appear not to be affected. No lesion of the lungs can be detected. At the first examination of the heart the rate is 96. At the base a soft systolic murmur is heard, more distinctly on the left. In the veins of the neck a marked musical hum is heard, louder on the right. It is continuous, with systolic intensification. The thyroid gland is easily demonstrated, but not markedly enlarged. Hæmoglobin is 65 per cent. by Fleischl's scale; red corpuscles number more than 4,000,000; there is no excess of white cells. Urine is 1018, acid; no albumin, no sugar, no casts, no red cells (Dr. Eshner). The fundus of the eye is normal; there is compound hyperopic astigmatism (Dr. Jackson).

Relief of constipation, together with correction of visual error by glasses apparently relieved the headache. After a few doses of nitroglycerin, the local asphyxia did not return while the drug was taken.

Some three months later the patient returned, complaining of recurrent headache, with attacks of precordial pain and violent palpitation. The nature of these attacks seemed to be that of tachycardia rather than simple palpitation. While under examination the pulse-rate was variable, about 130. The thyroid gland was slightly enlarged, and a bruit could be heard over the gland on auscultation.

Picrotoxin, $\frac{1}{8}$ grain t. d., was prescribed, with apparent relief to headache. During some ten weeks the thyroid was observed to enlarge and diminish irregularly, without reference to menstruation, which occurred twice during the period. The swelling was soft, not expansile, and greatest on the right side. The patient was last seen some four months ago, when the thyroid gland was apparently normal; pulse-rate 96.

CASE II. *Epilepsy; acro asphyxia; enlargement of thyroid gland.*—Mary N., aged nineteen years; domestic, unmarried; of American birth, Irish parent-

age; fair skin, brown hair, blue eyes; seen at the Philadelphia Polyclinic, January 4, 1893; has had mild epileptic paroxysms of about one half-hour's duration once a week, since the preceding October. There is no aura. She screams and turns pale before losing consciousness. The bowels are regular; the menses regular but painful. The patient is subject to paroxysmal flushing, with subjective and objective heat, especially of the face. There are irregular sweats. She has urticaria in summer-time. She is easily excited; and has frequent attacks of palpitation and rapid thumping of the heart. The heart is not enlarged; the impulse is jerky; the rate is 100; the first sound is short, the second sound is accentuated at the aortic cartilage and at mid-sternum. There is a soft systolic murmur over the sternum, near the articulations of the second cartilages; it is not transmitted. The thyroid gland is enlarged, especially in the right lobe; it is soft and pulsating; there is no thrill and no bruit. The hands are of a dusky-blue color, which slowly fades on elevation; the nails are purplish. Upon immersing the hands in ice-cold water they soon become red. If one hand only is placed in the cold water, that one becomes red, the other a deeper blue. Dermographism is marked. Factitious urticaria is produced by pressure, followed by cold.

The patient states that only recently has she noticed occasional blueness of the hands; that it is not constant, and is usually produced by cold, but may come on while at work in a warm room.

There are on the cheeks of this patient three or four small reddish elevations, surrounded by little radiating lines—a star, as it were—of dilated vessels. A number of small telangiectases are found on the arms and breast. She states that she bleeds easily if cut, but blood is stashed in a reasonable time. She frequently bleeds from the nose. No family history is attainable.

Taken by themselves, these two cases might not appear to be of special significance; but to me they were of great interest, because they seemed to supply the links between two groups of cases that had occupied my attention for a number of years, and which I believed to be related to each other, as to Graves's disease in the case of the one group, and to Raynaud's disease in the case of the other group; and thus to complete the chain of observation, as of reasoning. This will become more apparent if I relate briefly, but in some detail, the case that first drew my thoughts to the subject.

CASE III.—In February, 1885, Miss X., of American birth and parentage, Hebrew race; fair complexion, brown hair, gray eyes; an intelligent and truthful, and not hysterical young lady, some seventeen or eighteen years of age, apparently in perfect health, was alarmed at a sudden dimness of vision, progressing in the course of a few minutes to total blindness, which lasted "about a second." The return of sight was followed by intense headache, lasting about ten minutes. Ophthalmoscopic examination, some hours afterward, and at different times since, has never detected any abnormality.

Examination of the urine passed the morning following this attack showed the presence of a quantity of albumin too slight to be quantitatively estimated, a few leucocytes, a few uric acid crystals, many red blood-cells, and in one or two fields a hyaline tube-cast, or a mucous cast. This condition lasted for two or three days. The urine was acid in reaction, and 1015 to 1018 specific gravity; the quantity was normal. Inquiry revealed the fact that the patient blushed easily, and that in addition, without known emotional cause, there occurred at times what she termed "burning flashes," in which the skin at various areas, sometimes circumscribed, as to a cheek, sometimes generalized, would for a few minutes, or a few hours, become intensely red, with both subjective and objective sensation of heat. On one or two occasions the peculiar distribution of the red areas and their persistence for a day had led to a false domestic diagnosis of measles. But the repetition of the attacks, their

peculiar development and course, and the absence of all other morbid phenomena, soon proved the error. As a child, too, she was said to have had measles three times and rubella once. In one of these attacks that I saw, as the rash was fading, the skin of the arms, chest, and neck was covered with little pink spots, not elevated above the surface, the largest of which was no larger than an ordinary pin-head; and I was told that the rash began in the same way, but that when at its height it presented either as a uniform scarlet flush, or the mottled appearance simulating measles. On another occasion I saw the patient when the right cheek was the seat of a vivid blush, the left being apparently normal, and was told that the left cheek had been the blushing one some hours earlier. The flushed right cheek had a surface temperature of 97° F., the left cheek 95° F., while the axillary temperature was 98.4° F.

Over the middle portion of the left lower jaw this patient's skin invariably presents during menstruation an area of fixed blushing; that is, it is reddened in an oval patch about two inches long and half an inch wide, the color being deepest in the centre, and fading at the periphery into that of the surrounding skin. Her nails are slightly convex, pink in color, longitudinally striated, and exhibiting crescentic markings. She has been under observation continuously since the attack of blindness recorded, and during that time has presented, in addition to the flushes spoken of, an attack of erythema nodosum; several attacks of urticaria; one attack that I did not see, which appears from her description to have been a circumscribed oedema of the arm; and one that I did see, which was circumscribed oedema of the calves of the legs. The transient blindness has been repeated, affecting only one eye, however, and there was one attack of hemiopia, likewise transient, in which she did not determine which eye was affected, or whether both were involved. In 1889 an attack occurred, which (my notes being defective) she describes as follows:

"Having been in good health for two years, I awoke one night with a great desire to urinate; this was followed by a feeling of faintness and great pain in the heart—I must have been partly unconscious, as I walked down stairs without remembering how. When I became aware of my surroundings, there was intense itching of the palms of the hands and soles of the feet, and a trembling of the whole body, which, for some minutes, I was unable to control. In the morning there was a red blotchy appearance on the chest, lasting several hours, and welts on the wrists. I felt well, and had no pain. I remember that the urinalysis for the next six months frequently showed albumin, but I felt perfectly well and strong. The rash and the welts occasionally appeared."

The urine is for months normal, but occasionally shows a trace of albumin, uric acid crystals, casts, cylindroids, or hæmocytes. Sometimes all of these will be found together, sometimes albumin only, or blood cells only. General health and strength keep good, the eyes are emmetropic (Dr. Jackson), with large pupils, and the blood is normal. Though there are occasional attacks of palpitation, the heart, and so far as I can determine, the lungs and all the other viscera—for I do not believe there is organic renal disease—are normal. Menstruation, however, is irregular at times, and there is occasional dysmenorrhœa. The attacks described are not related with menstruation. The thyroid gland is demonstrable, but not enlarged.

The family history in this case is of great interest. It can hardly be a series of meaningless coincidences. The patient's father died of acute pneumonia, after having for forty years suffered with pulmonary hemorrhages, attributed to "disease of one lung," of what nature I do not know. Several paternal cousins have leucoderma; one has had renal colic, passing uric acid gravel; another, highly myopic, has obscure symptoms of disturbance of the sympathetic nervous system, diagnosed by one observer as incipient Graves's disease; another has had chorea, and is very liable to epistaxis and to pannus; another, likewise highly myopic,

has had retinal hemorrhage; another has chilblains every winter, and is subject to sudden syncope from slight indigestion; another has blueas of the knods every winter, with tendency to deep fissuring of the fingertips, unless constantly protected by woolen mittens; another will get circumscribed edema from slight knocks that in others would pass unnoticed, and that even in him do not cause discoloration of the skin. A paternal aunt, still living, is affected similarly to the father. A brother of the father's died at the age of thirty, of suffocation in the course of a pulmonary hemorrhage. His son has progressive myopia of high type. There is likewise a rheumatic tendency in this family; one of its members has had diabetes mellitus. The patient's mother is living and healthy, at past sixty years of age. Severe mental shock, however, not long ago prostrated her in bed for a few days, during which time the heart's action was feeble, excited, and irregular; the temperature was slightly subnormal; albumin, tube-casts, red and white blood-cells were found in the urine. I am satisfied that she has no organic lesion. Several members of her family have had diabetes mellitus—living, however, to advanced age, and two of her sisters and one niece have had carcinoma of the breast. There is also a gouty and a neurotic heredity in this family.

As further exhibiting the essentially constitutional basis of vasomotor ataxia may be briefly stated:

CASE IV.—A brother of the preceding patient, aged thirty-five years, dark-haired, blue-eyed, has been for some eight years the subject of ophthalmic migraine, and has attacks of spasmodic asthma if exposed to the emanations of feathers, or to moist atmosphere at the seashore. He has hyperopic astigmatism (Dr. Gould). His thyroid gland is slightly enlarged. He exhibits along the borders of the ribs the peculiar appearance which I have termed the *costal fringe*, namely, a network of telangiectases, following the outlines of the costal arches. This appearance is found in some cases of hepatic cirrhosis, but this patient's liver is apparently normal. He has no pulmonary or other visceral lesion, but is seized at times with gastric crises (pain relieved by vomiting), that appear to correspond with periods of lithuria and oxaluria. His urine has never shown albumin or casts; and red blood-cells have been found on but one occasion. His reflexes are normal, or perhaps slightly exaggerated.

These two patients, and a sister of theirs who is subject to profuse epistaxis, occurring without apparent cause, but is otherwise healthy, exhibit three symptoms upon which I would lay special stress:

1. *Dermographism*. That is to say if, with a blunt probe, and using very light pressure, letters or other device be traced upon the skin of the patient, especially upon the inner aspect of the limbs, or over the sternum, the tracings soon appear in a rosy-red tint that lasts for some minutes, or even half an hour.

2. *Facitious urticaria*. If in tracing upon the skin one uses a little deeper pressure than before, the red lines soon broaden, and finally the reddened portions show a more or less decided elevation, like the wheals of urticaria. In some cases the red color fades, in others it persists. The

elevation remains in some instances, notably in cases of chorea and of exophthalmic goiter, for several hours. When factitious urticaria is not immediately apparent upon the use of pressure merely, it may in some cases be quickly developed by applying cold to the part, as with a lump of ice; in other cases the application of hot water will cause it to appear. When cold or heat is applied, the wheals are always reddened, and sometimes a diffuse redness that slowly fades is likewise seen upon the intervening skin.

3. *A modified form of Stellwag's eye-sign of exophthalmic goitre.* When the patient looks fixedly before him, and opens the eyes, a distinct white rim of sclera is exposed above the cornea. It may be spontaneously exhibited in the excitement of conversation, or may have to be developed by the physician in the course of examination.

I lay stress upon these signs on account of their occurrence in Graves's disease. Unfortunately I have not been systematically employing these tests for much more than a twelvemonth, during which time I have not seen a large number of typical cases of exophthalmic goitre. I have records, however, of seven undoubted cases (one male, six females), in which dermatographism and factitious urticaria were marked; and, indeed, I have never seen factitious urticaria so readily produced, so persistent, or so striking, as in the case of a colored woman with exophthalmic goitre, in the wards of one of my colleagues at the Philadelphia Hospital. I may briefly record in this connection, as a case linking the preceding ones with those to follow, a case from my own service at that hospital:

CASE V. *Exophthalmic goitre with acro-asphyxia.*—(Notes taken by Drs. Claribel Cone and S. Stivers, resident physicians, Philadelphia Hospital, February 23, 1893.) Charles P., aged thirty-three years; waiter; native of Ireland; unmarried. His mother died of cancer of the breast, his maternal grandmother, of cancer of the nose; a maternal cousin, of phthisis. There is no neurosis in the family. The patient had the infective fevers of childhood. He has been a hard drinker. He had syphilis and gonorrhœa about twelve years ago. He has not had rheumatism. When a child he had attacks of palpitation of the heart, which ceased as he grew older. Twelve years ago he was occasionally attacked in the same way. Six years ago, after a debauch, more persistent rapid action of the heart developed, and has continued at intervals since. Attacks may be brought on by his being startled. The cardiac disturbance sometimes prevents sleep. It is accompanied with dyspnoea. There is no cough. For the same length of time he has been very nervous, easily frightened; his hands tremble, and at times there is a general tremor. The cardiac storms and general nervousness develop synchronously. He has occasionally spit blood—not sufficient to cause him to give attention to it. The present attack began about a month before admission. There is no pain, no anaesthesia, no motor paralysis. The eyes were always large, but have been getting more prominent for the last two years. Graefe's and Stellwag's signs are both present. Goitre has appeared and disappeared; no data of this are attainable. At present there is no demonstrable enlargement of the thyroid gland. The pulse-rate varies from 81, under treatment, to 140 without treatment. The cardiac impulse is not strong. There is no murmur. In the vessels of the neck, especially the jugulars, there is a marked musical hum. Examination of the blood shows: Hæmoglobin (Fleischl's scale), 30 per cent.; red corpuscles, 4,036,000;

white cells, 11,000. There is no pulmonary lesion. There is nothing abnormal in the urine. The patient has frequent cold sweats. The skin is usually warm and moist. The hands, from time to time, become bluish and cold. They are always moist. At times, after an attack of coldness and lividity, they become pink and warm. The attacks are independent of weather, and of the temperature of the ward, but can be induced by exposure to cold. The duration is variable. The patient has an irregular temperature, but no relation can be traced between temperature curve and paroxysms of acro-asphyxia. Dermographism and factitious urticaria are marked. The hands immersed in warm water (110° F.), become slightly red in about three minutes. In cold water (40° F.) they become quite red in two minutes. One hand being placed in cold water becomes red; the other, left free, becomes blue. White spots made by pressure on the bluish or reddened skin remain for a long while. Elevation reduces lividity slowly, but has no effect on the pinkish discoloration. The patient exhibits telangiectases at different portions of the trunk, and has a hard, pinkish, sessile growth about the size of a bean, on the left cheek.

Incidentally, it may be remarked that this patient professed to feel better and exhibited slight objective improvement during the administration of desiccated thyroid gland. The only abnormality observed in the urine was during this time, and consisted in an intense blood-red coloration. It did not respond to tests for hæmoglobin, and Dr. John Marshall kindly examined the specimen, and reported the color to be due to a modified form of indican.

Bearing the foregoing case in mind, the observation now to be recorded finds its place and explanation. The case is in many respects similar to one that I observed in 1886, at the Jefferson Medical College Hospital, and in which Prof. Bartholow concurred in my diagnosis of vasomotor paresis, as against cardiac hypertrophy. In the earlier case acro-asphyxia was not present; temperature was elevated during paroxysms of flushing of the face. There was much headache.

CASE VI. *Hæmoptysis; tachycardia; acro-asphyxia.*—J. H., aged sixteen years, of Russian birth and parentage; Hebrew race; dark skin, hair, and eyes; a poor boy, who during the day teaches languages to beginners, and at night, in a cold room, studies to fit himself for college, was sent to me by his attending physician, Dr. C. D. Spivak, February 26, 1893, with a note stating that for a week he had had daily hemorrhages, slight in amount, believed to be pulmonary, the blood being bright red and sometimes mixed with saliva. There was no cough, no expectoration. Physical examination revealed no pulmonary or laryngeal lesion. The heart was rapid (130) and forcible, but not demonstrably enlarged. The first sound was somewhat short, the second sound accentuated. The pulse was tense. The hands were discolored, the terminal phalanges being of a deep purple, the rest of the fingers and the dorsum of the hand being of various shades of pink, red, and blue, the palms being mottled red and blue. Elevation slightly lessened the color, and secured a more even distribution of shades. The thyroid gland was slightly enlarged, and there was a faint hum in the vessels of the neck. The pupils were widely dilated, and there was evidently great eye-strain; the patient complaining of headaches brought on by reading, and the left eye showing a tendency to wander. Later in the case, Dr. George M. Gould kindly examined the eyes, and found a high degree of compound hyperopic astigmatism, the eye-ground being normal. The urine has never contained albumin or casts, and red blood-cells were found on but one occasion.

The patient was put to bed, with regulation of diet and secretions; ice was applied over the heart, and tincture of aconite given until the pulse fell to 60. In the course of a week he was permitted to rise, when the pulse immediately shot up to 100. Dark glasses and paralysis of accommodation, adopted at Dr. Gould's suggestion, failed to quiet the heart. Suitable glasses were then prescribed, and aconite again administered until the pulse, in a

sitting posture, fell to 80. On stopping the aconite, tachycardia again manifested itself. Examination of the urine showed nothing abnormal. Examination of the blood showed corpuscles and hæmoglobin about 75 per cent. The accentuation of the second heart-sound, and the high pulse-tension now received the consideration that perhaps they should have had earlier. Aconite was stopped, and nitroglycerin given in ascending doses until physiological effect was manifested. The pulse-rate fell to 80 in the sitting posture, 90 in the standing position. It was still further increased upon exertion. Aconite was now given in conjunction with nitroglycerin, and tincture of chloride of iron administered concomitantly. Under this treatment, with gradually decreasing doses of aconite and nitroglycerin, the pulse has become steady at about 80. There has been no further hemorrhage. No sign of pulmonary lesion is to be discovered. There has been no history of rheumatism. While in the house, the room being kept warm, the discoloration of the hands faded to a light duskiness. While going about in cold weather, the condition previously described returned. The hands sweat profusely at all times, even in cold weather. Since warm weather has set in the hands have become normal in appearance. The patient exhibits dermatographism, factitious urticaria, and the eye sign already described. The pupils are persistently and equally large.

CASE VII. *Edematous acro-asphyxia*.—The brother of the preceding patient, a peddler, a native of Russia, aged twenty-three years; is subject to chilblains. I had one opportunity to examine him—July 17, 1893—on a warm day. The hands were of a dusky color, mottled red and bluish; the nails purplish, and exhibiting the peculiar crescentic markings. There was considerable sweating of the hands; he says that they get almost black in cold weather, and sometimes when not cold. At times they suddenly swell, and then often become dark blue. The swelling lasts a few hours, rarely a day. Sometimes there are white patches on the hands when they are otherwise blue. The duskiness present on the occasion of my examination lessened on elevation. The heart was strong; there was no murmur; pulse 84 in sitting posture, somewhat tense.

There was mydriasis; the sclerotic was exposed upon opening the eyes. Dermographism and factitious urticaria were present. The hands trembled on being held out for a short time. This was said to be of frequent occurrence. The thyroid gland was not demonstrable. There was no history of cardiac palpitation. This patient likewise has hyperopic astigmatism.

Additional cases might be narrated were it necessary (and some will be published hereafter), in which what we may, for convenience of designation, call the Groves group of phenomena and the Raynaud group of phenomena are mingled in varying degree. But those selected are sufficiently indicative of the gradual transitions by which two diseases, apparently so opposite in their nature, may be brought under one clinical generalization. Leaving now the Groves group, and those cases that stand on the far side of it, I desire to briefly submit some interesting cases on what we may call the hither side of the Raynaud phenomenon; and it will be found, I think, that gradual transitions may also be traced here down to normality, which, like the sigil, completes our ring.

CASE VIII. *Anæmia; hæmatemesis; gastric ulcer (?) ; acro-asphyxia*.—Mary T., aged seventeen years; of American birth and Irish parentage; fair skin, dark hair, gray eyes; syphilitic inheritance; was under my care in 1888, for profound anæmia with hæmatemesis and symptoms suggestive of gastric ulcer, and recovered under treatment based on such a diagnosis. Early last winter she returned, rosy in hue, without anæmia, but again complaining of spitting blood. Her hands were of a deep-blue color, which was

unaffected by position. I sent her to a friend to have her hands sketched, and on the way to his office they resumed a normal color. Frequently during the cold weather they would become red or blue, or mottled red and blue. On severe exposure they once became dead white, and were excessively cold. When blue, the hands are subjectively and objectively cold; when red they are objectively warm, but subjectively cold. The same changes take place in the feet. Both hands and feet sweat profusely. Capillary pulse was seen in the lips and nails. Occasionally she has a film before her eyes. There is no lesion of the eye-ground, but glasses are worn for relief of headache (myopic astigmatism, Dr. Jackson). There is no cardiac or pulmonary lesion. The thyroid gland is not abnormal to palpation. The pulse is 80, and of low tension as shown by sphygmogram. Examination of the blood showed hæmoglobin, 80 per cent; corpuscles normal. The urine contained a few red corpuscles.

CASE IX. *Hæmoptysis; tuberculosis; acro-asphyxia*.—M. M., a drug clerk, a native of Russia, of fair complexion, light hair, blue eyes, applied at the Philadelphia Polyclinic, February, 1893, on account of pulmonary hemorrhages. Attention was attracted to the blueness of his hands. This was said to have manifested itself while out of doors during cold weather for several years, and to slowly fade into a pinkish tint while the patient remained indoors. Elevation caused very gradual disappearance of the discoloration. The heart was normal. There was found slight dulness and crackling at the left apex, and large and small mucous râles over both sides of the chest. After repeated examination of the sputa a few tubercle bacilli were found. The patient stated that his mother's hands were similar to his, as were also those of one sister and one brother younger than himself. His father and his elder brothers and sisters did not exhibit it. The sister and brother who had blue hands were quite subject to bleeding from the nose; with the sister, epistaxis ceased with her first pregnancy.

This patient showed dermatographism and factitious urticaria. There was no cardiac lesion, and no abnormality of the thyroid gland. His hands and feet were constantly sweating both in hot and cold weather. He had paroxysms of polyuria. His urine while under observation showed occasionally red blood-cells, no albumin, no sugar, no excess of urates. He has myopic astigmatism (Dr. Jackson). Under treatment, with rest and calcium chloride, the pulmonary hemorrhages ceased, and the hands improved while kept wrapped in cotton, and treated daily with a descending galvanic current.

In these cases of blue hands, and in many others of which I have record, there is a striking series of phenomena to be observed, which I have not thought it necessary to relate in detail in each case. If, during a period of quiescence, that is to say, in warm weather, or after the effect of treatment or of the warmth of the room has made the hands somewhat less blue, one hand be placed in ice-water, it will, in a few minutes, become a bright red, while the other hand, not exposed to local cold, becomes a deep blue. Control observations on normal hands do not show the same result. If, during an attack of local asphyxia, the blue hands be placed in warm water, one of two things may occur: 1st. The hands may quickly become red. In that event, on removal from the warm water the red fades to a dead-white, then the normal color returns, then an abnormal blueness. Stroking the hands, either up or down, increases the rapidity with which the whiteness develops—and in some few mild cases, stroking alone, without resorting to immersion in cold water, will produce it. 2d. In other cases the hands become white on immersion in warm water, and red or pink when removed

into the air. In all cases, whether the hands be blue, pink, red, or mottled, pressure produces a whiteness which does not quickly disappear. In some cases the experiment was made of immersing the blue hands, during an attack, in cold water. They would either become red and warm, or almost black and intensely cold.

I have alluded to the appearance of the finger-nails. Setting aside the well-known appearance in typical Raynaud's disease and that produced by psoriasis, to which latter affection these subjects seem quite prone—I have observed many varieties that fall into two groups: a clubbed finger-end, with broad and flat, or Hippocratic parrot-bank nail; and secondly, a tapering finger-end, with long and transversely curved nail. The nails are usually striated, sometimes thickly ridged longitudinally. They are sometimes a bluish, sometimes a purplish, sometimes a pink color. The broad, flat nails are more frequently a leaden blue; the long nails, more often pink. Both the pink and the blue nails exhibit crescentic markings. In the pink nails there is usually one narrow and deep-red crescent between two wider and whitish crescents near the tip. The flat, leaden-colored nails usually show one wide, whitish crescent centrally. These markings differ from the whitish or reddish discoloration produced by varying pressure in normal persons.

To resume the development of our circle of cases, I have now to submit two instances that would be merely curious in themselves, but find place and explanation through each other, especially in relation with the cases of hæmoptysis and hæmtennesis recorded, and with the occurrence of blood-spitting in Graves's disease. I have seen two cases of hæmoptysis in exophthalmic goiter, in both of which pulmonary tuberculosis finally developed.

CASE X. *Paroxysmal numbness of extremities; chlorosis; hæmoptysis; pulmonary tuberculosis; acute hemorrhagic varices (?) of pharynx.*—Miss V., of American birth and parentage, Scotch descent; fair complexion, brown-gold hair, gray-brown eyes; not hysterical; first had indications of numbness in the left hand and arm on nearing the menstrual period at the age of fourteen years. Previous to this she had enjoyed good health, with the exception of an abscess on the left side of the neck, at the age of eight, and frequent paroxysms of hard, hacking cough. She was subject in warm weather to an eruption on the hands, which was relieved by applications of black wash. The frequency of the attacks of numbness and their extent continued to increase until the age of twenty, when the patient was treated for anæmia. She had then had no menstrual period for six months, had lost flesh, was very pale, had cough, and constant headache. At this time the patient came under my care (1883) for pulmonary hemorrhages with fever, and physical signs of tuberculous infiltration of left apex. Under treatment complete recovery ensued; the menses appeared and the general tone of the health was restored. The numbness disappeared for about four years; when the attacks returned, and still occur, with not so much frequency but more severity, and affecting likewise the tongue and throat. The face becomes very pale; the arm and hand seem perfectly lifeless, and can be placed in almost boiling water. When feeling is restored a violent headache follows, and the patient is weak for two days. The attacks generally follow disorder of the stomach or mental disturbance, or occur about the menstrual period. At times, not connected with the attacks of numbness,

there occur in the throat during glottition, what she terms "blood-blisters," which consist of little bluish elevations about the size of half-a-pen, and apparently of the nature of varices, that when ruptured, artificially or spontaneously, discharge black blood. Her sister is subject to similar but larger "blood-blisters," which, however, do not always discharge themselves, and it is said that it is sometimes necessary to puncture them to prevent suffocation. Her grandmother was liable to attacks of numbness, from about the age of thirty until the age of eighty.

This patient exhibits dermatographism, factitious urticaria, and the eye-sign. Her nails are curved, pink, marked with crescents. She has hyperopic astigmatism (Dr. Turnhull). The thyroid gland is not enlarged; there is no heart lesion.

CASE XI. *Blue œdema of pharynx and uvula, with urticaria of fundament; angio-neurotic œdema of trunk and face; paroxysmal tachycardia.*—Mrs. B., aged sixty years, on June 26, 1892, complained of sudden dyspnoea of a few hours' duration, and soreness of the throat. For a day the patient has had urticaria of the fundament. She is subject to this form of urticaria at irregular intervals. The uvula is swollen, more upon the left, and the mucous membrane is of a grayish-blue color; the left posterior palatine fold is similarly discolored and edematous. The swellings pit upon pressure. Scarification gives exit to less than a drachm of black blood. Two or three days ago the patient had, without known exciting cause, an attack of sudden violent beating of the heart. She became quite faint, and lay down, and in the course of about half an hour the heart became quiet. An attack less violent and of shorter duration occurred later in the day. The attacks were accompanied with flushing and heat of the entire body. The patient has not menstruated for some years. She has had similar attacks previously. The first followed a mental shock twenty years ago. The attacks usually last twenty-four hours. Different portions of the body are swollen. Once the œdema occupied half the face; at another time half the abdomen. On three occasions it has begun in half the lip, afterwards extending to the whole structure. The tongue has been swollen.

Her urine, examined on the day following the attack reported, was amber in color, turbid, acid reaction, specific gravity 1019, contained no albumin, no sugar; leucocytes and red cells were present.

The patient exhibits dermatographism and factitious urticaria. She is not specially susceptible to cold. Her family, while long-lived, is gouty and neurotic. One of her daughters has aggravated hysteria. One sister has diabetes mellitus. This sister likewise exhibits dermatographism and factitious urticaria, and as a child and young woman was subject to paroxysmal flushing of one cheek.

The following case will serve as a transition to a comparatively large group, in which digestive disorders are prominent.

CASE XII. *Hysteria; burning and coldness of extremities; herpetic (?) eruption; hungry dyspepsia; exophthalmos.*—July 11, 1892. Mrs. R. O'D., a typical brunette, of American birth, French parentage, aged twenty-five years; complains of subjective and objective coldness of the legs below the knee, for a week. There is cold perspiration of the feet. For a year the patient has been feeling worn out and languid. During this time the hands have been swollen, red, and burning when she rises in the morning. The redness passes off quickly.

Sometimes there is a similar condition for half an hour toward evening. The patient is hysterical and easily frightened—the heart palpitates violently when she is nervous or excited. For three months subjective vertigo has occurred at irregular intervals. There is no dimness of vision; she sees neither flashes of light nor dark specks. Ten years ago she had "fainting spells," in which, however, she did not lose consciousness. She became dizzy, then clenched her teeth and hands, and fell; the image of the last object seen remained impressed on the retina. The attack lasted a few minutes; there was no convulsion, no subsequent drowsiness. There have been six such

attacks in one day; they have become less frequent since marriage; the last was six months ago.

About a year ago there would, from time to time, appear on the legs and disappear after about two days, a papulo-vesicular eruption associated with itching. It did not pustulate and dried without scabbing. The bowels are constipated. There is headache. Sometimes there is pain referred to the stomach and relieved by eating. There is no nausea, no vomiting, no pyrosis. Appetite is excessive. There is no polydipsia. The urine is excessive in quantity, and the patient rises at night to urinate. Menstruation is irregular. The eyes are prominent, the eyelids tremble when closed. The sclera is exposed when the eyes are opened. The reflexes are all exaggerated. The heart is irregular, not specially rapid; no murmur. The thyroid gland is not enlarged. Urine: acid, 1013, no albumin, no sugar; numerous disks that may be decolorized red cells. (Dr. Eshner.)

The phenomena of disturbed and incoördinate circulation are often even more strikingly manifested in the cases diagnosticated of recent years as "neurotic dyspepsia" and "neurasthenia." In this connection I will briefly enumerate the salient features only, of two additional cases.

CASE XIII. *Neurasthenia; lithæmia; vertigo; membranous enteritis.*—Mr. J., aged thirty years; attorney; American. Hyperopic astigmatism; nausea; no vomiting; paroxysms of vertigo, with pallor, chilliness, and sweating; aggravated neurotic dyspepsia; invagination proves absence of morbid secretion; emaciation; inability to attend to business; morbid attention to symptoms; no heart or lung lesion; throbbing and murmur in abdominal aorta; exaggerated reflexes; mottled hands; pink, crescent-marked nails; dermatographism, factitious urticaria; eye-sign; paroxysms of polyuria. Urine contains no albumin, no sugar; at times leucocytes, red cells, uric acid, calcium oxalate, phosphates. Patient has membranous enteritis. Has had attacks of urticaria; is extremely susceptible to both heat and cold; hands and feet frequently become cold without apparent cause. His child has a curious mottling of the skin of the trunk and limbs that resembles measles. At times it is of a vivid red, at others it fades to a delicate pink or faint brow.

CASE XIV. *Hysteria in a male, with neurotic dyspepsia, hæmatemesis, paroxysmal flushing, and sexual crises.*—The principal points in this case, of which space forbids a full report at present, are as follows: The patient, a merchant, aged forty-five years, and happily married, is highly emotional and of an hysterical family. He is stout, heavily built, with red cheeks, and dusky-pink hands. His nails are of the leaden-blue variety. Dermatographism, the eye-sign, and the costal fringe are present. Factitious urticaria can readily be produced, and the patient has had hives repeatedly. He is quite susceptible to moderate heat, flushing and perspiring when others feel comfortable. He has a habit of working feverishly, and is an interminable talker. After a period of overwork his digestion fails. He has burning pain in the stomach, with excessive thirst, and inability to retain anything except iced liquids. There are crises of gastric and abdominal cramp with vomiting—at times vomiting of blood—with serous diarrhoea, and at times passage of membrane. He does not use alcohol or tobacco, and always has been chaste. At times when suffering with indigestion, he will have sudden sensations of heat in the head and coldness below the knees; or general heat followed by chilliness; which, as he lives in a malarious region, has been called malaria. A peculiarly distressing form of the paroxysm is a feeling of heat beginning at the navel and spreading over the body, with pain in the testicles and unnatural sexual imaginings provoked by the sight of a strange man or woman "perhaps ugly as Satan;" his face becomes dusky red and his whole body trembles. This is followed by insomnia, anorexia nervosa, and finally for two or three nights by excessive nocturnal micturition, the urine being colorless as water. Such urine has a specific gravity of about 1002, and contains nothing abnormal. His ordinary urine contains neither albumin nor sugar. On two occa-

sinus colorless blood-cells were found in large quantities. His blood is apparently normal, and when examined in Philadelphia during a paroxysm of subjective heat, without elevation of general temperature, malarial organisms could not be found. Lavage proved entire absence of gastric catarrh, and examination of stomach-contents after test-breakfast showed absence of free acid with diminished total acidity. The eyes are normal. The knee-jerks are sluggish. The heart is slow (60) and feeble; dilatation not demonstrable. There are attacks of palpitation with dyspnea. The abdomen is not sensitive to pressure. Hepatic dulness is normal. The splenic dulness is not enlarged.

In some cases of vasomotor ataxia there is a pronounced idiosyncrasy toward drugs; the most remarkable instance I have seen being the following:

CASE XV. Paroxysmal headache and vertigo; circumscribed oedema caused by strychnine and by picrotoxin.—Mrs. E. S., aged forty-seven years; of American nativity and parentage; dark hair and eyes; full habit, flushed face; was seen in April, 1890. She complained of paroxysmal headache, subjective vertigo, and flushes of heat; the symptoms being of several years' duration. There is no visual disturbance. Headache and vertigo occur together or independently. The headache is not localized, but sometimes there is a feeling as of whirling inside the skull, in the vertical region. At times there is a sensation as of cold water being poured down the back. There is no rheumatic or other personal or family morbid history. The patient is regular in menstruation. There is no indigestion, but the bowels are inclined to be constipated. The thyroid gland is not enlarged; there is no thrill or bruit. There has been no urticaria, nor can factitious urticaria be produced. Dermographism is marked. The nails are pink and purple; they are striated and exhibit pink and white crescents. The hands are always warm, frequently sweating. The feet are cold even in warm weather; at times there are paroxysms of icy coldness, without loss of sensation or change of color. The urine is scanty, less than a quart in twenty-four hours; it contains nothing abnormal. The pupils are much dilated. Dr. Hansell examined the eyes, and reports "presbyopia, no lesion of fundus, veins overfilled." The heart is slow and steady (rate 60), the pulse is full but not strong; superficial veins are not prominent. Strychnine ($\frac{1}{10}$ grain t. d.) administered medicinally caused marked oedema of the face. The patient recalled a previous experience of the same kind. Nux vomica and picrotoxin caused similar effects. Hyoscyamine relieved the headaches; alkaline diuretics increased the urine. The patient improved, but passed out of observation. August 31, 1893, she reported at request. She is going through the menopause. The flushes of heat are more frequent. The head, neck, chest, and arms to the finger-tips become red. The redness passes off in a few minutes. Sometimes it is accompanied by a numbness of the left hand and arm, and tingling with coldness in the last two phalanges of all the fingers. Sometimes the numbness will last for two hours after the redness has disappeared. A second flushing may occur before the numbness ceases. There is no periodicity in these occurrences. Perhaps they are worse when constipation exists. The hands are usually warm and moist, the feet cold. Immersing one hand in ice-water it becomes quite red and slightly swollen. The wrist and forearm become blue in patches, with marked distention of venules. The hand is objectively cold, subjectively warm. The other hand is not changed in color, but quite cold. On removing the reddened hand from the cold water the finger-tips first become white and numb, but after a few minutes redness returns, with a sensation of pins and needles, and both subjective and objective warmth.

Not now to detail additional instances, it may be stated that among other morbid associations found in cases of the same general character as those reported have been ecchymoses, petechiæ, hæmaturia, retinal

hemorrhage, organic heart lesion, organic kidney lesion, chorea, rheumatism, hay fever, paroxysmal engorgement of turbinated bodies, angina pectoris and pseudo-angina and glycosuria. In one case hæmoptysis occurred only during epileptic paroxysms; in another case of epilepsy, tachycardia and flushed face accompanied the convulsion. In both these cases there was a soft enlargement of the thyroid gland.

The obscurity in which the pathology of diseases of the sympathetic, or, to use Gaskell's term, the visceral nervous system, is still involved, cautions against premature assertion of other than clinical facts.

I believe that the phenomena herewith submitted for consideration are of considerable clinical significance.

Leaving out of consideration for the present, the diseases other than exophthalmic goitre (acromegalia, myxœdema) known to be associated with abnormality of the thyroid gland, there are four affections of great moment in which functional or structural alteration of some portion of the visceral nervous system is an important element, if not the essential feature. These are Graves's disease, Raynaud's disease, Addison's disease, and certain forms of diabetes mellitus.

The cases here reported show the existence of lesser degrees of disturbance of that system; and indicate that in some instances, at least, there is a congenital tendency to such disturbance. They suggest, moreover, that this congenital want of balance in the circulatory apparatus may be the germ from which, under the fructifying influence of various exciting causes, the more serious disorders develop. Thus mental or even physical shock in a subject of congenital vasomotor ataxia might cause the sudden development of exophthalmic goitre; and an exposure to cold from which a normal individual would quickly react, causes, in the subjects of this condition, local asphyxia, chilblains, frost-bite, or even extensive gangrene. So too, slight indigestion, itself the result of influences that would be ineffectual in a normal individual, may, in the subjects of vasomotor ataxia, induce crises of vertigo, migraine, syncope, or even paroxysms of epilepsy. And similarly, other sources of peripheral irritation—eye-strain, nasal abnormality, exposure to pollen, and the like, result in the production of an exaggerated reaction. The relationship of hay fever with the group of cases under consideration, may be best exhibited by comparing two of the descriptive names it has received—"idiosyncratic coryza" (J. Solis-Cohen) and "periodic vasomotor coryza" (J. N. Mackenzie). One of my patients with blue hands, was compelled to give up his position in a drug house because of his excessive susceptibility to ipecacuanha.

The occurrence of diabetes mellitus in members of the families or patients exhibiting the phenomena of vasomotor ataxia; of intermittent glycosuria in one of my cases of menstrual migraine with urticaria and almost constant flushing of the face; and of intermittent polyuria in

many of my cases, are circumstances worthy of note—especially in relation with the occurrence of glycosuria in some cases of Graves's disease, and with the investigations of Thiroloix upon pancreatic diabetes.

The tendency to hemorrhage must not be overlooked, especially in connection with the diagnosis of pulmonary tuberculosis, of gastric ulcer, and of hypertrophy of the heart. Cases such as those I have reported may develop tuberculosis or cardiac hypertrophy, but these conditions need not necessarily be present at the time of hemorrhage, or later. I would call especial attention to the extraordinary frequency with which, in cases of vasomotor ataxia, red blood-cells are found in urine not discolored—a fact rendered significant to my mind by personal observation of hæmaturia in a case of undeveloped Graves's disease that later exhibited the full complexus of symptoms, and by the records of hæmaturia and hæmoglobiuria in Raynaud's disease. Unfortunately, the single case of paroxysmal hæmoglobinuria from cold that has come under my observation was not studied from the standpoint of the present paper, and is not available for comparison. In this connection, too, an interesting relation with hæmophilia, and with the purpuric group of affections is suggested; but it would not be advisable at present to more than indicate this subject.

The frequent association of refractive errors, and especially of hyperopic astigmatism, with instability of the circulatory equilibrium, raises the question whether the ocular defects are to be classed in the category of exciting causes acting by reflected irritation, or whether there is a more fundamental relation. I am inclined to the opinion that abnormality of circulation and nutrition bears a causative relation to the ametropia. The eye-strain may then react additionally upon the centres, increasing their irritability.

Finally, as exemplified by the case which first drew my attention to the subject (Case III.), and by the case last reported (Case XV.), we must recognize a class of cases to which, as yet, no definite nosological place has been given, and in which a varied symptomatology of circulatory disorder cannot be referred to disease of any organ; though lesion of the digestive tract, of the kidney, of the heart, or even cerebral or spinal lesion may be suggested. For these cases, depending as they must, upon a want of control in the nervous system governing the calibre and tension of the vessels, a defect clearly of inhibition, and by the radius of its effects evidently central in location, it seems to me that the most appropriate name is *vasomotor ataxia*.

SUMMARY.

1. By the term *vasomotor ataxia* it is proposed to designate the condition of instability of the mechanism of circulation present in certain persons and characterized by abnormal readiness of disturbance with

tnrdness of restoration, of the equilibrium of the cardio-vascular appn-ratus. The mnifestations are most strikingly displayed by the heart and by the peripheral vessels of the extremities, but analogy indicates the occurrence of similar phenomenn in the vessels of the glands and of the viscera, more especinly in those of the kidney, of the gastro-intestinnl tract, and of the brain. They may occur appnrently spontnneously, but often there is a recognizable exciting cause. Among the influences acting as excitants, nre tempernture, especinly cold; toxic agents formed in the body, or introduced from without; visceral or internal reflex excitation; and emotion. The stimulus may be npplyed centrnlly or peripherally, but in either case the resulting phenomenn indicate a defect of central inhibition; the expression, probnbly, of functional or nutritional aberration in the great ganglin of the visceral nervous system, in the medullary centres, or in both. The morbid anatomy is nncertain, and the results of necropsies necessarily inconclusive.

2. Vasomotor ntaxia may be acquired as n sequela of disease; in many cases it is congenital; in some cases inherited; the condition is not nrnely present in severnl members of n fnmily.

3. In some cases the phenomenn nre of paretic, in others of spasmodic chrnacter. Usunly the two kinds of phenomena nre displayed in vary-ing degree in the same ptient. Whether spasmodic or pnretic the symptoms nre suggestive of incoördinntion. They nre always in some degree nroxyymnl.

4. In exophthlmic goitre, especinly such cases as nre produced by emotion or are mnrkedly intermittent, is found the extreme type of the "relnxing" vnriety of vasomotor ntaxin.

5. The form of Rnynnud's disease, known as "local syncope" furnishes nn extreme type of the "constrictive" vnriety; while "locl nsphyxia" exhibits phenomenn of both nbnormal relaxation and nbnormal constriction of the vessels.

6. Between these extremes are numberless gradations down to the slightest departure from normality; while even the extreme symptom-groups represent merely exnggerations of phenomenn that under certnin conditions occur in normal individunls.

7. Dermogmphisn is nu essential feature of vasomotor ntaxin, and in most cases factitious urticarin can be readily produced by cold or by pressure or by both; mottlings of the skin, certain peculiar markings of the nnils, telnngiectases, and stigmnta are common.

8. There is usunly n hemorrhngic tendency, as shown by ecchymoses, petechiæ, epistaxis, hæmoptysis, hæmntemesis, hæmnturia, and retinal hemorrhage.

9. Even in the nhsence of hæmaturia, red blood-cells are often found in the urine; uric acid, urates, and oxalates nre likewise common; the

presence of albumin, tube-casts, and cylindroids is less common, and is usually intermittent. Glycosuria has been observed.

10. In many striking cases there has appeared to be morbid alteration of the thyroid gland.

11. The action of the heart is usually rapid, irregular, and easily disturbed; palpitation is common, and intermittent tachycardia has been noticed. Hæmic and functional murmurs are not uncommon.

12. Among other symptoms and morbid associations observed are anæmia, hysteria, drug idiosyncrasies, urticaria, local œdema, hyperidrosis, angina pectoris and pseudo-angina, organic heart disease, pulmonary tuberculosis, asthma, hay fever, vertigo, migraine and other forms of headache, transient hemiopia and other visual disturbance, persistent mydriasis, astigmatism, myopia, hyperopia, menstrual irregularities, intermittent polyuria, rheumatism, rheumatoid arthritis, contractures of digits, chorea, epilepsy, neurasthenia, neurotic dyspepsia, gastralgia, enteralgia and membranous enteritis—most of which are doubtless fundamentally related, as effects of a common cause, or as secondary results.

13. In making the diagnosis of simple vasomotor ataxia, it is necessary to exclude primary organic disease. The occurrence of such disease later does not invalidate the original diagnosis. The development of pulmonary tuberculosis in some cases is probably a sequence of vascular and trophic disturbance in the lung. Cardiac hypertrophy and renal lesion may likewise be among the results of disordered circulation.

TOXÆMIA OF PREGNANCY: ITS DIAGNOSIS AND TREATMENT.¹

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By the term *toxæmia of pregnancy* we understand a condition occurring in the pregnant woman in which toxic material is present in the body in excess. There can be no nutrition without the production of waste, and when the dual existence in the body of the pregnant patient is considered, it is not strange that an additional quantity of waste products is present. The excretion of this material is effected largely through the agency of the kidneys, and hence attention was first attracted by those cases where kidney failure was the first and prominent symptom; but as our knowledge of pathology is increased, we see that