ADDISON’S DISEASE.

BY

WILLIAM OSLER, M.D.,
Professor of Medicine in the Johns Hopkins University of Baltimore.

An address delivered before the classes of the Medico-Chirurgical College of Philadelphia on January 24, 1896.

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The glands of the body, you are aware, are divided into different classes; certain of them, as the salivary glands and the kidneys, elaborate materials from the blood, which are poured out externally and which either serve some useful purpose or are excrementitious. Other glands have a double secretion, one of which is discharged by a duct and the other is passed into the blood either directly or through the medium of the lymphatics, and hence is termed an internal secretion. To this group belong the liver, which forms both bile and glycogen, and the pancreas, which secretes a powerful digestive fluid and an internal secretion with a remarkable glycolytic function. Then there is a third group of glands, comprising the spleen, thyroid, thymus, pituitary, and suprarenal bodies, which have no ducts or orifices of discharge; hence, the term "ductless glands." These bodies elaborate an internal secretion which is poured back into the blood and which, in the case of some of the glands, at any rate, has been shown to have most important functions. The progress of our knowledge of the physiology of these glands has been very rapid of late years. Let me first call your attention to the functions of the thyroid gland and to the manner in which they have been determined.

In the first place, it has long been known that in regions in which goitre is endemic many of the children present a peculiar impairment in physical and mental development. The subjects, known as cretins, are strangely malformed, and either completely idiotic or feeble-minded. They are found particularly in certain European countries, and in some of the Cantons of Switzerland they occur by hundreds. It has long been recognized that the condition is in some way connected with disease or atrophy of the thyroid gland. While the affection is endemic in certain regions, it also occurs sporadically, and cretins are occasionally met with in this country.

In the second place, the observations of Sir William Gull and Dr. Ord showed that in adults a remarkable physical and mental change was liable to supervene in certain forms of disease of the thyroid gland. The subjects of the affection presented a great thickening of the subcutaneous tissues, marked change in the nutrition of the skin, and a gradual impairment of the brain-function, leading ultimately to dementia. So similar was this condition to that of the cretin that Sir William Gull called it the "cretinoid state," and Dr. Ord gave it the name of "myxedema," owing to the large amount of mucoid material in the subcutaneous tissues.

A further step was the discovery by surgeons, particularly by Kocher and by Reverdin, that total extirpation of the thyroid, as is so often practiced in goitre, was followed in a certain number of cases by a condition identical with that of myxedema. The patients grew listless and apathetic and the cutaneous tissues underwent the same remarkable change already referred to.

These were the clinical contributions to the question. Then the experimental physiologists added their all-important studies.

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Schiff had demonstrated that a remarkable series of changes followed complete extirpation of the thyroid in animals, and his observations were confirmed and extended by many observers, particularly by Horsley, whose experiments were conducted upon monkeys. It was shown that these changes invariably followed total extirpation of the gland, and in monkeys a condition was noticed very similar indeed to myxedema in men. If, on the other hand, a supernumerary thyroid gland existed, the change did not occur, or even if a small fragment of the gland were left, or if, indeed, a portion of the thyroid were transplanted into the animal operated upon. The clinical and experimental studies demonstrated conclusively the prime functional importance of the thyroid for the normal metabolism of the body.

Then came the all-important practical deduction which has proved one of the most striking therapeutic discoveries of modern times. Inasmuch as the peculiar train of symptoms following thyroidectomy in an animal did not occur if a gland from another animal were transplanted, it was a very natural suggestion which occurred to Dr. Murray—a pupil of Horsley's—to try the same procedure in cases of myxedema. Transplantation was at first used; then it was found that feeding by the mouth was equally advantageous or the extract of the gland used subcutaneously. The consequences of Murray's shrewd suggestion have opened one of the most interesting chapters in the history of therapeutics. The treatment has been before the profession now for a period long enough in which to form a clear judgment, and it may be said that the results of thyroid feeding in myxedema and in cases of early cretinism are without parallel in practical medicine. Let me give you an illustration. A lady came under my care some months ago, who for six years had been changing gradually, both mentally and bodily. She had become heavy, bloated, and flabby, and the skin exceedingly dry, the face puffy, and the eyelids baggy, and there were great cushions of swollen, subcutaneous tissue about the neck. The hair was dry, and there was a condition of patchy alopecia. She had changed mentally from a bright, active, intelligent woman, capable of taking charge of a large household, to a dull, listless apathetic creature whose only wish was to be left alone. In short, she was an advanced case of myxedema, scarcely able to walk, and presenting in many respects a pitiful caricature of the human form and face. Within three months under the use of the thyroid extract she had lost all her bloated appearance; physically she had become active and energetic, and mentally she took an interest in everything. She returned to her home, resumed her domestic cares, and has been practically rescued from a condition of hopeless futility, and she is again a happy and intelligent member of society. This is not an isolated instance, but the cases are now numbered by scores; both in the infantile and adult myxedema this remarkable change has been effected. This is a brilliant triumph, too, for experimental medicine.

The facts which I have mentioned indicate clearly that the thyroid gland secretes some important substance which, poured back into the circulation, is of vital import in maintaining the metabolism of the brain and of the subcutaneous tissues.

How stands the case now of Addison's disease? Eleven years ago in Pepper's "System of Medicine" I wrote as follows: "The relation of affections of the thyroid gland to myxedema and cretinism and the experimental production of these conditions by the removal of the thyroid have widened our view of the importance of the ductless glands. In both there are distinct histological changes in the tissues—in one, an increase in the mucin; in the other, an increase in the pigment—and in both marked nervous phenomena; mental dullness, a progressive dementia in myxedema, a profound ashenia in Addison's disease. We regarded the thyroid as unimportant to life until the experience of surgeons and extirpation in monkeys by Horsley demonstrated that abolition of its function was followed by a serious train of symptoms; and perhaps the experimental removal of the suprarenals in monkeys—so much more closely allied to man than the animals hitherto experimented upon—may demonstrate that these little bodies are also not without their influence upon health."

We may divide the steps in our knowledge, as we did in the thyroid, into the clinical, experimental, and therapeutic. Addison in 1854 described the disease very thoroughly and recognized the three important symptoms—namely, gradual deepening of the pigmentation of the skin; profound ashenia, both muscular and mental, and gastro-intestinal disturbances. Anatomically, Addison found that these clinical symptoms
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were associated with changes in the suprarenal bodies, usually a fibrocaseous alteration, which was subsequently shown to be tuberculous. While this is the common alteration, in other instances atrophy of the glands has been met with, in others again cancer, and in a few sclerosis. There has not been much added to our clinical and anatomical knowledge of Addison's disease. You will find the whole question very thoroughly and critically considered in Rolleston's Goulstonian Lectures at the Royal College of Physicians, published in the Lancet and British Medical Journal, Vol. I, of last year.

The experimental steps in our knowledge are by no means so complete or so satisfactory as in the case of the thyroid. Brown-Sequard, whose work was stimulated directly by Addison's paper, concluded that the glands were necessary to life and that they influenced in some way the elaboration of the pigment. I must refer you to Rolleston's Lectures for full details of the subsequent experiments. Recently Schaefer and Oliver have found that an extract prepared from the medullary portion of the suprarenal gland contains an organic principle of extraordinary power which acts especially upon the muscular fibres of the heart and the peripheral arteries and also upon the voluntary muscles. They were not able to obtain this substance from the glands in two cases of Addison's disease. The experimental work is by no means complete, and at present the most that we can say is that the balance of evidence is strongly in favor of the view that the adrenals are functional glands which contribute an important internal secretion, the nature of which is as yet undetermined, but which probably has an important influence on the normal metabolism of the skin and muscles.

The third step, which in the case of the thyroid has so brilliantly clinched and harmonized the clinical and experimental data, has been taken in connection with Addison's disease by the administration of the extract of the gland to patients. The disease is so rare that only a few cases have as yet been treated, and the results are not as yet by any means assured. I have had, for the past eight months, a case under my observation which has improved in a very remarkable manner. The following is an abstract of his history: Wm. H., aged 46, sail-maker, was admitted to the Johns Hopkins Hospital, May 3, 1895, suffering from cough, weakness, and an increasing pigmentation of the skin. Nothing special in his family history. He did not know of any members having had tuberculosis. At the age of 16, when on board a man-of-war at Panama, he had an attack of jaundice, and he says his skin has never been of a perfectly good color since that time. In July of 1893 he was run over by a wagon, the wheel passing across the body at the level of the navel. He has had indigestion for several years. For two years he has been losing strength and energy and has noticed an increasing pigmentation of the skin. Within the past six months he has had a good deal of cough and mucous-purulent expectoration. On admission he was very feeble, his eyes were sunken, and he was apathetic. The pigmentation of the skin was very intense, particularly on the face, forehead, hands, axillae, elbows, areolae of nipples, and genitalia. The skin of the trunk was not so much discolored. There was slight pigmentation on the roof of the mouth and upon the velum of the palate. The pulse was of fair tension and the wall of the artery not thickened.

There were well-marked signs of softening at the right apex and a pleuritic friction-rub in the right mammary and axillary regions. There was no enlargement of the spleen or of the liver, no special tenderness over the region of the suprarenals. The sputum was greenish yellow, but did not contain either elastic tissue or tubercle bacilli.

From the date of admission to May 16th the temperature ranged from normal to 101 degrees F. On May 16th he began to take a glycerine extract of the pig's suprarenal, the dose being, at first, half a gland three times a day.

On May 20th tubercle bacilli were found in the sputum for the first time. During the first week the patient improved and gained three pounds. The temperature was normal from about the 20th. No unpleasant effects whatever were noted from the use of the extract. During the week ending June 16th he gained five pounds—an increase of nine and a half pounds since the treatment was begun. The pulse gradually fell from 104 to 84, the sputum decreased to 40 cubic centimetres daily, the appetite improved, and the patient looked very much better. During July and August the treatment was continued and the patient gained in strength and in weight. He lost entirely the dull, apathetic appearance, and his bodily vigor improved greatly.
On September 10th he left the hospital, the change in his condition being in every way remarkable. He had gained nineteen pounds, was bright mentally, and very active and vigorous. There was no change whatever in the pigmentation.

I showed this patient at my clinic exactly eight months after the beginning of the treatment. He continues well and strong. He has no longer any cough, he attends to his business, and says he feels perfectly well. There is no essential change in the pigmentation.

Time alone will tell whether we can obtain by this method of treatment the brilliant results such as we have in myxedema with the use of the thyroid extract. It is not at all probable that the results will be uniformly good. In the first place, the lesion of the adrenals associated with Addison’s disease is often only a part of a general tuberculosis. In advanced cases, therefore, the suprarenal extract is not likely to be of use. In cases associated with malignant disease the treatment will, of course, be fruitless. In a few instances, however, it is quite possible that the progress may be checked or that the disease may be permanently cured. I have emphasized the fact that the question is still in the tentative stage. The experimental evidence has not that strong and powerful unanimity such as we have noted in the case of the thyroid gland; still, it is extremely suggestive of the view that the adrenals are important functional glands, furnishing an internal secretion. If the symptoms of the disease are directly dependent upon the absence of this internal secretion, then in suitable cases the extract of the gland may supply this defect, and, as in the case of myxedema, arrest the progress or even cure the disease. The cases treated so far number only eight or ten, and I think it may be said that in a majority of these the condition has been improved, as in the case I have mentioned, but I do not know of any instance in which the symptoms of the disease have permanently disappeared.
ON SIX CASES OF ADDISON'S DISEASE,
WITH THE
REPORT OF A CASE GREATLY BENEFITED
BY THE USE OF THE SUPRA-
RENAL EXTRACT.

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ON SIX CASES OF ADDISON'S DISEASE, WITH THE REPORT OF A CASE GREATLY BENEFITED BY THE USE OF THE SUPRA-RENAL EXTRACT.

Nine cases of this rare affection have fallen under my observation. In two of these I made the dissection of the nerves and capsules.1 A third case I reported in conjunction with Dr. J. C. Wilson in volume xiii. of the Transactions of the Philadelphia Pathological Society. The additional six cases, which I here give, have not been previously recorded.

Recent studies render it very probable that the original view of Addison is correct,—namely, that the symptoms of the disease are caused by loss of function of the adrenals. The evidence on which this is based is readily available in the elaborate Goulstonian Lectures of Rolleston,2 in the address of Professor Schäfer 3 on Internal Secretions, and in a paper by Dr. Oliver.4 On this view the disease is analogous in all respects to myxœdema, and is caused directly by the loss of the internal secretion of the glands. The comparison between these two diseases has frequently been drawn. As far back as 1885, in an article on Addison's disease in Pepper's "System of Medicine,"5 I used the following words:

"The relation of affections of the thyroid gland to myxœdema and cretinism, and the experimental production of these conditions by the removal of the thyroid, have widened our view of the importance of the ductless glands. It is interesting to note the analogy between myxœdema and Addison's disease. In both there are distinct histological changes in the tissues—in one an increase in the mucin, in the other an increase in the pigment—and in both marked nervous phenomena: mental dulness, a progressive dementia in myxœdema, a profound asthenia in Addison's disease. We regarded the thyroid as unimportant to life until the experience of surgeons and extirpation in monkeys by Horsley demonstrated that abolition of its function was followed by a serious train of symptoms; and perhaps the experimental removal of the suprarenals in monkeys—so much more closely allied to man than the animals hitherto experimented upon—may demonstrate that these little bodies are also not without their influence upon health.

"Although the view of disturbed innervation consequent upon involve-

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3 Lancet, 1895, vol. ii.
5 Vol. iii. p. 947.
ment of the abdominal sympathetic meets the case, theoretically, better than any other, and is at present widely held, yet there are signs of a return to the old view of Addison.”

The analogy will be complete if it be found that in suitable cases the use of the suprarenal extract cures Addison’s disease in the same remarkable way that the thyroid extract relieves myxedema. Clinical workers may now contribute their share by carefully studying the effects of the extract in selected cases. Addison’s disease is so rare that every opportunity should be seized. At the same time the greatest caution should be exercised, on the one hand, to select only well-characterized cases, and, on the other hand, to exclude cases in which the condition is a concomitant of widespread tuberculosis.

Case I.—Failing health for a year; attacks of faintness; bronzing of face and hands; sudden death. (Abstract.)

A. J., aged about forty, lawyer, consulted me in the spring of 1885, complaining of weakness and attacks of faintness. He was a healthy-looking, well-nourished man, of good family history. For about a year he had been overworked and worried, and had had at times dyspepsia. On one occasion, in court, he felt very faint and almost fell. On two or three other occasions he felt very weak and prostrated without any obvious cause. For nearly a year he had noticed a gradual darkening of the skin of the face and of the hands. At the suggestion of his physician he sought an opinion as to the existence of Addison’s disease. The patient’s general condition was so good, without anemia, loss of flesh, or any signs of tuberculosis, and the pigmentation was so slight and limited, that doubt seemed reasonable. Dr. Pepper saw the case with me, and we agreed that the pigmentation and causeless fainting spells were, to say the least, suggestive, and we advised him to give up business for a year and live quietly abroad. He went home prepared to follow our advice, arranged his affairs, and made preparations for his trip, when one morning he dropped dead in a railway station. There was no autopsy.

Case II.—Gradual asthenia; progressive bronzing of the skin; attack of syncope; nausea and vomiting. Autopsy: cheesy foci at apex of left lung and in bronchial glands; tuberculosis of the adrenals; very slight matting of the semilunar ganglia and nerves.

Nellie R., aged forty-one; admitted to the Philadelphia Hospital July 2, 1886, with great weakness and bronzing of the skin. Her father and mother both died of heart-disease, one sister of dropsy, and one of heart-disease. She had small-pox when a child; otherwise she has been a very healthy woman until a year ago, when she was attacked suddenly with great pain in the region of the heart and with dyspnea. The distress lasted for at least three days. Until April of this year she has been in fairly good health, except that she seemed more languid than formerly and felt indisposed to work.

Last November her friends noticed that she was changing in color, and throughout the winter her normally fair complexion has been replaced gradually by a dark bronze. Three weeks before admission she had a sudden attack of syncope, preceded by dizziness in the head. Shortly afterwards she began to vomit after meals, and has done so almost every day since. She has had no pain anywhere.

Present Condition.—Small, somewhat emaciated woman. Face, neck, and hands deeply, general surface of the trunk slightly, pigmented. The bronzing of the face is extreme; it is interesting to note that on the forehead the deep small-pox scars
are unpigmented. The skin of the abdomen is much darker than that of the thorax; the fingers are not clubbed; the nails are incurved; the pulse is 96, small and thready; the heart-sounds are clear and loud; there is slight flattening beneath the clavicles at both apices, and the percussion note is a little high pitched, and there are a few râles on deep inspiration. The abdomen is soft; no pain on deep pressure in the epigastrium; no tenderness on either side in the renal regions. There is no pigmentation of the mucous membrane of the mouth. The color of the lips is fairly good; no anemia; temperature 98° F.

The patient had most profound anorexia with great prostration, and once or twice vomited small quantities of blood. She gradually sank and died on the 13th.

**Autopsy.**—Body not emaciated; skin of face, neck, hands, and arms of a light bronze color; marked pigmentation of abdomen. On the inner surfaces of cheeks a dark patch on either side. Vaginal mucosa not pigmented; panniculus over abdomen three-fourths of an inch in thickness.

**Peritoneum.**—Adhesions between the surface of the liver and the diaphragm. The omentum is adherent to the wall of the pelvis. In thorax there are adhesions at the right apex and general adhesions at the left side. The heart contains fluid blood and clots. The valves are normal; the muscle substance is a little pale.

**Lungs.**—The left is crepitant except at extreme apex, and in two or three small areas of anterior margin, which show cheesy foci surrounded by gelatinous infiltration. The right lung is everywhere crepitant. The pleura is thickened, particularly at the apex. The bronchial glands are caseous.

**Stomach.**—Everywhere throughout the mucosa are small white bodies about two millimetres in diameter. There is pigmentation towards the pylorus; no erosions and no other special changes.

The **spleen** is of average size, closely adherent to the diaphragm, and the pulp looks normal.

The **liver** is small, united closely to the diaphragm. There are no tubercles, but in the adhesions on the right border is a small caseous body the size of a pea.

The **intestines** show no special changes except a slight enlargement of Peyer's patches and the solitary glands.

The suprarenals and sympathetic ganglia were dissected *in situ*.

The right splanchnic nerve is large, and a ganglion existed on it opposite the tenth dorsal vertebra. The left nerve is not so large and presents a smaller ganglion. The right nerve enters the semilunar ganglion, which is readily dissected, as it is not specially involved in cicatricial tissue. On the left side the ganglion is large, but also readily separated from the adjacent tissue. The nerves joining the two ganglia and those about the coeliac axis are less distinct than usual, owing to the slight matting of the tissue. The nerves passing to the suprarenals are free.

The capsules are not much enlarged. The right is six centimetres long, very firmly adherent to the liver and to the inferior cava. The left, six centimetres in length, is closely united to the kidney and to the spleen. On section the right capsule presents no trace of normal gland tissue. The lower half is occupied by a large cheesy mass, the central portion of which presents a grayish translucent, fibrous tissue. The remainder of the organ is made up of a similar tissue in which are small cheesy nodules. Behind the vena cava there is also a solid caseous mass. The left capsule presents a firm, cheesy nodule just where its main vein emerges. The organ is flat and made up of a gray, translucent, fibrous tissue.

The kidneys are of average size. The left presents numerous small tubercles and one or two caseous masses which are in close proximity to the suprarenal capsules. In the pelvis the broad ligaments, ovaries, and tubes are closely matted together by old peritoneal adhesions.

The dissection of the nerves and adrenals is in the Mütter Museum of the College of Physicians in Philadelphia.
CASE III.—Dyspepsia and occasional attacks of vomiting for two or three years; for some months gradual pigmentation of the skin and mucous membrane of the mouth; attacks of dizziness; extreme prostration and anaemia; profuse diarrhoea; urgent vomiting; death; no autopsy.

William S., aged fifty-nine, longshoreman; admitted June 30, 1887, to the Philadelphia Hospital, complaining of vomiting and great prostration. With the exception of yellow fever, in 1864, he had enjoyed very good health until three years ago, when he began to have dyspepsia and occasional attacks of vomiting. He has, however, kept at work.

For many months past (he does not know the exact time) he has himself noticed, and his friends have remarked, that he was becoming very dark in color. Eight days before admission he had an attack of dizziness, in which he fell but did not lose consciousness. Since then he has been extremely prostrated and the attacks of vertigo have become more frequent.

Condition on Admission.—Large, well-nourished man; slight oedema of the feet. Skin of the face, neck, and hands of deep mahogany brown. General surface of the body very much darker than ordinary; sclerotics are pearly. The lips are pale, and there is evidently marked anaemia. Mucous membrane of the lips and inner side of the cheeks deeply pigmented, and a large patch can also be seen on the soft palate.

The lungs are entirely negative: no râles at the apices; no dulness; no sign of old tuberculous disease. The apex-beat is in the fifth interspace. Pulse 96, small. There is a venous hum in the vessels of the neck; no hæmoric murmur at the base of the heart.

There is marked pain on pressure over the tenth and twelfth ribs on the left side; none on the right. The blood showed the characteristic features of an extreme anaemia, and the blood drop looked very watery. The count gave one million red corpuscles per cubic millimetre. Proportion of white to red one to four hundred.

The patient sank rapidly after admission; had profuse diarrhoea and urgent vomiting, and died July 6. The temperature ranged from 98.2° to 101.4° F. So far as could be ascertained from the patient himself and his friends, there had been no tuberculous disease in his family.

This is the only case of Addison's disease which I have seen with profound anaemia, a symptom on which Addison laid a good deal of stress. In a majority of the cases the blood count does not fall below fifty or sixty per cent. A difficulty sometimes arises in the diagnosis of the disease in cases of severe anaemia of the progressive pernicious type which have irregularly mottled pigmentation. I have recently seen a case in which, with the progressive anaemia, there was a degree of asthenia and gradual pigmentation highly suggestive of Addison's disease.

CASE IV.—Gradually developing languor and asthenia; frequent attacks of causeless vomiting; progressive pigmentation of the skin; convulsions; toxæmia; death. Autopsy: sclerosis and atrophy of the adrenals; no tuberculosis.

David A., aged fifteen and a half, a patient of Dr. Mullin's, of Hamilton, Ontario, who consulted me by letter about him, and who very kindly sent me the suprarenal capsules for examination.

The patient's father died at forty-five from pulmonary tuberculosis of four years' duration. The mother is a healthy woman; the brothers and sisters are healthy.
The boy had suffered from no serious illness in early life, and had good health until the onset of the present illness. In March he had a slight febrile attack, in which he was confined to bed for two days. Early in April his mother noticed that he appeared to be sunburned, and she thought it was due to wearing his Scotch cap too long in the spring. He seemed also languid and listless, and did not seem able to apply himself to study. Early in the summer he was taken from school, as he fretted and cried frequently on account of the scoldings. Ever since the attack in March he has had at intervals of three or four weeks attacks of vomiting, in which he brought up greenish and yellow matter, after which he felt better. In the summer the mother noticed that the skin became much more discolored. He was very indolent and took but little exercise and did not engage in any sports. His complexion was fair and his hair of a light color and thin, so that his discoloration, which deepened through the summer, was very marked. He had at times very severe headache, and sometimes acted strangely, as if silly.

His final illness is so graphically described by Dr. Mullin that I give his statement in full.

"On Monday of this week he complained of sickness and headache. On Wednesday he did not rise from bed; that night he slept and did not complain. On Thursday he was languid and stayed in bed; vomited a little green matter; said he had no headache, but had a bad taste; he was dull and heavy; his eyes appeared strange, and he acted as if he did not wish to be disturbed. About 2 P.M. he took a little oyster-soup; this was taken quickly, and he then turned to the back of the bed; later he vomited slightly. About 5 P.M. he would not answer questions; turned to the wall as if he wished to sleep. A little before 6 P.M. a convulsion occurred, not violent; the limbs were fixed; he was quite unconscious, face a little drawn, and slight frothing; the hands jerked slightly. After this he did not speak, except to say 'yes,' 'yes'; he would put out his tongue and open his mouth, and then turned away and moved to the back of the bed. A few minutes after the convulsion he was seen by a physician, who said that the movements were very similar to those of an hysterical patient. I saw him at nine o'clock the same evening. He was not unconscious, but did not seem able to fully understand. He moved to the front of the bed at my request, but soon turned and moved to the wall. The pulse was feeble and could not be counted at the wrist; the hands were cold; temperature in axilla, 100° F.; it had fallen one degree since taken after the convulsion. The tongue was a little furred, yellow; the breath seemed foul. During the night he was very restless, tossing from side to side and pulling the bedclothes. He passed urine once; at this time he asked for the vessel. The next morning I visited him at ten. The hands were cold, bluish, nails blue; pulse so feeble that it could not be counted at the wrist; heart-impulses, 132 per minute. Occasionally he made a deep sighing inspiration.

"The brownish discoloration of the skin very marked on the face, the shoulders, and anterior part of the thorax; the surfaces of the extremities discolored, but not so deeply; the integuments of penis and scrotum much darker than elsewhere, and the areola around each nipple was discolored as in pregnancy. Along the spinous processes from the level of the scapular spines to the sacrum was a row of ten spots about the size of a quarter of a dollar more deeply discolored than the surrounding skin. No pigmentation of the mucous membrane of the mouth; the breath was offensive; urine free from albumin and sugar.

"Until the afternoon he was very restless, pulling the bedclothes, and tossing about from side to side, and at 4 P.M. one-third grain of morphine was given hypodermically. After this he became more quiet, and when I visited him at 9 P.M. he was sleeping. He continued quiet during the night, and died the following morning about nine o'clock."

Dr. Mullin was kind enough to give me the opportunity of examining the suprarenals, sections of which I showed one evening at the Pathological Society of Phila-
delphia. Unfortunately, the specimens and sections of both this and the following case have been mislaid. Both capsules were extremely small, not half the normal size, and surrounded by much fat. They were firm, and on section showed no distinction between the medullary and cortical portions. Microscopically, there was a condition of diffuse sclerosis, with here and there areas of fatty degeneration. There was no tuberculosis of the organs.

CASE V.—Attacks of vomiting and indigestion for eight months; gradual pigmentation of the skin; intense prostration; death. Autopsy: tuberculosis of both adrenals; no involvement of other organs.

William B., aged nine, a patient of Dr. William E. Parke, of Philadelphia, Pa. The boy was at Girard College, and according to the doctor's statement he had seen him, on and off, for about eight months, during which time he had been repeatedly admitted to the infirmary with attacks of vomiting and indigestion, occasionally with a mild tonsillitis. His color had changed and he had become very much bronzed, but this was suggested to have been due to a dark ancestor. His last illness was characterized by most intense prostration and weakness, and obstinate vomiting. There was no elevation of temperature; the pulse had been rapid, but on the morning of his death it came down to forty.

I made the autopsy on the 28th of March, 1888. Unfortunately, the notes which I dictated to Dr. Parke at the time were mislaid. The skin was uniformly pigmented and about the color of a mulatto's. There was no enlargement of the lymph-glands; the heart and lungs were normal; no tuberculosis; no involvement of the lymph-glands in the abdomen; no changes in the stomach or intestine. The suprarenal glands alone were diseased. Both looked small; the right was larger than the left, and presented a flattened tuberculous mass about the size of an almond, the left a smaller mass in the upper part of the gland. There was no thickening or adhesion about the semilunar ganglion in the nerves passing to the glands.

CASE VI.—Pulmonary tuberculosis; injury two years ago; dyspepsia; gradual asthenia; pigmentation, deepening for nearly two years; treatment for eight months with suprarenal extract; rapid disappearance of the serious symptoms; marked and persistent improvement in general condition; no change in the pigmentation.

William H., aged forty-six, sail-maker, admitted to the Johns Hopkins Hospital May 3, 1895, complaining of cough, shortness of breath, great weakness, and a change in the color of his skin.

Family History.—His father died of cholera morbus and his mother from the effects of a stone in the bladder. He had three brothers and two sisters, all of whom are dead. He does not know of what the brothers died. One sister died in confinement; the other from poisoning by mercury. He knows of no tuberculosis in his family, and none of his relatives have had discoloration of the skin.

Personal History.—When a child he had measles, diphtheria, chicken-pox, and mumps, and when about seventeen years of age, varioloid. In his sixteenth year he served on board a man-of-war at Panama, where he had a protracted fever of nearly four months' duration. Shortly after this he had jaundice for a month, since when he has never had a very healthy or natural-looking color of the skin. Ten years ago he had two attacks of severe pain in the hypochondriac and epigastric regions, lasting about five hours. He was doubled up with the pain and had to have morphine. The attack was not followed by either jaundice or chills. In July, 1893, the patient was run over by a wagon, the wheels passing over his abdomen just below the navel. He was laid up for two months, and suffered a great deal of pain in the abdomen. There was no paralysis afterwards, but he has not been very strong since. For two years the
skin has been growing darker in color, and his friends have noticed that within the past five or six months the pigmentation has become much more intense. He has had at intervals throughout his life attacks of indigestion, and at times belching, but no vomiting. Twelve years ago he had an attack of diarrhoea, which lasted for a week. During the past two years he has lost very much both in flesh and strength, and for some months has had no ambition whatever for his work.

He is uncertain how long he has had a cough, but five weeks ago he began to have a great deal of cough with much muco-purulent expectoration. He has not had any pain, but he has suffered a great deal with shortness of breath on the slightest exertion, and he has the dyspnoea even when resting quietly in bed. There have been profuse night-sweats. He has been losing flesh rapidly, and has become very weak. The appetite is poor, but he has had no nausea and no vomiting. He has had no palpitation of the heart.

Present Condition.—The patient is a small-framed, poorly-nourished man; height about five feet, eight inches; present weight ninety-nine pounds. Temperature on admission was 101° F.; pulse, 136; respiration, 40. The eyes are sunken, and he looks very apathetic. One's attention is immediately attracted by the intense pigmentation of the skin, particularly of the face and forehead, which is of a uniform deep brown with irregular patches of a darker color. The lips and mucous membranes are not anæmic. On the roof of the mouth there are two patches of pigmentation; on the velum there is slight pigmentation; no spots on the lips, cheeks, or gums. The skin of the hands and wrists is of a very deep bronze color. The pigmentation is more marked in the axillæ and at the bends of the elbow. The areolæ of the nipples and the genitals are dark brownish-black in color. The general surface of the body shows a marked bronzing. There are areas of very deep pigmentation on the shins, and there is accentuation of the bronzing on either side of the great toes. The superficial glands are not enlarged. The epididymes and testes are normal. The pulse is regular, of medium volume, tension normal, the vessel wall slightly thickened.

The thorax is symmetrical, expansion slight, both clavicles prominent. The percussion-note is slightly impaired in the right front, and here from the second space there is a well-marked friction rub, heard throughout the mammary and axillary regions and around to the back, throughout the infrascapular area. At both apices behind there are a few fine moist râles. On the left side auscultation is negative. The sputum the day after admission was very abundant and frothy, containing a considerable quantity of greenish muco-pus, but tubercle bacilli were not found.

The apex-beat of the heart is in fifth interspace, just outside the nipple line. The sounds are everywhere clear.

The abdomen is somewhat retracted, nowhere tender; the border of the liver is not easily palpable; no increase in the area of liver flatness. The spleen is not palpable; neither kidney can be felt.

There is no enlargement of the thyroid or of the lymphatic glands; no nodes or lesions of the bones.

From the date of admission to May 16, the patient's temperature ranged from normal to about 101° F. The pulse-range was from 120 to 130; respirations from 25 to 35. He expectorated about two hundred and fifty cubic centimetres of sputum, which was examined every other day for tubercle bacilli, but without result; and no elastic tissue was found. The patient has been in bed, and the general prostration and the rapidity of the heart-action have been out of all proportion to the amount of local disease of the lung.

On May 16 the treatment with suprarenal extract was begun. Thirty-six pigs' suprarenals were obtained at the time of slaughtering, cut up finely, thoroughly powdered with pestle and mortar, and to this mass about six ounces of pure glycerin
were added, and the whole allowed to macerate for thirty-six hours in a refrigerator. The mixture was then filtered several times through fine-meshed gauze. The filtrate consisted of a reddish-brown syrupy fluid of a rather disagreeable odor. After filtering there were thirty-eight drachms of the extract, so that one drachm corresponded to a capsule. The patient began with half a drachm of the extract three times a day.

The patient's blood-count when he began the treatment was: red corpuscles, 4,564,000; leucocytes, 6600; haemoglobin, eighty-five per cent.

On May 20 tubercle bacilli were found in the expectoration for the first time. The cough and shortness of breath had been very much better. Prior to the treatment with the suprarenal extract the patient had gained one pound. The note by Dr. Thayer on May 24, eight days after beginning the use of the extract, was: The patient looks brighter and says he feels better. The pulse, which had ranged from 120 to 140, is now 100. He has gained three pounds in weight.

On June 6 the amount of the extract was increased so that he took the equivalent of three glands daily. Numerous careful blood-counts were made, and a differential count of the leucocytes. There was moderate leucocytosis; there were no nucleated corpuscles. The number of reds on June 6 was about 4,000,000 per cubic millimetre; leucocytes, 8000.

After May 20 the patient's temperature remained normal. During the week ending June 16 the patient gained five and a half pounds,—a gain of nine and a half pounds since the use of the extract was begun. The patient continued to take the equivalent of three glands daily. A note by Dr. Thayer on June 19 is as follows: Temperature has been quite normal for more than a month. The pulse, which had ranged between 120 and 140 to the date of beginning the extract, has gradually fallen until during the last week the range was between 84 and 104. The amount of sputa has diminished to less than forty cubic centimetres in the day. The patient says he feels much better; his appetite is good, and he looks a great deal brighter. The condition of the lung has improved, and the friction murmur is no longer heard.

On June 28 tubercle bacilli were found. The treatment was continued throughout July and August, and in spite of the hot weather he improved progressively. The gain in weight was remarkable. In July his weight increased from one hundred and ten and a half to one hundred and fifteen pounds. In August, during the very hot weather, he lost again slightly in weight.

He left the hospital on September 10. The change in his condition had been very remarkable. When admitted he could scarcely walk to the bed, and was profoundly asthenic and emaciated. The general appearance had improved wonderfully; he was bright and active, and said he felt vigorous. His weight on discharge was one hundred and eighteen pounds, a gain of nineteen pounds. The pigmentation was unaltered.

Since his discharge he has been at work, and has reported at the hospital occasionally. He felt so well that throughout the latter part of November and December he remained without any of the suprarenal extract, and he lost three pounds in weight in that time. His condition to-day—January 15, 1896—is as follows:

The color is good. To me his face looks a little less pigmented, but Dr. Thayer, who had the patient in charge during the summer, while he was in the ward, does not think that there is any material change in the face, but thinks the discoloration is less intense on the trunk. It is still of a very advanced grade, such as is seen only in the most typical cases of the disease. The small patches of pigmentation on the palate have disappeared. The local condition in the lung has cleared, and there are now only a few rales to be heard occasionally on coughing. The friction is still audible just outside the right nipple. The change in the patient's general vigor is remarkable. He walks briskly, is active, energetic, in very good spirits, and says that he is as well as he ever was in his life.
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Hemiplegia in Typhoid Fever.

BY

WILLIAM OSLER, M.D.,

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HEMIPLEGIA IN TYPHOID FEVER.¹

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Professor of Medicine, Johns Hopkins University, Baltimore.

I SHALL speak to-day of two cases of great interest, illustrating a rare form of paralysis in typhoid fever. First, let me call your attention to a diagram which I have placed on the blackboard of the forms of paralysis most commonly met with during and after the specific fevers. As you see, they are very varied in their symptomatology, and varied, too, in the nature of the local lesion.

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<td>Hemiplegia</td>
<td>Thrombosis of veins of meninges.</td>
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<td>Thrombosis and embolism of cerebral arteries.</td>
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<td>Monoplegia</td>
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We can divide the cases into those with central lesions, either of brain or cord, and those with peripheral lesions, affecting the nerves and muscles. In diptheria, small-pox, scarlet fever, measles, and typhoid

¹ A clinical lecture at the Johns Hopkins Hospital, Dec., 1895.
fever, the patient may become hemiplegic at the height of the disease, a condition which may be preceded by convulsions. In reviewing a large number of cases of hemiplegia, particularly in children, one meets with many instances in which the paralysis has developed during the course of one or other of the infectious diseases; thus, of the one hundred and twenty cases which I analyzed from the Infirmary for Nervous Diseases, Philadelphia, and the Institution for Feeble-Minded Children, Elwyn, there were sixteen with this history.

The anatomical lesion in these cases is not known in all instances. In a certain number, haemorrhage has been found; in others, thrombosis of the cerebral arteries, or of the meningeal veins; while an acute encephalitis may exist.

You will find an exhaustive consideration of the whole question in the address by Dr. J. J. Putnam before the Third Congress of American Physicians and Surgeons, published in Vol. III. of the Transactions.

I have recently given in full detail our experience during the past six years of paralysis during and after typhoid fever.²

Of the nine instances under observation five were monoplegias, or local paralysis, and in four all the extremities were involved—diplegia. In every one of these cases the lesion seems to have been a neuritis. You will notice that I have placed among the lesions causing local paralysis, myositis. I have done so because we have had several instances in which the disability was associated with great pain in the muscles, with positive swelling, and great tenderness on pressure as though the trouble was within the muscle itself. The two cases which I shall first show you illustrate one of the most serious of the accidents of typhoid fever.

CASE I.—Protected attack of typhoid fever; in the tenth week, while the fever still persisted, sudden convulsions; hemiplegia, with aphasia.

Annie F., aged 7, admitted to the medical wards October 3, 1895, complaining of inability to use the right hand.

There is nothing of note in the family history. With the exception of measles at four, she has been unusually strong and well; and has always been a very bright, intelligent child.

²Studies in Typhoid Fever, Johns Hopkins Hospital Reports, Vol. V.
During the first week of April of the present year, the patient had much malaise with headache and debility and epistaxis. On the 6th she went to bed, complaining of pain in the abdomen, fever and diarrhœa. She had a slow and protracted attack, the diarrhœa and fever continuing for more than ten weeks. She seemed to be doing well until Sunday, June 3, when she was seized with violent convulsions, which were confined to the head, the right arm and leg. She was unconscious. The attack came on in the morning, and in the afternoon the movements ceased in the head, but movements of flexion and extension continued in the arm for nearly two days. It was then noticed that the right side was completely paralyzed, and the child was unable to move arm or leg. The face was also involved. With the hemiplegia there was total loss of the power of speech, and she remained aphasic for seven weeks. She improved, but very slowly. Voluntary movements were first noticed in the right leg six weeks after the convolution. She has never regained power in the arm, but she has gradually begun to talk again. The child has now, as you see, the attitude and gait characteristic of hemiplegia, which has partially recovered. You noticed as she walked into the room that she limped, the right leg being dragged, with the foot inverted. You see, too, that she has worn away entirely the outer portion of the sole of the right shoe. Crippled as she is, yet she gets along very well and is able to run quite briskly. You notice as I throw this coin into the arena, that when she attempts to pick it up, the right arm is extended from the side and semi-flexed, but she puts the left arm and side forward, and grasps the coin with the left hand. When in repose the right arm is held close to the side, the wrist flexed, and the fingers also flexed. She can voluntarily flex and extend the arm at the elbow; can lift the hand to the head, but the power of extension in the wrist and the power of extension in the fingers, and of grasping with the hand are almost completely lost. When making any exertion, as in running for an object, the paralyzed arm is held out from the side, but there are no irregular movements in it. The condition of the face has improved very much since we first saw her early in October, but there is still paresis of the muscles.

In one other respect, too, she has got very much better. You notice now that she can name objects cor-
rectly, recognizes a knife, a watch, and a cent, but is confused somewhat between a cent-piece and a five-cent piece. Her sister tells us that in the matter of speaking the improvement has been quite rapid of late, and, indeed, she says a great many more words now than she did when she came under observation early in the session. She looks also bright and intelligent, and evidently understands what is said to her.

Briefly, then, this child is suffering with hemiplegia which followed a convolution in the latter part of an attack of typhoid fever. She is recovering the power of speech and the paralysis of the face and of the leg is better, but the arm remains quite helpless and is becoming spastic.

As not infrequently happens, when one unusual case appears, another is certain to follow, and I am able to show you here a second instance of hemiplegia developing during typhoid fever in a man who has just applied for admission to the hospital.

**Case II.—Severe attack of typhoid fever in March, 1895; at the end of the second week, without convulsion, slight hemiplegia, which persists.**

W. H. B., aged 25, clergyman, was admitted to the hospital November 30, complaining of paralysis of the left arm and leg.

His family history is good. Patient was not at all strong as a child; but was very well as a young man and while pursuing his theological studies.

On March 10, 1895, he went to bed with headache, fever, and diarrhoea. Gradually all the features of a very severe attack of typhoid fever developed, with much delirium.

On March 24th the paralysis developed suddenly without convulsions. There was also, Dr. R. K. Kneass informs me, no aggravation of the delirium following the attack.

He had no difficulty in speaking; there was no trouble with either rectum or bladder. He had a very protracted convalescence. Throughout the summer there was a gradual improvement, so that about July 1st he was able to stand and began to walk. The power over the leg muscles has returned more rapidly than in those of the arm. He has never regained any power in the fingers. There has been a steady gain in weight since his illness. This is the history of the case as obtained by Dr. Thomas, who first saw him, and from Dr. R. K-
HEMIPLEGIA IN TYPHOID FEVER.

Kneass, who kindly wrote to me about the original attack.

You noticed as the patient came in that the attitude and gait were those typical of hemiplegia. The left leg is dragged, the arm is held close to the side, flexed at the elbow, and the hand flexed.

He is well nourished, the face looks pale, but the color of the lips is good. There is no trace of paralysis of the facial muscles, and the eyes are normal in every respect. The left arm can be moved at the shoulder and elbow, and slightly at the wrist in flexion. The hand cannot be extended. The power of pronation and supination is lost. There are only very slight movements of extension of the fingers. The muscles of the arm are very thin, and the interossei are wasted. The left leg can be moved freely at the thigh and flexed and extended at the knee. The feet can be flexed and extended slightly. Movements of eversion and inversion are better performed. The deep and superficial reflexes are everywhere exaggerated on the left side. The ankle clonus is very readily to be obtained. Sensation appears to be perfect.

An interesting feature, not noticeable at first, is the occurrence of wide, irregular, choreiform movements on attempting any voluntary effort with the left arm. The patient's mental condition is excellent.

As I have already stated, hemiplegia in typhoid fever is exceedingly rare. Even in children, in whom hemiplegia is a more frequent complication of the specific fevers, it is very uncommon. Of the one hundred and twenty cases which form the basis of my monograph on the Cerebral Palsies of Children, there was no instance of hemiplegia following this disease. Of the one hundred and sixty cases collected by Wallenberg, four only occurred in typhoid fever. In a somewhat rich experience in typhoid fever no other cases of the kind have ever come under my observation. In the "Clinical Society's Transactions" (Vol. XXVI., 1893), Dr. Francis Hawkins has collected seventeen cases from the literature. Three of these occurred in children under fifteen years of age. In the fourteen cases in which the data were given, the time of onset was in the second week in one case, during the third week in six cases, during the fourth week in two cases, during convalescence in five cases. The right side was paralyzed in twelve of the sixteen cases in which the side was men-
tioned. Aphasia accompanied the hemiplegia in twelve instances. Of the seventeen collected cases only two died, and in both of these a thrombus was present in the middle cerebral artery. Probably this is the usual lesion in typhoid fever, and, as you know, in this perhaps more than in any other disease, there is a tendency to the formation of thrombi in the arteries. Endocarditis is so rare that hemiplegia from embolism must be very uncommon.  

We had this year a sad illustration of the occurrence of thrombous formation in the cerebral arteries in typhoid fever. The case is given in full in our recently issued "Studies in Typhoid Fever," but I give here a brief abstract since it bears directly upon the question.

The patient was a young man, aged 22, of good family history, who was admitted April 24, 1895, on the fourth day of an illness, in which he had headache, pain, and fever. On admission the temperature was 104°, but sank on the following morning to 100.7°. For the following three or four days the temperature range did not reach the bathing point, 102.5°. On the 27th rose-spots were seen, and the spleen was palpable. On the morning of the 28th the temperature was 99.3° and in evening 100°, and he seemed to be doing well in every respect. At noon on the 29th, as we were making the visit in the wards, Dr. Thayer was hurriedly called, and he found the patient in some distress, complaining of uneasy feelings in the head. The pupils were dilated, and in a few minutes he had a short, sharp, general, clonic convolution, beginning almost simultaneously in both arms. The eyes showed marked conjugate deviation to the left and upwards, the head also being drawn somewhat to the left. For about an hour the convulsions were repeated at short intervals. Morphia was given hypodermically, and chloroform administered. They then became less intense, and finally ceased altogether for several hours. During the convulsions there was profound unconsciousness, and in the severer ones great embarrassment of the respiration, so that he became quite livid. In the interval the patient appeared to be conscious, and spoke to those about him, and seemed to understand questions, though he had a confused, frightened look. At 5 p. m., the convulsions recurred with great severity, and in spite of inhalations of chloroform,

they recurred at intervals until ten o'clock in the evening, when in a severe one the patient died. The convulsions were general, but the more intense movements were on the right side.

The autopsy showed a marked hæmorrhagic enteritis affecting the ileum, which presented here and there small ulcers in Peyer's patches. The heart was normal. The following is a description of the lesion in the brain by Dr. Flexner: "There was an area of thrombosis in certain of the vessels on the convolutions of the left side. At the time of the autopsy this was seen to involve the branches springing from the middle cerebral artery; but at this time the dissection was not completed. Subsequently in the formalin hardened specimen it was seen that the thrombi were situated in the ascending parietal and parieto-temporal branches of the middle cerebral artery. The meninges over these vessels contained small hæmorrhages, and the brain substance corresponding to them, while not softened, showed small extravasations of blood, although the surrounding tissue was quite firm. Small, but quite extensive pointiform hæmorrhages could be seen to occupy the cortex and adjacent white substance in the immediate neighborhood of the thrombosed vessels. These areas extend sometimes for a distance of two cm. (usually toward the convexity) from the vessels.

"The internal carotid artery was free from thrombosis, as likewise the Sylvian branch. The ascending parietal and parieto-temporal arteries, including at the points of their origins in the middle cerebral artery, were occluded by an adherent, partly decolorized, and quite firm thrombus. More recent dark thrombi were traceable into the branches of these arteries; for example, into the branches running in the Rolandoic fissure, the sulcus between the ascending frontal gyri and the ascending frontal convolutions, and the branches supplying the temporo-parietal region generally. The inferior external frontal artery, and the arteries of the anterior perforated spaces were free from thrombi.

"On section of the brain there were no gross anatomical lesions. The ventricles were not dilated.

"Cultures of typhoid bacilli grew from different organs."

There is no possibility of perfect recovery in these two patients. The little girl will, in all probability, regain completely the power of speech. In both cases
there will be some additional improvement in walking. In the matter of prognosis in recent cases, it is worth noting that of fourteen of the cases collected by Hawkins, in which the result is given, nine recovered completely.

These upper motor segment paralyses in the fevers are fortunately exceptional and rare. In a much larger series of cases the lower motor segment is involved and the picture is of a spinal or neuritic paralysis. The lesion may be either central, involving the grey matter of the cord to a greater or less extent, or peripheral, involving the nerves of the extremities, more rarely those of the eye and of the palate.

Gowers states that anterior polio myelitis is more frequently secondary to typhoid fever than to any other acute specific disease, adding, however, that when the onset is subacute the symptoms are, no doubt, due in many cases to a multiple neuritis. The very full report given by Bury of cases of paralysis following typhoid fever (in the monograph by Ross and Bury on peripheral neuritis), does not, however, bear out this statement. In a great majority of all the cases there noted the condition had been evidently a peripheral neuritis. It is stated that some cases have presented the picture of an acute ascending paralysis, and death has followed in a few days; but it may be that even in these instances with the type of Landry's paralysis the lesion is a peripheral neuritis. The two cases of ascending myelitis described by Raymond (Revue de Medicine, 1885), both of which showed marked changes in sensation, as well as progressive muscular debility, and which recovered rapidly, would nowadays certainly be regarded as neuritis. There is less doubt about certain cases of monoplegia and of local paralysis; as in the case reported by Shore (St. Bartholomew's Hospital Reports, Vol. xxiii), in which there was acute myelitis of the anterior cornua from the third to the eighth cervical nerves.

For the purpose of comparison I show you a third case, illustrating the neuritic form of paralysis in typhoid fever. From his general appearance you can easily see that this patient has been through a severe ordeal. He has been in the private ward for exactly two months, and is now, as he would express it, as long and lank and brown as the Ancient Mariner. He is, however, convalescent, and has consented to come
before you to-day that you may see the remnants, at least, of a complication which, for a time, caused us great uneasiness.

I will first read you his history. The clinical summary is as follows:

Severe attack of typhoid fever; in the fifth week, pain in right arm and gradual loss of power in arm and hand; in sixth week, loss of power in both legs without pain; gradual recovery.

A. B., aged 26, one of the associate professors in a New England college, was admitted August 30, 1895.

There is nothing of any special moment in his family history.

Early in August he paid a visit to the Eastern Shore, at which time he was quite well. On the 16th he began to complain of headache and pains in the limbs. On the 24th he noticed for the first time fever in the evenings. His appetite, however, was good until about four days before admission. He has had no bleeding from the nose. He has been thoroughly purged with calomel. For a week he has had a good deal of tenderness in the abdomen.

On admission, the features of typhoid fever were quite well marked. There were rose spots and enlargement of the spleen. For the first week the temperature ranged from 100 to 105°.

On repeated examinations of the urine during the first month he had slight traces of albumin and an occasional small hyaline cast.

About the 21st of September the patient began to complain of pain in the right arm. It was difficult to get from him the exact location. He winced when the shoulder was touched, or the arm, or the elbow. Movement of the arm was very painful, and pressure on the elbow or shoulder, or on the arm caused him much pain. There was no swelling of the joints. He complained, too, that the fingers were numb and stiff. During the next two or three days this condition became more aggravated. The temperature ranged from 98° to 102°.

On the 24th of September he complained that he could not move his legs well, and that they were stiff, but he could move his feet and toes readily. On this day, however, there was distinct wrist drop on the right side. He could neither extend the fingers nor the wrist. It was impossible to fix accurately the point of most pain about the arm. He winced when the humerus was grasped, but there was no special tenderness over the
ulnar nerve or along the brachial cords. The extensor surface of the right arm seemed a little swollen in comparison with the left. For the next few days he did not complain so much, but there was almost complete loss of power in the right arm.

On the 30th the pain was very much less. He could neither lift the right arm from the shoulder joint, nor flex on extend it at the elbow. There was complete wrist drop, and he could only just move the fingers. The legs could not be drawn up, nor could he move the toes of either foot. The muscles were flabby and greatly wasted from the fever, but they were not tender.

There was slight improvement in the paralyzed limbs. He could move the hand and forearm, and the wrist could be slightly extended. The grasp, however, was scarcely perceptible. There was still deep-seated tenderness in the muscles.

On October 7, he could not lift either leg from the bed; the feet were in the typical position of bilateral foot drop. There was no tenderness in the muscles or along the nerves; no paraesthesia; the sensation was normal.

October 10 the note was: "He cannot extend the fingers. He can flex the arm at the elbow, but it falls over at once. The left hand and arm are not and have not been affected. He can draw up the legs slightly at the hips. There is still complete foot drop."

During the last few days he has improved very rapidly. He can extend the hand and move all the fingers, but the grasp is very feeble. The legs can be drawn up at the hips and flexed at the knee, though there is still quite evident bilateral foot drop. He can, however, move the toes a little. The rapid improvement within the past few days is a very favorable omen in the case.

The distribution of the paralysis in this patient is quite unusual. In the paper already referred to, you will find full details of the nine cases of neuritis during and after typhoid fever, which have been under observation in the hospital during the past six years. The prognosis is usually good, and in the case before you the improvement of the past ten days has been so marked that probably his recovery will be rapid.4

4 With systematic friction to the arm and legs the power returned within a few weeks.
THOMAS DOVER
(of Dover's Powder)

PHYSICIAN AND BUCCANEER

BY

WILLIAM OSLER

BALTIMORE
THE FRIEDENWALD COMPANY
1896
THOMAS DOVER
(of Dover’s Powder)

PHYSICIAN AND BUCCANEER

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WILLIAM OSLER

Baltimore
The Friedenwald Company
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THOMAS DOVER, M. B. (OF DOVER’S POWDER),
PHYSICIAN AND BUCCANEER.

As Sir Thomas Browne remarks in the *Hydriotaphia*: “The iniquity of oblivion blindly scattereth her poppy, and deals with the memory of men without distinction to merit of perpetuity.” Thus it happens that Thomas Dover, the Doctor, has drifted into our modern life on a powder label (to which way of entering the company of posterity, though sanctified by Mithridates, many would prefer oblivion, even to continuous immortality on a powder so potent and palatable as the *Pulvis Ipecacuanhae compositus*); while Thomas Dover, the Buccaneer, third in command, one of the principal owners, and president of the Council of the *Duke and Duchess,*—privateers of the ancient and honorable city of Bristol,—discoverer of Alexander Selkirk (the original Robinson Crusoe), in spite of more enduring claims on our gratitude, has been forgotten.

Of the facts of Dover’s life very little is known. Munk (*Roll of the Royal College of Physicians*, Vol. II) states that he was born in Warwickshire about 1660, that he was a Bachelor of medicine of Cambridge, on the authority of the author of the *Athenae Cantabrigenses*, but that his name does not occur on the roll of the graduates. After taking his degree he settled in Bristol, and having made money, joined with some merchants in a privateering expedition. “On Dover’s return to England he resumed practice at Bristol, and from the number of patients he says he visited each day during an
epidemic of the fever, he must have obtained the confidence of the inhabitants of that city.” In 1721 he settled in London and was admitted a Licentiate of the Royal College of Physicians. He resided in Cecil Street, Strand, but in the latter part of 1728 he removed to Gloucestershire, where he lived for four or five years, when he finally settled in London, at first in Lombard Street, and afterwards in Arundel Street, Strand, where he died probably in the latter part of 1741 or the beginning of 1742. Essentially the same details are given by Dr. Norman Moore in the Dictionary of National Biography.

In his work “The Ancient Physician’s Legacy” he often speaks with veneration of Sydenham as his Master; and in his description of the small-pox he says, “whilst I lived with Dr. Sydenham,” so that he was probably a house pupil of the great physician, who was at the height of his fame at the very time we may suppose Dover to have been a student of medicine. On the title-page of the first edition of the “Legacy,” 1732, he speaks of forty-nine years of practice, so that he probably took his degree in 1683. Apparently he never proceeded to a doctor’s degree, since he speaks of himself as a “poor Bachelor of physic.” On the title-page of the first edition, however, the letters M. D. occur after his name.

We know really nothing of Dover’s life until he appears as one of the promoters of a privateering expedition to the South Seas in 1708. In this he was associated with a group of Bristol merchants, among whom were Alderman Bachelor and Sir John Hawkins. Two ships, the Duke and the Duchess, were fitted out with great care. Dover went as third in command, being styled Captain Dover, and as owner of a very considerable share of both vessels, he was president of the Council, and had a double voice in the deliberations. The days of the buccaneers were almost numbered, but there was in Bristol at this time one of the last and one of the most famous of the old South Sea captains, William Dampier, a man who knew more of the Spanish Main and of the Pacific than any one living. He had returned recently from a disas-
trous voyage and agreed to accompany Captain Woodes Rogers as pilot of the expedition. In October, 1708, the ships

"...sailed against the Spaniard with his hoard of plate and gold, Which he wrung with cruel torture from the Indian folk of old"—
in which words Charles Kingsley well expresses the feelings which animated these highwaymen of the sea. The narrative of the voyage is told by Captain Woodes Rogers in *A Cruising Voyage Round the World, 1708-1711*, London, 1712.

The expedition was rendered memorable by the discovery of "Robinson Crusoe," which is thus told in the words of Captain Rogers:

"We arrived at the Island of Juan Fernandez on the first of February, 1710, and having a good observation the day before when we found our latitude 34° 10' S. In the afternoon we hoisted out our pinnace, in which Capt. Dover set off to go on shore, though not less than four leagues from the ship. As it grew dark we observed a light on shore, which some were of the opinion was from our boat, but it was evidently too large for that, and we hung up a light to direct our boat, firing our quarter gun, and showing lights in our mizen and fore shrouds, that our boat might find us, as we had fallen to leeward of the island. Our boat came aboard again about two in the morning, having turned back on seeing the light ashore when within a league, and we were glad they had got off so well, as it now began to blow. We were all convinced that the light which we had seen was from the shore, and therefore prepared our ships for an engagement, supposing it might proceed from some French ships at anchor, which we must either fight or want water. All this stir and apprehension, as we afterwards found, arose from one poor man, who passed in our imagination for a Spanish Garrison, a body of Frenchmen, or a crew of pirates, and it is incredible what strange notions some of our people entertained about this light; yet it served to show their tempers and spirits, and enabled us to guess how our men would behave in case there really were enemies on the island."
“While under these apprehensions we stood to the back of the island in order to fall in with the southerly wind till we were past the island; then we stood back for it again, and ran close aboard the land that begins to form its N. E. side. The flaws came heavily off the land, and we were forced to reef our top-sails when we opened the middle bay, where we expected to find our enemy, but all was clear and no ships either there or in the other bay near the N. E. end. These are the only bays in which ships can ride that come here for refreshments, the middle one being the best. We now conjectured that there had been ships here, but that they had gone away on seeing us.”

“About noon of the 2nd of February we sent our yawl on shore, in which was Captain Dover, Mr. Fry, and six men, all armed; and in the meantime we and the Duchess kept turning in, and such heavy squalls came off the land that we had to let fly our top-sail sheets, keeping all hands to stand by our sails, lest the winds should blow them away. These flaws proceed from the land, which is very high in the middle of the island; but when they passed by we had little or no wind. As our yawl did not return, we sent the pinnace well armed to see what had occasioned the yawl to stay, being afraid there might be a Spanish garrison on the island, who might have seized her and our men. Even the pinnace delayed returning, on which we put up the signal for her to come back, when she soon came off with abundance of cray-fish, bringing also a man clothed in goat skins, who seemed wilder than the original owners of his apparel. His name was Alexander Selkirk, a Scotsman, who had been left here by Captain Stradling of the Cinque-Ports, and had lived alone on the island for four years and four months. Capt. Dampier* told me he had

*Selkirk had been sailing master under Captain Dampier in his expedition which left in May, 1703, and had been put ashore on the island at his own request. Dampier’s expedition was unsuccessful, and “the merchants were so sensible of his want of conduct, that they resolved never to trust him any more with a command.”
been Master of the Cinque-Ports, and was the best man in that vessel; so I immediately agreed with him to serve as a mate on the Duke. During his stay he had seen several ships pass by, but only two came to anchor at the island, which he found to be Spanish, and therefore retired from them, on which they fired at him, but he escaped into the woods. Had they been French he would have surrendered to them; but chose rather to run the risk of dying alone on the island than fall into the hands of the Spaniards, as he suspected they would either put him to death, or make him a slave in their mines. The Spaniards had landed before he knew what they were, and came so near him that he had much ado to escape; for they not only shot at him, but pursued him into the woods, where he climbed up a tree, at the foot of which some of them made water and killed several goats, yet went away without discovering him."

"He told us he was born in Largo, in the county of Fife, Scotland, and was bred a sailor from his youth. The reason of his being left there was a difference with Captain Stradling, which, together with the ship being leaky, made him at first rather willing to stay here than to continue in the ship; and when at last he was inclined to have gone, the captain would not receive him. He had been at the island before to wood and water, when two of the men were left upon it for six months, the ship being chased away by two French South Sea ships; but the Cinque-Ports returned and took them off, at which time he was left. He had with him his clothes and bedding, with a firelock and some powder and bullets, some tobacco, a knife, a kettle, a bible, with some other books, and his mathematical instruments. He diverted himself and provided for his sustenance as well as he could; but had much ado to bear up against melancholy for the first eight months, and was sore distressed at being left alone in such a desolate place. He built himself two huts of pimento trees, thatched with long grass and lined with goat skins, killing goats as he needed them with his gun so long as his powder lasted, which
was only about a pound at first. When all this was spent he
procured fire by rubbing two sticks of pimento wood together.
He slept in his larger hut and cooked his victuals in the
smaller, which was at some distance, and employed himself
in reading, praying, and singing psalms, so that he said he was
a better Christian during his solitude than he ever had been
before, and than, as he was afraid, he would ever be again.”

“At first he never ate but when restrained by hunger, partly
from grief, and partly for want of bread and salt. Neither
did he then go to bed till he could watch no longer, the
pimento wood serving him both for fire and candle, as it
burned very clear and refreshed him by its fragrant smell.
He might have had fish enough, but would not eat them for
want of salt, as they occasioned a looseness; except crayfish,
which are as large as lobsters and are very good. These he
sometimes boiled, and at other times broiled, as he did his
goat’s flesh, of which he made good broth, for they are not so
rank as our goats. Having kept an account, he said he had
killed 500 goats while on the island, besides having caught as
many more, which he marked on the ear and let them go.
When his powder failed he ran down the goats by speed of
foot; for his mode of living with continual exercise of walk-
ing and running cleared him of all gross humours, so that he
could run with wonderful swiftness through the woods and
up the hills and rocks, as we experienced in catching goats
for us. We had a bull-dog, which we sent along with several
of our nimblest runners to help in catching the goats, but he
outstripped our dog and men, caught the goats, and brought
them to us on his back. On one occasion his agility in pur-
suing a goat nearly cost him his life; as while pursuing it
with great eagerness he caught hold of it on the brink of a
precipice, of which he was not aware, being concealed by
bushes, so that he fell with the goat down the precipice to a
great depth, and was so bruised and stunned by the fall that
he lay senseless, as he supposed, for twenty-four hours, and
when he recovered his senses found the goat dead under him.
He was then scarcely able to crawl to his hut about a mile distant, and could not stir out again for ten days."

"He came at length to relish his meat well enough without bread and salt. In the proper season he had plenty of good turnips, which had been sowed there by Captain Dampier's men, and had now spread over several acres of ground. He had also abundance of cabbage from the cabbage-palms, and seasoned his food with the fruit of the pimento, which is the same with Jamaica pepper, and has a fine flavor. He found also a species of black pepper called *malageta*, which was good for expelling wind and curing gripes."

"He soon wore out his shoes and other clothes by running in the woods, and being forced to shift without them, his feet became so hard that he ran about everywhere without inconvenience, and it was some time after he came to us before he could wear shoes, as his feet swelled when he first began to wear them."

"After he had got better of his melancholy he sometimes amused himself with carving his name on the trees, together with the date of his being there, and the time of his solitary residence."

"At first he was much distressed with cats and rats, which had bred there in great numbers from some of each species which had got on shore from ships that had wooded and watered at the island. The rats gnawed his feet and clothes when he was asleep, which obliged him to cherish the cats by feeding them with goat's flesh, so that many of them became so tame that they used to lie beside him in hundreds, and soon delivered him from the rats. He also tamed some kids, and for his diversion would at times sing and dance with them and his cats; so that by the favor of Providence and the vigor of his youth—for he was now only thirty years of age—he came at length to conquer all the inconveniences of his solitude and to be quite easy in his mind."

"When his clothes were worn out he made himself a coat and a cap of goat skin, which he stitched together with thongs of the same, cut out with his knife."
Subsequently the expedition sacked the two cities of Guaiaquil, in the assault on which Dover led the van. They took several prizes and cruised about the coast from Peru to California waiting for treasure ships. Of one of the largest prizes, which they named the *Bachelor*, after the Bristol alderman doubtless, Dover took command as chief captain. They then sailed across the Pacific to Batavia, where they refitted, and in October, 1710, sailed for England, which was reached in 1711.

Captain Thomas Dover returned from the South Seas a wealthy man; the expedition had been unusually successful, having realized the enormous sum of £170,000. To Dover, who is stated to have been the owner of a very considerable part of both ships, fell a considerable share of the spoils. Alexander Selkirk as mate received £800 prize money.

Harris (*Voyages*, etc.) makes the following comments on the voyage: “It has been universally allowed by such as are proper judges of such expeditions that there never was any voyage of this nature so happily adjusted, so well provided in all respects, or in which the accidents that usually happen in Privateers were so effectually guarded against.” This he attributes to the abilities of the gentlemen of Bristol, and remarks that it was owing to this expedition that the spirit of privateering in the South Seas was not totally lost in England. The large sums realized had evidently made an enduring impression, and Harris adds, “I might, perhaps, go too far should I assert that this voyage gave rise to the South Sea Company, but this much I can safely say, that the success of this voyage was what the patrons of that Company chiefly insisted upon in their defence, when the plan of it was attacked as insufficient and chimerical.”

In 1712 Dover must have been fifty years of age, and quite ready to enjoy a period of leisure. Where he settled or what he did we do not know, but it is certain that three years such as he had spent at sea were no preparation for practice. Possibly he travelled, and in the introduction to the *Ancient*
Physician's Legacy he scoffs at the doctors who have travelled "far at home"; "Let them take a trip to Hungary and see the mines," speaking, and describing scenes, as though he had been there himself. He refers not infrequently to his wide knowledge of the globe, and in one place says, "if travelling be necessary to make an accomplished physician, I am very sure that I have travelled more than all the physicians of Great Britain put together."

In 1721, as mentioned by Munk, he was admitted Licentiate of the Royal College of Physicians, a qualification which enabled a man at that time to practice in and six miles round Westminster. It is doubtful how long he remained at this time in London; at any rate he states (A. P. L.) that he lived in Gloucestershire in the years 1728 and 1729. None of the cases which he mentions in his book are of this period. His permanent settlement dates from about 1731. In a 1733 edition of the A. P. L., in replying to certain strictures on the use of quicksilver, he says, "I challenge you to shew when I have lost three patients for the past five years, when I was first called either in acute or chronic cases, (though I have settled in town about eighteen months." At this time Dover was well on in years, about or above seventy, a late age at which to begin practice in London.

To abet his laudable endeavors he resorted to the time-honored plan of writing a book. Of the popular or semi-popular treatises on medical subjects so common in those days, a few were by very able men. George Cheyne's Essay on Health and Long Life forms an exception to Latham's sweeping criticism on books of this class (quoted by W. A. Greenhill), "They are all bad, and many dishonest." A favorite plan was to write a treatise on some mineral water, lauding the virtues of a particular spa. Smollett, who knew so well the trials, vexations and disappointments incident to beginning medical life in London, has sketched in strong lines the condition of the profession in the fourth and fifth decades of the century. He, too, had made an unsuccessful attempt to introduce him-
self in an *Essay on the External Use of Cold Water*, etc. Dr. L—n with his “hotch-potch of erudition and extravagance,” and the pedantic doctor in *Peregrine Pickle*, in whom he satirized the learned Dr. Akenside, were well-known types; while in Dr. Fathom the “mystery” of the sons of Paean, as he terms them, is mercilessly exposed. Among the “means used to force a trade”* Smollett mentions “the insertion of cures by way of news in the daily papers,” the erection of a “hospital, lock or infirmary, by the voluntary subscription of his friends; a scheme which had succeeded to a miracle with many of the profession, who had raised themselves into notice on the carcasses of the poor.” To understand Dover’s relations with the apothecaries (to which subsequent reference will be made) the reader must know that they were the general practitioners of that day, and dispensed their own medicines, but in serious cases always called in a physician or a surgeon. Smollett’s account of the practice “parcelled out into small enclosures, occupied by different groups of personages,” who tossed the ball (the patient) from one to another, would almost fit modern usage, in which a patient is sometimes tossed in a circle from specialist to specialist, until he returns with an inventory of his local woes to the consultant from whom he started. In Smollett’s days the patient had to be content with three, except in the cases requiring a midwife. “The apothecary being summoned, finds her ladyship in such a delicate situation that he declines prescribing, and advises her to send for a physician without delay. The nomination of course falls to him, and the doctor being called, declares the necessity of immediate venesection, which is accordingly performed by the surgeon of the association.”

While merit ing the general criticism of Latham, the work with which Dover trusted to reach practice had many important qualifications for success. It appealed directly to the

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*This seems to have been a stock phrase; Cheyne uses it in his *English Malady*, in an autobiographical note.*
public in a taking way, not alone in the main title, The Ancient Physician's Legacy to His Country, being what he has collected himself in Forty-nine Years of Practice, but in asserting that the diseases incident to mankind are described in so plain a manner "that any person may know the nature of his own diseases; together with the several Remedies for each Distemper faithfully set down." It is expressly issued as a popular work on medicine, Designed for the Use of all Private Families.

The author's name is given, Thomas Dover, M. D., and the work was printed for the author and sold by A. Bellesworth and C. Hitch in Pater-Noster Row, etc. (giving the names of two other booksellers), 1732. Price, stitched, Five Shillings.

This is the title-page, date, etc., of the first edition, a copy of which is in the British Museum. In the Dictionary of National Biography the date of the first edition is given as 1733. The mistake is due to the fact that in this year appeared an edition of the "Legacy" not stated on the title-page to be a second edition. This is the earliest copy in the Library of the Royal Medical and Chirurgical Society, and in the Radcliffe Library. The name is spelt Dovar, and the title-page is different. Forty-nine years of practice are still claimed (not fifty), and it is stated that "the extraordinary effects of mercury are more particularly considered." After the author's name, Thomas Dovar, M. D., are the words, "with remarks on the whole by a learned physician." There is also a translation of a treatise on mercury "by the learned Belloste." It was printed for the relict of the late R. Bradley, F. R. S. The second and third editions I have not seen; this was probably one of them. The fourth and fifth editions also appeared in 1733; the sixth in 1742; the seventh in 1762, and the eighth, the last so far as I know, in 1771.

The Ancient Physician's Legacy, in the language of one of Dover's correspondents, "made a great noise in London, and was the subject of almost every Coffee-house."
It contains a description in plain language of about forty-two disorders, illustrated by cases, the majority of which are made to attest in some way to the author’s skill. The later editions abound in letters from grateful patients, extolling his virtues. The pictures of disease are scarcely such as might have been expected from a pupil of Sydenham. The account of consumption or “phthisis,” as he spells it, is very meagre from the hand of a contemporary, possibly a friend, of the author of the *Phthisiologia*. There are evidences throughout that the book was written “for revenue purposes only,” and the spirit of the buccaneer was not dead in the old man, as no occasion is missed either to blow his own trumpet, or to tilt a lance at his colleagues. “Let me but come to People as early in this Distemper (dropsy) as they generally apply for relief from other Physicians, and it shall be cured,” etc.

On page 18, in the section on gout is given the formula of his famous powder. “Take Opium one ounce, Salt-Petre and Tartar vitriolated each four ounces, Ipocacuana one ounce. Put the Salt-Petre and Tartar into a red hot mortar, stirring them with a spoon until they have done flaming. Then powder them very fine; after that slice in your opium, grind them to a powder, and then mix the other powders with these. Dose from forty to sixty or seventy grains in a glass of white wine Posset going to bed; covering up warm and drinking a quart or three pints of the Posset—Drink while sweating.” The same formula is repeated in all the editions. He says that some apothecaries have desired their patients to make their wills and settle their affairs before they venture upon so large a dose as from forty to seventy grains. “As monstrous as they may represent this, I can produce undeniable proofs where a patient of mine has taken no less a quantity than an hundred grains, and yet has appeared abroad the next day.”

In the treatment of fevers he follows the practice of the “good Dr. Sydenham,” for whose memory he professes “the greatest veneration.” “In this Distemper as in all other
Fevers, I prescribe the cool Regimen, which must be followed in case Mankind prefer Life to Death; Ease to Pain; a short Fit of Illness to a long and tedious one; a good to a broken and shattered constitution, laying aside Blisters and all heating and poisonous Powders.” In another place he says, “I would have cold bathing grow as universal as inoculation.” He waxes furious against the “Unhuman Method of Blistering,” and invokes the authority of Radcliffe and “the honest Dr. Sydenham” against it. When living with Dr. Sydenham, Dover had smallpox. In the beginning he lost twenty-two ounces of blood and had a vomit. He went abroad until he was blind, and then took to bed. “I had no fire allowed in my room, my windows were constantly open, my bed-clothes were ordered to be laid no higher than my waist. He made me take twelve bottles of small beer acidulated with spirit of vitriol every twenty-four hours.” The experiences of his travels are referred to frequently, and he mentions Asia, the East and West Indies, and Hungary, in connection with special points in practice. There is an account of the plague among the sailors of the Duke and Duchess, “when I took by storm the two cities of Guaiquil, under the line, in the South Seas.”

The Ancient Physician’s chief legacy to his country was quicksilver, which was his specific in almost every disease, and the use of which is vaunted in a most forcible manner in letters from patients. He ordered an ounce or an ounce and a quarter of crude mercury daily, believing that it freed the patient from all vermicular diseases, opened all obstructions, and made a pure balsam of the blood. A Captain Harry Coit, who had lived by the doctor’s direction “on Asses milk, Syrup of Snails and such stuff,” took for his cough and shortness of breath an ounce a day, and took altogether an hundred and twenty pounds weight. Dover says that he was called in derision, The Quicksilver Doctor. The “Legacy” stirred up an active pamphlet war, and for twenty years or more the merits of crude mercury were much discussed.
If Dover's object in writing the work was to gain publicity, he could not have taken a better way than in his sharp comments on the physicians and apothecaries. The latter he assaults in terms which must have tickled the frequenters of the coffee-houses, among whom we are told the book made such a noise. "I never affronted any Apothecary, unless in ordering too little Physic; and curing a patient too soon, is, in their Way of Thinking, an unpardonable Crime. I must confess, I never could bring an Apothecary's Bill to three pounds in a fever; whereas I have known some of their bills in this disease amount to forty, fifty, and sixty Pounds. If they can't cure with less charges, I can't forbear saying, That I have the same opinion of their Integrity as I have of their Understanding." The doctrine of the apothecary was that, "'Tis your Writing-Physician only who has a Title to a Fee." Dover takes strong and most reasonable ground against the constant varying of prescriptions when there is no occasion for it. The hostility of the apothecaries to him, according to his own account, arose from his being "always inviolably attached to the Interest and Welfare of my Patient and entirely regardless of these Gentlemen's unwarrantable Gains." These attacks did not pass unnoticed, and in 1733 H. Bradley, Surgeon, criticises the Ancient Physician's Legacy, and makes some "animadversions on his scurrilous Treatment of the Professors of Physic in general; with a word or two on the uselessness of his Legacy to all Private Families."

Daniel Turner, "of the College of Physicians," who in the same year, "impartially surveys the Ancient Physician's Legacy," refers to the Guayaquil incident in the following terms: "I think the Doctor had much better have left out his Bravado of having taken two cities by storm, unless he thinks it an honour to a Physician to kill and slay, and after to plunder the Innocent, those who never wronged him, and to carry off the spoil; a good prelude, this, to the blood shed after among his own men." (Dover had had them bled
copiously for the plague.) Turner hints that Dr. D—v's quicksilver did not a little to hasten the end of the celebrated tragedian, Barton Booth, to whom he had given between May 3d and 8th, within two ounces of two pounds of mercury.

Like his master, Dover's only affiliation with the Royal College of Physicians was through the minimum qualification of the license. Sydenham and Morton, the two most distinguished English clinical physicians of the 17th century, were regarded as innovators and "sectaries" by the heads of the College, who, as Sydenham remarks, took fire at his attempts to reduce practice to greater easiness and plainness. The coolness and moderation of the Master were not imitated by the "Ancient Physician," who in the sixth edition attacks the gentlemen of the faculty, and warns unwary people "not to take every Graduate for a Physician, nor a clan of prejudiced Gentlemen for Oracles." He added to his Legacy the Statuta Moralia, or as he terms it on the title-page, "the moral conversation of the College of Physic, in Latin and English, by way of appendix, together with a Digression." Dover affirms boldly that the whole purport of the "Conversation" is to conceal their ignorance and to deceive their miserable patients, but he avers his desire is "more to do justice to Mankind than to irritate and provoke a Set of Gentlemen who, like moles, work under ground, lest their Practices should be discovered to the People." He again refers to the relations of the apothecaries with the physicians in the following terms: "The Apothecaries, generally speaking, have it in their Power to recommend the Physician, which is the wrongest Step the Patient can possibly take: The Physician, to gratify the Apothecary, thinks himself obliged to order ten times more Physic than the Patient really wants, by which means he often ruins his Constitution, and too often his Life; otherwise how is it possible an Apothecary's Bill in a Fever, should amount to Forty or Fifty, or more Pounds? Nay, I have been creditably inform'd that several of those Apothecaries have declared they would never call in a Physician, but what should put Fifteen or Twenty
Shilling a Day into their Pockets: What must the Conscience of such Physicians be, that would forfeit their Reputation and every thing that is dear to them, by cheating for others? I would venture to say, Neither Sydenham's nor Radcliff's Bills did ever amount to Forty Shillings in a Fever, and yet they recover'd their Patients without the Rule, at present prescribed, of Vomiting, Bleeding, and multiplying Blisters in all Cases whatsoever; so since this is to be their Rule of Practice, they are very indifferent in their Enquiries what the Patient's Disease is."

Dover continued to practice in London, and in the seventh edition of the A. P. L. there is a letter to him from Catherine Hood, dated November 6, 1738, in which she speaks of having consulted him in 1737.

In 1742 appeared the sixth edition of the Legacy, which must have been issued by the author, as he speaks on the titlepage of fifty-eight years of practice. He is stated by Munk to have died in 1741 or 1742, probably the latter, but his name does not appear in the register of deaths in the Gentleman's Magazine in either of those years.

Doubtless the old buccaneer, described "as a man of rough temper, who could not easily agree with those about him," was a striking figure as he passed along the Strand to the Jerusalem Coffee House, where he saw his patients. A good fighter, a good hater, as alas! so many physicians have been, his weaknesses and evil behavior we may forget, but Captain Thomas Dover, who on the 2nd of February, 1710, found "Robinson Crusoe," the world should not forget; and we also of his craft have cause daily to remember with gratitude the student and friend of the great Sydenham, who had the wit, in devising a powder, to remember his master's injunction: Sine papa-veribus, sine opiatis et medicamentis, ex iis confectis, manca et clauda, esset medicina.
JOHN KEATS
THE APOTHECARY POET

BY

WILLIAM OSLER

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JOHN KEATS—THE APOTHECARY POET.

We have the very highest authority for the statement that “the lunatic, the lover, and the poet, are of imagination all compact.” In a more comprehensive division, with a keener discernment, Plato recognizes a madness which is not an evil, but a divine gift, and the source of the chiefest blessings granted to men. Of this divine madness poetry occupies one of the fourfold partitions. Here is his definition: “The third kind is the madness of those who are possessed by the Muses; which, taking hold of a delicate and virgin soul, and there inspiring frenzy, awakens lyrical and all other numbers; with these adorning the myriad actions of ancient heroes for the instruction of posterity. But he who, having no touch of the Muses’ madness in his soul, comes to the door and thinks that he will get into the temple by the help of art—he, I say, and his poetry are not admitted; the sane man disappears and is nowhere when he enters into rivalry with the madman.”

Here, in a few words, we have expressed the very pith and marrow of the nature of poetry, and a clearer distinction than is drawn by many modern writers of the relation of the art to the spirit, of the form to the thought. By the help of art, without the Muses’ madness, no man enters the temple. The poet is a “light and winged and holy thing,” whose inspiration, genius, faculty, whatever we may choose to call it, is allied to madness—he is possessed or inspired. Oliver Wendell Holmes has expressed this very charmingly in more modern terms, speaking of his own condition when composing
the Chambered Nautilus. "In writing the poem I was filled with a better feeling, the highest state of mental exaltation and the most crystalline clairvoyance that had ever been granted to me—I mean that lucid vision of one's thought and all forms of expression which will be at once precise and musical, which is the poet's special gift, however large or small in amount or value."* To the base mechanical of the working-day world, this lucid vision, this crystalline clairvoyance and mental exaltation is indeed a madness working in the brain, a state which he cannot understand, a Holy of Holies into which he cannot enter.

I.

When all the circumstances are taken into account, the English Parnassus affords no parallel to the career of Keats—Adonais, as we love to call him—whose birthday, one hundred years ago, we celebrate to-day.

Born at the sign of the "Swan and Hoop," Moorgate Pavement, the son of the head ostler, his parentage and the social atmosphere of his early years conspired to produce an ordinary beer-loving, pugnacious cockney; but instead there was fashioned one of the clearest, sweetest, and strongest singers of the century, whose advent sets at naught all laws of heredity, as his development transcends all laws of environment.

Keats' father succeeded to "Mine Host of the Swan and Hoop," but died when the poet was only eight years old. His grandmother was in comfortable circumstances, and Keats was sent to a school at Enfield, kept by the father of Charles Cowden Clarke. Here among other accomplishments he developed his knuckles, and received a second-hand introduction to the Greek Pantheon. He is described by one of his schoolfellows as "the pet prize-fighter with terrier courage," but in the last two years at school he studied hard and took

*In a private letter which is published in a notice of Dr. Holmes, J. H. H. Bulletin, October, 1894.
all the prizes. The influence of the Clarkes upon Keats was strong and formative, particularly that of the younger one, Charles Cowden, who was an usher in the school. In the poem addressed to him he frankly acknowledges this great debt, “you first taught me all the sweets of song.”

In 1810 his mother died of consumption, and during a long illness Keats nursed her with incessant devotion.

On the completion of his fifteenth year he was removed from school and apprenticed to Mr. Hammond, a surgeon at Edmonton. The terms of the old indenture as surgeon’s apprentice are quaint enough. I have one of my uncle, Edward Osler, dated 1811. The surgeon, for a consideration of £40, without board, undertook the care and education for five years of the apprentices, of whom there were often four or five. The number of specific negatives in the ordinary indenture indicates the rough and ready character of the Tom Sawyers of that date. The young apprentice promised not “to haunt taverns or playhouses, not to play at dice or cards, nor absent himself from his said master’s service day or night unlawfully, but in all things as a faithful apprentice he shall behave himself towards his said master and all his during the said term.”

We know but little of the days of Keats’ apprenticeship. A brother student said, “he was an idle, loafing fellow, always writing poetry.” In 1814, in the fourth year of his indenture, the pupil and master had a serious quarrel, and the contract was broken by mutual consent. It would appear from the following sentence in a letter to his brother, that more than words passed between them: “I daresay you have altered also—every man does—our bodies every seven years are completely fresh material’d. Seven years ago it was not this hand that clinch’d itself against Hammond.”*

At the end of the apprenticeship the student “walked” one

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of the hospitals for a time before presenting himself at the College of Surgeons or the Apothecary's Hall. Keats went to the, at that time, United Hospitals of Guy's and St. Thomas, where he studied during the sessions of 1814–15 and 1815–16. He became a dresser at Guy's in the latter year under Mr. Lucas, and on July 25, 1816, he passed the Apothecary's Hall. The details of Keats' life as a medical student are very scanty. In after years one or two of his fellow-students placed on record their impressions of him. He doesn't seem to have been a very brilliant student. Poetry rather than surgery was followed as a vocation; one of his fellow-students says, "all other pursuits were to his mind mean and tame." Yet he acquired some degree of technical skill, and performed with credit the minor operations which fell to the hand of a dresser. He must have been a fairly diligent student to have obtained even the minimum qualifications of the "Hall" before the completion of his twenty-first year. In the Biographical History of Guy's Hospital Dr. Wilks states that Sir Astley Cooper took a special interest in Keats.

What attraction could the career of an apothecary offer to a man already much "travelled in the realms of gold," and who was capable at twenty of writing such a sonnet as that on Chapman's Homer? So far as we know he never practiced or made any effort to get established; and in 1817 he abandoned the profession, apparently not without opposition. In a letter to his friend Brown, dated September 23d, 1819, he says, "In no period of my life have I acted with any self-will but in throwing up the apothecary profession."

During the next four years he led, to use his own words, "a fitful life, here and there, no anchor." While a student he had made friends in a literary circle, of which Leigh Hunt and Haydon, the artist, were members, and he had a number of intimates—Brown, Taylor, Bailey, Dilke, and others—among the coming men in art and science. From his letters to them, to his brother George (who had emigrated with his wife to America), and to his sister Fanny, we glean glimpses
of his life at this period. His correspondence reveals, too, so far as it can, the man as he was, his aspirations, thoughts, and hopes.

II.

The spirit of negative capability dominated these years—the capability, as he expresses it, "of being in uncertainties, mysteries, doubts, without any irritable searching after fact and reason." The native hue of any resolution which he may have entertained—and we shall learn that he had such—was soon sicklied o'er, and he lapsed into idleness so far as any remunerative work was concerned. A practical woman like Mrs. Abey, the wife of the trustee of his mother's estate, condoned his conduct with the words "the Keatses were ever indolent, that they would ever be so, and that it was born in them." In a letter to his brother he uses the right word. Here is his confession: "This morning I am in a sort of temper, indolent and supremely careless—I long after a stanza or two of Thomson's 'Castle of Indolence'—my passions are all asleep from my having slumbered till nearly eleven and weakened the animal fibre all over me to a delightful sensation about three degrees this side of faintness. If I had teeth of pearl and the breath of lilies, I should call it languor; but as I am* I must call it laziness. . . . This is the only happiness and is a rare instance of the advantage of the body overpowering the mind."

The gospel of "living" as against that of "doing," which Milton preached in the celebrated sonnet on his blindness, found in Keats a warm advocate. "Let us not, therefore," he says, "go hurrying about and collecting honey, bee-like buzzing here and there for a knowledge of what is not to be arrived at, but let us open our leaves like a flower, and be passive and receptive, budding patiently under the eye of Apollo, and taking truths from every noble insect that favors

* Especially as I have a black-eye.
us with a visit." Fatal to encourage in an active man of affairs, this dreamy state, this passive existence, favors in "bards of passion and of mirth" the development of a fruitful mental attitude. The dreamer spins from his "own inwards his own airy citadel"; and as the spider needs but few points of leaves and twigs from which to begin his airy circuit, so, Keats says, "man should be content with as few points to tip with the fine web of his soul, and weave a tapestry empyrean, full of symbols for his spiritual eye, of softness for his spiritual touch, of space for his wanderings, of distinctness for his luxury." All the while Keats was "budding patiently," feeling his powers expand, and with the "viewless wings Poesy" taking ever larger flights. An absorption in ideals, a yearning passion for the beautiful, was, he says, his master-passion. Matthew Arnold remarks it was with him "an intellectual and spiritual passion. It is 'connected and made one' as Keats declares that in his case it was 'with the ambition of the intellect.' It is, as he again says, the mighty abstract Idea of Beauty in all things." Listen to one or two striking passages from his letters: "This morning Poetry has conquered,—I have relapsed into those abstractions which are my only life." "I feel more and more every day, as my imagination strengthens, that I do not live in this world alone, but in a thousand worlds. No sooner am I alone than shapes of epic greatness are stationed round me, and serve my spirit the office which is equivalent to a King's body-guard. Then 'Tragedy with scepter'd pall comes sweeping by.'" "What the imaginationseizes as beauty must be truth," the expression in prose of his ever memorable lines,

"Beauty is truth, truth beauty,—that is all
Ye know on Earth, and all ye need to know."

III.

Keats' first published work, a small volume of poems issued in 1817, contained the verses written while he was a student
and before he had abandoned the profession. With the exception of one or two small pieces it contained nothing of note. The sonnet on Chapman's Homer, written while he was a pupil at Guy's, was the most remarkable poem of the collection. In 1818 appeared Endymion, a poetic romance, an ambitious work, which, in the autumn of the year, was mercilessly "cut up" in the Quarterly and in Blackwood. Popularly these reviews are believed to have caused Keats' early death—a belief fostered by the jaunty rhyme of Byron:

" 'Tis strange the mind, that very fiery particle,
Should let itself be snuffed out by an article."

The truth is, no event in Keats' life so warmly commends him to us, or shows more clearly the genuine robustness of his mind than his attitude in this much discussed episode. In the first place, he had a clear, for so young a man an extraordinarily clear, perception of the limitation of his own powers and the value of his work. The preface to Endymion, one of the most remarkable ever written, contains his own lucid judgment. He felt that his foundations were "too sandy," that the poem was an immature, feverish attempt, in which he had moved, as he says, from the leading-strings to the go-cart. Did any critic ever sketch with firmer hand the mental condition of a young man in transition? "The imagination of a boy is healthy, and the mature imagination of a man is healthy; but there is a space of life between, in which the soul is in a ferment, the character undecided, the way of life uncertain, the ambition thick-sighted; thence proceeds mawkishness, and all the thousand bitters which those men I speak of must necessarily taste in going over the following pages." It cannot be denied that there are in Endymion, as the Quarterly Review puts it, "the most incongruous ideas in the most uncouth language," but the poem has lines of splendid merit, some indeed which have passed into the daily life of the people.

Naturally the criticism of the Quarterly and of Blackwood rankled deeply in his over-sensitive heart, but after the first
pangs he appears to have accepted the castigation in a truly philosophic way. In a letter to his friend Hersey, dated Oct. 9th, 1818, he writes, “Praise or blame has but a momentary effect on the man whose love of beauty in the abstract makes him a severe critic in his own works. My own domestic criticism has given me pain without comparison beyond what Blackwood or the Quarterly could possibly inflict,—and also when I feel I am right, no external praise can give me such a glow as my own solitary reperception and ratification of what is fine. J. S. is perfectly right in regard to the slip-shod Endymion. That it is so is no fault of mine. No!—though it may sound a little paradoxical, it is as good as I had power to make it—by myself.” And he adds, “I will write independently,—I have written independently without judgment. I may write independently, and with judgment hereafter. The Genius of Poetry must work out its own salvation in a man.” A young man of twenty-three who could write this, whatever else he possessed, had the mens sana, and could not be killed by a dozen reviews.

In June 1820 appeared Keats’ third work, “Lamia, Isabella, The Eve of St. Agnes, and other poems,” which placed him in the first rank of English writers. I will quote briefly the criticisms of two masters.

“No one else in English poetry save Shakespeare,” says Matthew Arnold, “has in expression quite the fascinating facility of Keats, his perfection of loveliness. ‘I think,’ he said humbly, ‘I shall be among the English poets after my death.’ He is; he is with Shakespeare.”

Lowell, speaking of his wonderful power in the choice of words, says, “Men’s thoughts and opinions are in a great degree the vassals of him who invents a new phrase or reapplies an old one. The thought or feeling a thousand times repeated becomes his at last who utters it best. . . . As soon as we have discovered the word for our joy or our sorrow we are no longer its serfs, but its lords. We reward the discoverer of an anaesthetic for the body and make him a member of all the
societies, but him who finds a nepenthe for the soul we elect into the small Academy of the Immortals."

And I will add a criticism on the letters by Edward Fitzgerald: "Talking of Keats, do not forget to read Lord Houghton's Life and Letters of him; in which you will find what you may not have guessed from his poetry (though almost unfathomably deep in that also) the strong masculine sense and humor, etc., of the man; more akin to Shakespeare, I am tempted to think, in a perfect circle of poetic faculties, than any poet since."

IV.

Very few indications of his professional training are to be found in Keats' letters; fewer still in the poems. Referring to his studies, he says, in one of the early poems (the epistle to George Felton Mathew), "far different cares beckon me sternly from soft Lydian airs." During the four years from 1817 to 1820 he made fitful efforts to bestir himself into action, and on several occasions his thoughts turned toward his calling. In a letter to his brother, written in February, 1819, he says, "I have been at different times turning it in my head whether I should go to Edinburgh and study for a physician; I am afraid I should not take kindly to it; I am sure I could not take fees—and yet I should like to do so; it is not worse than writing poems and hanging them up to be fly-blown on the Review shambles." In 1818 he wrote to his friend Reynolds, "Were I to study physic, or rather medicine, again, I feel it would not make the least difference in my poetry; when the mind is in its infancy a bias is in reality a bias, but when we acquire more strength, a bias becomes no bias," adding that he is glad he had not given away his medical books, "which I shall again look over, to keep alive the little I know thitherwards." In May, 1820, when convalescent from the first attack of hæmoptysis, he wrote to Dilke, "I have my choice of three things—or at least two—South America or surgeon to an Indiaman, which last will be my fate." A year before,
in a letter to Miss Jeffreys, he spoke of voyaging to and from India for a few years, but in June, 1819, he tells his sister that he has given up the idea of an Indiaman, and that he "was preparing to enquire for a situation with an apothecary." Allusions to or analogies drawn from medical subjects are rare in his letters. In one place, in writing from Devonshire, he says, "When I think of Wordsworth's sonnet, 'Vanguard of Liberty! Ye men of Keats!' the degraded race about me are pulvis ipecac simplex—a strong dose."

He played a medical prank on his friend Brown, who had let his house to a man named Nathan Benjamin. The water which furnished the house was in a tank lined with lime, which impregnated the water unpleasantly. Keats wrote the following short note to Brown:

Sir:—By drinking your damn'd tank water I have got the gravel. What reparation can you make to me and my family?

Nathan Benjamin.

Brown accordingly surprised his tenant with the following answer:

Sir:—I cannot offer you any remuneration until your gravel shall have formed itself into a stone, when I will cut you with pleasure.

C. Brown.

In a letter to James Rice he tells one of the best maternal impression stories extant: "Would you like a true story? There was a man and his wife who, being to go a long journey on foot, in the course of their travels came to a river which rolled knee-deep over the pebbles. In these cases the man generally pulls off his shoes and stockings and carries the woman over on his back. This man did so. And his wife being pregnant, and troubled, as in such cases is very common, with strange longings, took the strangest that ever was heard of. Seeing her husband's foot, a handsome one enough, looked very clean and tempting in the clear water, on their arrival at the other bank she earnestly demanded a bit of it. He being an affectionate fellow, and fearing for
the comeliness of his child, gave her a bit which he cut off with his clasp-knife. Not satisfied, she asked for another morsel. Supposing there might be twins, he gave her a slice more. Not yet contented, she craved another piece. ‘You wretch,’ cries the man, ‘would you wish me to kill myself? Take that,’ upon which he stabbed her with the knife, cut her open, and found three children in her belly: two of them very comfortable with their mouths shut, the third with its eyes and mouth stark staring wide open. ‘Who would have thought it!’ cried the widower, and pursued his journey.”

The estate of Keats’ mother was greatly involved, and it does not appear that he received much from the trustee, Mr. Abbey. His books were not successful, and having no love for the ordinary hack work in literature, he was largely dependent upon the bounty of his friends, from whom in several of the letters the receipt of money is acknowledged. Who could resist a charming borrower who could thus write: “I am your debtor; I must ever remain so; nor do I wish to be clear of my rational debt; there is a comfort in throwing oneself on the charity of one’s friends—’tis like the albatross sleeping on its wings. I will be to you wine in the cellar, and the more modestly, or rather, indolently I retire into the backward bin, the more Falerne will I be at the drinking.”

We must remember, however, that Keats had reasonable expectations. He says to Haydon, December 23d, 1818, “I have a little money, which may enable me to study and to travel for three or four years.” He had enough wisdom to try to be “correct in money matters and to have in my desk,” as he says, “the chronicles of them to refer to and to know my worldly non-estate.”

To the worries of uncertain health and greatly embarrassed affairs there were added, in the summer of 1819, the pangs, one can hardly say of disprized, but certainly of hopeless love. Writing to his friend Reynolds, May 3d, 1818, in comparing life to a large mansion of many apartments, he says pathetically that he could only describe two; the first, Infant or
Thoughtless Chamber, in which we remain as long as we do not think; and the second, the Chamber of Maiden-Thought, in which at first we become intoxicated with the light and atmosphere, until it gradually darkens and we see not well the exit and we feel the "burden of the mystery." For his friends he hopes the third Chamber of Life may be filled with the wine of love and the bread of friendship. Poor fellow! Within a year the younger Aphrodite, in the shape of Fanny Brawne, beckoned to him from the door of this third chamber. Through her came no peace to his soul, and the Muses' inspiration was displaced by a passion which rocked him as the "winds rock the ravens on high"—by Plato's fourth variety of madness, which brought him sorrow and "leaden-eyed despair." The publication of Keats' letters to Fanny Brawne can be justified; it must also be regretted. While there are some letters which we should be loth to miss, there are others the publication of which have wronged his memory. Whether of a young poet as Keats, or of an old philosopher as Swift, such maudlin cooings and despairing wails should be ruled out of court with the writings of paranoiacs.

V.

Keats' mother died of consumption in 1810. In the winter of 1817–18 he nursed his brother Tom with the same disease. In the spring they spent several months together in Devonshire, which Keats compares to Lydia Languish, "very entertaining when it smiles, but cursedly subject to sympathetic moisture." In the summer he took a trip through Scotland, and in the Island of Mull caught a cold, which settled in his throat. In a letter dated Inverness, August 6th, he speaks of his throat as in "a fair way of getting quite well." On his return to Hampstead we hear of it again; and in September he writes "I am confined by Sawrey's mandate in the house now, and have as yet only gone out in fear of the damp night." During the last three months of the year he again nursed his brother Tom, who died in December. From this time the
continual references to the sore throat are ominous. On December 31st he complains to Fanny Keats that a sore throat keeps him in the house, and he speaks of it again in January letters. In a February letter to his sister he says that the sore throat has haunted him at intervals for nearly a twelvemonth. In June and July he speaks of it again, but the summer spent in the Isle of Wight and at Winchester did him good, and in September he writes to one of his friends that he had got rid of his "haunting sore throat." I have laid stress upon this particular feature, as there can be but little question that the tuberculosis of which he died began, as is common enough, with this localization. For more than a year there had been constant exposure while nursing his brother, and under conditions, in Devonshire at least, most favorable to infection. The depression of the Review attacks in the autumn of 1818 must also be taken into account. Through the summer of 1818 there are occasional references to an irritable state of health apart from the throat trouble—unfitting him for mental exertion. "I think if I had a free and healthy and lasting organization of heart and lungs as strong as an ox's, so as to bear unhurt the shock of an extreme thought and sensation without weariness, I could pass my life very nearly alone, though it should last eighty years. But I feel my body too weak to support me to the height, I am obliged continually to check myself and be nothing." If we may judge by the absence of any references in the letters, the autumn of the year was passed in good health, but on December 20th he wrote that he was "fearful lest the weather should affect my throat, which on exertion or cold continually threatens me."

On February 3d the smouldering fires broke out, after he had been exposed in a stage ride, in an attack of hæmoptysis. From this date we can trace in the letters the melancholy progress of the disease. In April and May the lung symptoms became less pronounced, but in spite of much nervous irritability and weakness, he was able to direct the publication of
his third little volume of poems. On June 22d he had a return of the spitting of blood, which lasted several days. The serious nature of the disease was by this time evident to both the patient and his physicians. He acknowledges that it will be a long, tedious affair, and that a winter in Italy may be necessary. "'Tis not yet consumption," he writes Fanny Keats, "but it would be were I to remain in this climate all the winter." This, too, was a time of terrible mental distress, as he became madly jealous of his best friend, C. A. Brown. The letters of this period to Fanny Brawne tell of the "damned moments" of one who "dotes yet doubts, suspects, yet fondly loves."

Preparations were made for his journey to Italy, which he speaks of "as marching up to a battery." He sailed for Naples, which was reached after a tedious voyage about the end of October. Severn, the artist, accompanied him, and has given (Atlantic Monthly, April, 1863) a touching account of the last months of his friend's life. Realizing fully the hopelessness of his condition, like many a brave man in a similar plight, he wished to take his life. Severn states, "In a little basket of medicines I had bought at Gravesend at his request there was a bottle of laudanum, and this I afterwards found was destined by him 'to close his mortal career,' when no hope was left, and prevent a long, lingering death, for my poor sake. When the dismal time came, and Sir James Clark was unable to encounter Keats' penetrating look and eager demand, he insisted on having the bottle, which I had already put away. Then came the most touching scenes. He now explained to me the exact procedure of his gradual dissolution, enumerated my deprivations and toils, and dwelt upon the danger to my life, and certainly to my fortunes, from my continued attendance upon him. One whole day was spent in earnest representations of this sort, to which, at the same time that they wrung my heart to hear and his to utter, I was obliged to oppose a firm resistance. On the second day, his
tender appeal turned to despair, in all the power of his ardent imagination and bursting heart.” *

In Rome, Keats was under the care of Dr. (afterwards Sir James) Clark, who, with Severn, watched him with assiduous care throughout the winter months. Unlike so many consumptives, Keats had none of the *spes phthisica*, which carries them hopefully to the very gates of the grave. He knew how desperate was his state. “I feel,” he said, “the flowers growing over me.” “When will this posthumous life come to an end?” On February 14th he requested Severn to have inscribed on his grave-stone the words,

“Here lies one whose name was writ in water.”

On February 27th he passed away quietly in Severn’s arms.

All lovers of poetry cherish Keats’ memory for the splendor of the verse with which he has enriched our literature. There is also that deep pathos in a life cut off in the promise of such rich fruit. He is numbered among “the inheritors of unfulfilled renown,” with Catullus and Marlowe, with Chatterton and Shelley, whom we mourn as doubly dead in that they died so young.

It was with true prophetic insight that he wrote in 1818 to his brother George,

“What though I leave this dull and earthly mould,
Yet shall my spirit lofty converse hold
With after times.”

*Under similar circumstances one of the gentlest and most loving of men whom it has been my lot to attend was more successful, and when he realized fully that a slow, lingering death awaited him, took the laudanum with which for months he had been provided. In such a case, whose heart will not echo the kindly words with which Burton closes his celebrated section on suicide? “Who knows how he may be tempted? It is his case; it may be thine. *Quae sua sors hodie est, cras fore vestra potest.* We ought not to be so rash and rigorous in our censures as some are; charity will judge and hope the best; God be merciful unto us all!”*
Shelley, who was so soon to join this "gentle band," and find with Keats "a grave among the eternal," has expressed the world's sorrow in his noble elegy. I quote in conclusion his less well-known fragment:

"Here lieth one whose name was writ on water."
But, ere the breath that could erase it blew,
Death, in remorse for that fell slaughter,
Death, the immortalizing winter, flew
Athwart the stream,—and time's printless torrent grew
A scroll of crystal, blazoning the name
Of Adonais. . . .
ON THE CLASSIFICATION OF THE TICS OR HABIT MOVEMENTS.

By WILLIAM OSLER, M.D.,

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Linnaeus "who found botany a chaos, and left it a cosmos," is said to have had the courage to write a treatise on the Genera Morborum. While the present condition of the classification of disease can hardly be called chaotic, yet order and system are necessarily lacking in the absence of a fuller knowledge than we now possess of the mutual relations of various disorders. There are, indeed, insuperable difficulties in the way of any broad systematic arrangement upon a basis either etiological or anatomical. Meanwhile, we jog along in an aimless fashion, ticketing the maladies according to their seeming similarity, adding daily to the existing complexity, and waiting for some twentieth century Linnaeus with a genius for classification.

Nowhere is the confusion more evident than in the classification of diseases of the nervous system, particularly in the disorders characterized by abnormal movements. Even in an affection so well studied as chorea, it is very difficult to make a classification that will meet with universal approval. How can it be otherwise? We are by no means unanimous, either as to the nature of chorea minor, or as to the relations of other motor affections to it; for example, of the chronic progressive chorea of Huntingdon, which is regarded by most writers, and I think correctly, as separate and distinct from Sydenham’s chorea; while Charcot and his pupils hold that it is only a variety.

Important studies have been made of late years upon the group of muscular disorders which have been described as

* Read before the American Pediatric Society, Montreal, May 25, 1896.
pseudo-choreas or habit spasms, and, in extending to them the name of Tic, the Salpetrière school has developed a nomenclature and division somewhat confusing to Anglo-American ears. With our notions of the word tic applied to either the mimic spasm of the facial nerve—tic non-douloureux, or to neuralgia of the trigeminus—tic douloureux, it is a novel extension to hear such phrases as la nèvrose tiqueuse, la maladie des tics convulsifs, ticquer, tic psychique and tics coordonnés. With the exception of Dana, recent authors of works on diseases of the nervous system, have not adopted either the nomenclature or the division recognized by the Salpetrière school. It has certainly advantages, particularly in enabling us to separate a number of the spasmodic affections of children from chorea minor. The disadvantage lies in the use of a name already attached to two well-known and totally different affections, the spasm of the facial nerve and the neuralgia of the trigeminus. Still there need be no confusion in reality. The facial tic, like the spinal accessory and the hypoglossus spasms, differs entirely from the habit spasm, in as much as the convulsive seizures are situated within the domain of a definite nerve, and there is generally some lesion, central or peripheral.

The employment of the word with a significance different from that to which we are accustomed, is compensated for by the advantage of placing under it a group of allied affections which pass insensibly into one another, from a simple, habitual, conscious spasm of the facial muscles, to complex coördinated movements with marked psychical features, or to habit phenomena purely psychical. The distinguishing factor in the entire group is the habit or repetition, whether of motion or of idea, which, while influenced or controlled to some extent by the will, occurs in response to a sort of impulse in the case of muscular movements, and in the case of imperative ideas as a sort of obsession.

The following is the classification of the tics adopted by recent French writers.*

1. Simple tic or habit spasm. These are the common cases of spasmodic movement, chiefly of the facial muscles, which are, to a certain extent, under the control of the will. In very many of these cases the affection seems to begin as a childish trick.

* See particularly Noir Étude sur les Tics. Paris, 1893.
The muscles of the face and of the neck are most commonly involved, then those of the shoulder girdle and arms, less frequently those of the legs. The cases are very often confounded with chorea minor, from which they are distinguished by the much greater brusqueness of the movements, which have a lightning-like rapidity. They are also more or less systematic, limited to certain muscle groups, as of the face and neck, or of the shoulder girdle muscles and platysma, or the muscles of the thigh. In many of the cases there are sources of irritation, such as adenoids or errors of refraction, relief of which may be followed rapidly by cure. In addition to these localized forms, here may be also grouped as a generalized tic or habit spasm, those interesting cases in which there are sudden electric-like jerkings of the muscles of the trunk and extremities, making the patient start for an instant, but which pass away with great rapidity. Both children and adults are affected, and Henoch has described the condition as electric chorea—not a very suitable name, since this has been applied to the totally different affection known as Dubini's disease, met with in Lombardy. The condition may persist for many years, and in my monograph, *On Chorea and Choreiform Affections*, I have recorded several interesting cases. These habit spasms, whether local or general, often resist all methods of treatment, and, while never dangerous, are extremely annoying and a source of great worry to the unfortunate subjects. They should not be confounded with chorea, nor should that term be applied to them, but they are best designated either by the term habit spasm or simple tic.

2. Tics with super-added psychical phenomena, *Maladie de la Tic Convulsif* or Gilles de la Tourette's Disease. The study of these cases by Gilles de la Tourette, and by others of Charcot's pupils, really led to the extension of our knowledge on the subject of these curious affections. In this form, in addition to the ordinary motor disturbances of simple tic or habit spasm, there are explosive utterances and cries, and imperative ideas. Of these the anomalies of expression are the most interesting. There may be simply explosive exclamations, which are most frequent, or obscene words may be spoken, usually at the time of the movement—the so-called coprolalia; or a word heard is repeated a number of times, or some one word is said over and over again, for which habit the term echolalia has been invented. In other instances actions are mimicked—echokinesia, and it seems
probable that the jumping disease of Maine, the Latah of the Malays, and the Myriachit of Siberia, all of which affections are characterized by this condition of *echomatism*, come really under the category of the *tic convulsif* of Gilles de la Tourette. But the most interesting, as well as the most distressing feature of this variety of tic is the remarkable mental state, usually some form of obsession or imperative idea. They are very varied; many of them are the modifications of the various *phobias*, for which so many names have been invented, agoraphobia, topophobia, claustrophobia, haphephobia, etc. Or there may be the curious conditions of onomatomania, or of arithmomania, or in other instances the mental state is that of *folie du doute* or the *délire du toucher*; interesting cases of these I have given in the monograph already referred to.

3. Complex, coördinated tics. By far the best account of these is given in the exhaustive article on Tics by Noir, writing from Bourneville's clinic. Many are forms of habit movements which differ, however, from the simple tic in the more complex character of the action performed, which may be one of everyday life, but which is repeated without obvious cause, and which, in most instances, can be controlled by an effort of the will. Some of the more complex movements do not differ at all from ordinary tricks, or the complex movements may occur in connection with ordinary habit spasm, as in a child who always before taking anything in the hand, first smelt and then blew upon it; or a boy with facial tic, who had the habit of biting the middle finger, and at the same time pressing the point of the nose with the index finger. Some such tricks in children as head-nodding, head-swaying and head-banging, come in this category. In feeble-minded children one sees a very extended series of these complex coördinated movements, of which a very excellent account has been given by Noir, particularly the balancing, the jumping, the rotation of the head and the rhythmical beating of the head or of the chest with the fist. The movements are usually rhythmical in character. Sometimes a series of actions is performed from time to time in orderly sequence, such as stooping from the chair, lying prone upon the floor, raising the hands above the head, etc.

And, lastly in this group, come most appropriately those extraordinary bizarre movements, which may be repeated from time to time for a series of years, sometimes in association with
explosive utterances, or with imperative ideas, as the extraordinary case of pendulum spasm reported some years ago by Mitchell.

4. Tic psychique. An imperative idea is the psychical equivalent of, and has an origin similar to, the motor tic. The idée fixe impelling the victim to touch a certain object, or causing him to be haunted by a dread of the use of certain words, or making him count so many numbers before he can do a certain act, is the counterpart of the irresistible musculature which leads to the constant repetition of one of the many acts which we have been considering. The two processes are as we have seen, often though not necessarily associated, and in some of the subjects of imperative ideas the motor features are marked. In any of the cases the psychic tic is as harmless as are the slighter forms of the motor variety. Dr. Hack Tuke has called attention in a valuable paper to the trifling character of a large number of the imperative ideas. They may be present for years without delusions, recurring automatically, often proving a source of worry, but rarely becoming more serious than other of the many every-day ideas which from habit we entertain.

The following works may be consulted: Gilles de la Tourette's Archives de Neurologie, 1885; Guinon, Dict. Encyclopédique, Article Tic, 1887; Charcot, Leçons du Mardi, 1887-88, 1888-89; and in his last lectures, 1893, edited by Guinon; Noir, Étude sur les Tic, 1893; D. Hack Tuke, Brain, Part Second, 1894; Dana, Text-book of Nervous Diseases, Second Edition, 1894; Osler, Chorea and Choreiform Affections, 1894.
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The Cerebral Complications of Raynaud's Disease.

BY

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PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE.

FROM

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES,
NOVEMBER, 1896.
THE CEREBRAL COMPLICATIONS OF RAYNAUD'S DISEASE.

BY WILLIAM OSLER, M.D.,
PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE.

Raynaud's disease may complicate many affections of the central nervous system. Perhaps the most frequent disorder with which it is associated is hysteria. Case VIII. in Raynaud's original thesis is perhaps the most remarkable example on record. With the most aggravated paroxysms of pain and local asphyxia, she had hysterical convulsions, contractures, and analgesia. The literature contains a number of less aggravated examples. Levy (Revue Neurologique, January 30, 1895), who recently discussed the question, holds that there is a purely hysterical form, induced by emotional causes, and which may be relieved completely by hypnosis.

Raynaud's disease is not at all uncommon in asylum-cases, as noted by Southey. The disease has been met with in epileptic dementia (Wiglesworth) and in acute mania. Bland's patient, a male aged twenty-three years, had had fits from his thirteenth year. In an attack of acute mania he stood on his feet for eight nights. The disease developed in the feet, and at the same time paroxysmal haematuria occurred.

Ritti has reported two cases in which local asphyxia developed in the period of depression in cases of folie à double forme.

The disease has been noted in many chronic affections of the brain and spinal cord. There are three instances at least of the association with hydrocephalus, two of the cases in adults, and one, reported by T. K. Monro, a child of nineteen months, had had from birth mottled patches of local asphyxia in different regions, and at the age mentioned developed symmetrical gangrene of the toes. There are instances also in connection with syringomyelia and with locomotor ataxia.

Visceral manifestations, the expression of vascular changes of a kind similar to those which produce the peripheral phenomena of the disease, are exceedingly rare. In a few instances gastro-intestinal crises and attacks of colic occur not unlike those which develop in angioneurotic oedema; but I know of no post-mortem report of a case in which changes

1 Read before the American Neurological Society, 1896.
3 Trans. Path. Soc. Lond., xxxviii. 1887.
4 Lancet, 1889, i.
5 Annales Médecno-Psychologie, 1882, t. viii.
in the organs have been found at all suggestive of prolonged local disturbance of the circulation.

Occasionally there are symptoms pointing to serious disturbances in the functions of the brain. A number of the patients have been epileptic; but with the exception of the first case, to which I shall refer, I know of no instance in which the attacks appeared to be directly associated with the development of Raynaud's disease. In Case XIX. of Raynaud's original thesis, usually quoted as an illustration, the woman had epileptiform attacks which preceded and were not specially related to the gangrene of the feet of which she died.

Our attention was directed to cerebral symptoms in the disease by a patient at the Johns Hopkins Hospital, whose case is reported in full by Dr. H. M. Thomas in Volume II. of the Reports (1890). I give here a brief abstract and a note of his condition subsequently to Dr. Thomas's report:

CASE I. For six winters attacks of Raynaud's disease; attacks of epilepsy occurring only when the local symptoms were present; haemoglobinuria.

—This man, aged twenty-six years, had had for three winters in succession attacks of Raynaud's disease, the hands and feet and ears and nose being affected. The case presented nothing unusual so far as the local condition was concerned. He had had losses of substance in the ear-tips, but not of the nose or of the fingers. The most remarkable peculiarity was the occurrence of the disease in the winter only, and the association of it with severe epileptic convulsions and with haemoglobinuria, a symptom which has been frequently noted in the disease. The epileptic attacks occurred only in the winter, and always in association with the local asphyxia and the bloody urine. The report given by Dr. Thomas is up to January 10, 1890. The patient was in the wards on two subsequent occasions: on February 6, 1892, and March 21, 1893. In the winter of 1891–92 the ears and nose troubled him very much, and he had had blotches on the arms. Up to the date of his admission he had had no convulsions. He had had several attacks of bloody urine. We did not see him again until March 21, 1893. During this winter he had repeated attacks of discoloration of the ears, nose, and fingers, with the passage of bloody urine. On this admission he had no convulsions. He had, however, two additional symptoms of great interest, namely, attacks of severe abdominal pain, resembling colic, which recurred at intervals, and enlargement of the spleen, which could be felt 4 cm. below the costal margin. The patient has not been under observation for the past three years, and I have not been able to find his address.

I can find no parallel case in which the epilepsy occurred only during the manifestations of Raynaud's disease.

So far as I can gather from the literature, the only instance in which aphasia developed in connection with the attacks is reported by M. Weiss.¹

A woman of very nervous temperament was subject to most aggra-

¹ Wiener Klinik, 1882.
vated attacks of local asphyxia in the fingers, with arthropathies and superficial gangrene of the left cheek, followed by atrophy of the left half of the face; she also had patches of superficial gangrene on the buttocks. On October 8th she had suddenly disturbance of speech, with pallor, and slight cyanosis of the lips. The attack lasted fifteen or twenty minutes. On November 5th she had a similar attack. Weiss attributed the cerebral symptoms to a spastic ischemia in the region of the third left frontal convolution.

In the following remarkable case there were recurring attacks of aphasia with transient hemiplegia. The clinical summary is as follows:

Case II. For five or six years occasional attacks of numbness, with mottling of the fingers. In April, 1891, an attack of dizziness and, perhaps, transient loss of consciousness; a month later a second attack, with pain and local asphyxia in the little and ring fingers of the right hand. In January, 1892, a third attack of dizziness, accompanied with asphyxia and superficial necrosis of the terminal phalanges of the index and little fingers of right hand. A fourth attack on the 2d of February, with aphasia, loss of power in the right hand, and with paresis of the right foot; rapid recovery. On March 31st a second attack of complete aphasia, with spasm in the right hand. Good health until the summer of 1894, when she had slight pain and aching in the right leg and toes. In February, 1895, local asphyxia, necrosis of terminal phalanx of middle finger of right hand. On April 4th severe attack, with headache and slight paralysis of the left arm and leg, severe local symptoms in the right hand and fingers. On July 19th a third attack of aphasia, with right hemiplegia, local syncope, and asphyxia in right hand and fingers. In January, 1896, intense pain in right hand; rapidly developing gangrene extending to the elbow; coma; death.—Mrs. H., aged forty-eight years, admitted to Ward C of the Johns Hopkins Hospital, February 9, 1892, complaining of difficulty in speaking and of peculiar sensations in her fingers.

The family history is good. She knows of no similar complaint in any of her relatives. She is married and has had a number of children. She had one miscarriage in 1878. As a rule, she has enjoyed excellent health. In 1875 she had acute rheumatism, affecting the hands, elbows, and hips. The attack was very intense for a week, and lasted in all about six weeks. At intervals she had had slight returns of the pains in the joints. Six weeks ago she had what her doctor called rheumatic gout in the big toe. On several occasions she had had slight attacks of renal colic, and, though she has been told by her physicians that she has gravel, she does not think that she has ever passed a stone.

For five or six years at least she has had peculiar feelings in the fingers, a sense of tingling and numbness, chiefly at the finger-tips and on the pads; sometimes, too, in the ball of the thumb. At these times the fingers become mottled. The condition persisted usually for only a few hours, though she has had attacks in which it lasted for one or two weeks. The tingling feeling was sometimes so aggravated that she would put her hands on ice. The fingers were never blue, but on several occasions she had irregular bluish spots on the back of the right hand. The fingers never became cold and dead. The condition rather resembled that of chilblains, though she had never suffered from that complaint.
as a girl. During these years she never thought seriously of the condition. It was annoying, but not very troublesome. The toes were never affected.

In April, 1891, she was seized with dizziness while at the breakfast-table; a queer sensation began in the feet, spread all over her, and for a moment she lost her sight, and, she thinks, consciousness. The attacks, though of very short duration, frightened her very much. A month later she had a second attack. About seven o'clock in the morning she felt suddenly that things were moving, and she had to take hold of a chair to prevent herself from falling. She was given brandy, which nauseated her, and she vomited three or four times. The face and lips were congested, not pale; the speech was not affected. Within a few hours she felt quite well. She noticed, however, that her right arm ached very much, and at eleven o'clock she looked at her right hand and saw that the little and ring fingers were of a purplish-blue color. They remained black and painful for nearly five days, and were numb for a longer time. There was no loss of substance. She had no further attacks until just five weeks ago, when she again became very dizzy, and would have fallen had she not grasped a chair. In this attack the index and little fingers of the right hand were affected, and the doctor thought she would have lost them both, as they remained cold and black for days. The skin turned of a greenish-black color and gradually came off. The nail, however, did not come off. The fingers are now healing, and new skin is forming. In the first attack she had slight disability of the hand, which in the second attack was much more marked, so that she could not dress herself or use the hand to feed herself. She thinks, too, that the hand was somewhat swollen.

A week ago she had a third attack, which came on with much ringing in the head, particularly in the right ear. She felt very dizzy, but did not lose consciousness. Her teeth, however, chattered, and there were involuntary movements in her right hand. She had headache and saw double. She found that her right hand was almost useless. She could move it from the elbow and shoulder, but she could not hold a glass of water. On attempting to get up she scarcely could stand, and the right foot and leg were weak. For the first time the speech was affected. She could only mumble words, and could not be understood. She had no nausea and no vomiting. The difficulty in speaking and the slight hemiplegia have persisted, and it is for this condition that she seeks relief.

S. P.—The patient is a well-nourished, somewhat corpulent woman; the color of the face is good; the venules on cheeks and nose are a little dilated. The pupils are equal, react to light and on accommodation. There is no diplopia; the ocular movements are perfect. There is no facial paralysis, and there are no disturbances of the sense of taste or smell. The temperature is normal; pulse regular, tension a little increased; the vessel-wall of the radial arteries is a little sclerotic. The movements in the right hand are good, but the hand is weak and the grasp feeble. She can pick up a pin, can use a fork, and can write, though slowly and with difficulty. She says that the power in the hand has been returning rapidly within the past few days. The skin of the left hand and fingers looks quite natural. The terminal phalanx of the right index finger is of a deep bluish-red color, and the nail is deeply discolored. On the pad of the finger the skin is very dry, and there is
a thick layer of old dry epidermis, which on the ulnar side of the phalanx is of a greenish tint. Over the rest of the phalanx there is new skin. The middle and ring fingers look pale. The terminal phalanx of the little finger is covered with a shining new dermis. The nail-bed is swollen, and it looks as though the nail might come off. The condition of these fingers followed the attack early in January. She says that there is tingling in the thumb and in the middle fingers, and in the palm of the hand, and they feel hot like fire. The sensation in the hands is good on both sides. All trace of paralysis of the foot has disappeared. She walked upstairs, and she now seems to walk without any dragging. There is no distinct aphasia, and she does not appear to have any difficulty in expressing ideas; but there is a hesitancy in the speech, and the articulation is somewhat stammering. She names objects at once, and she reads easily. There is no hemianopsia.

The examination of the heart was negative, with the exception of a slight accentuation of the aortic second sound. The hypogastric and right iliac regions of the abdomen are occupied by large masses, probably fibromyomata.

The urine was light yellow in color, with a specific gravity of 1023, and a faint ring of albumin with cold nitric acid; no tube-casts; no blood.

The patient remained under observation until the 20th. She improved steadily, and on leaving the hospital she spoke with clearness and without hesitation. The fingers had almost healed, and the dry, greenish skin came away from the terminal phalanx of the index finger. On several occasions there were marked hyperemia and hotness of the right thumb, associated with a burning sensation, and on the back of the right hand a spot appeared about 2 cm. in width, which was very hot and tender.

Through the kindness of Dr. Boutelle I have been kept informed at intervals of the subsequent progress of this case. In a letter dated April 4, 1892, he says:

"Two weeks after her return from the hospital she had another attack of giddiness, not associated with any trouble in the fingers, or with loss of speech. On March 31st she had a very remarkable attack. She had burning sensations and nervous feelings in both hands, but was up and about and feeling very well. At three o'clock she was talking with some friends when she suddenly became completely aphasic. There was no giddiness. She was laid on a lounge and a messenger was sent to fetch me. I reached the house at 4 P.M. She was perfectly sensible, understanding everything, but was unable to reply. She could protrude the tongue fully and open the mouth. She seemed to know what she wanted to say, but could not express it. There was no double vision. The right hand was stiff, and at times convulsed. The attendants said that the thumb had been drawn strongly into the palm of the hand and that the hand and arm were cold. When I saw her they were warm, but the fingers and thumb had a tendency to spread and to become stiff. About 6 P.M. the power of speech began to return, and when I saw her the next day she talked as well as before the attack. There were one or two small discolored spots here and there on both hands, not associated with any pain, or with any threatening of gangrene as was formerly the case in the fingers."
Dr. Boutelle informs me that from this date until the summer of 1894 she remained well, having no symptoms of the trouble. At this time she had a sudden attack of pain and aching in the right leg and toes, but no discoloration. The pains would last for from a few minutes to a few hours and then disappear. Under date of March 25, 1895, he writes:

"Six weeks ago the middle finger of the right hand became very dark over the terminal phalanx, just as in the old attacks, but there were no cerebral symptoms. The discoloration has been disappearing, and is now almost gone. The nail is slightly raised, but I do not think it will come off. She consulted me lately for a return of the intermittent pains in the right leg. (These are probably pressure-pains from the myomata.) The general appearance is healthy, the pupils are normal, and the speech is natural. She took at this time nitroglycerin in very full doses without any benefit."

On April 8, 1895, Dr. Boutelle writes:

"Just now Mrs. 's case is presenting some very peculiar features. On April 4th, about 9 p.m., she had an attack of faintness and giddiness, with pain in the index, ring, and little fingers of the right hand. I saw her the next evening about six o'clock. She had had a severe headache, particularly in the right temple. She said that her left arm and leg felt weak and heavy, but she could move them very well. There was, however, marked clumsiness of movement in the left hand. The fingers were semiflexed, and she had difficulty in straightening them. There was no discoloration in the left hand. The terminal phalanges of the index, ring, and little fingers of the right hand were discolored and tender to the touch. On the palmar aspect of the middle phalanx of the index finger and on the palmar aspect of the metacarpo-phalangeal joints of all the fingers of the right hand there were spots of discoloration, slightly tender. The following day the discoloration of the right hand was less marked. The speech and intelligence were normal. The slight paralysis of the left hand continues. She moves it with difficulty. To-day, the 8th, the discoloration is more marked in the fingers, which are very tender."

This patient's son, a young medical man, has kindly sent me the following note of an attack which occurred on July 19, 1895:

While dressing the patient had an attack of partial unconsciousness. For ten minutes the right side was helpless and the speech impossible; she was dull and very lethargic. The arm recovered motion first, and then the leg. Sensation was restored later than motion. She complained of a dull, aching feeling in the arm during the day. The hand was stiff and the middle finger blue. On the 20th there was still aching in the right arm, with now and then an exacerbation, until luncheon, at noon, at which time all the fingers and the hand became of a dead white color. In a short time the tips of the fingers became dark blue, and spots of the same color appeared on the hand, particularly in the palm. The pain was very intense, and she suffered terribly, requiring several hypodermic injections of morphine in rapid succession.

On July 21st the hand was dead white, cool; the terminal phalanges
blue, with a few scattered blue-spots on the hand. The tip of the nose was also slightly blue, the only occasion on which she had any symptoms referable to the face. There was a spot of ecchymosis an inch by half an inch from the styloid process of the right radius.

On the 22d she was very much better, and was able to get up. The hand was still cold, but the blue color of the fingers was fading.

On the 23d and 24th she improved rapidly. At this time an oculist examined her eyes, and said she had choroiditis, with beginning optic atrophy. In this attack the urine was negative.

On April 3, 1896, Dr. Boutelle writes:

"Mrs. — died January 29, 1896. She did very well for a time after my last report. Last summer she had a rather prolonged attack, not so severe though as the former ones, and without any paralysis or brain-symptoms, but with much pain in the fingers, which turned livid, but did not ulcerate. Early in January, after feeling pretty well, she one day took a drive and ate rather heartily at supper. During the night she had an attack of giddiness and vomiting, followed by intense pain in the right hand. Morphine had to be given freely to relieve the pain, which she could not locate exactly, referring it to the elbow or upper arm. All of the fingers turned blue, and there was no sensation in the hand. She was a little bewildered and confused mentally, but there was no loss of power of speech. Any movement of the hand or arm gave the most intense pain. Gradually the coldness and lividity increased, until the hand and arm were dark purple as far as the elbow. She sank into a coma, and died in a couple of days."

Her son writes about the final attack:

"On his return home at his mother's final illness he found the right hand and fingers completely gangrenous. The arm was mottled nearly to the shoulder, and as far as the elbow it looked as if it must also become gangrenous."

Severe and persistent headache, alternating with or even taking the place of a well-marked attack, has been referred to by H. C. Wood in the discussion of a case reported by Cleemann, in which angina pectoris complicated the disease. The patient described the pain as of a character very similar to that which occurred in the fingers.

I am indebted to Dr. H. V. Ogden, of Milwaukee, for the report of the following case, possibly of the nature of Raynaud's disease:

Case III. Painful swelling of the legs between the knees and ankles, recurring for two and a half years; falling attacks of doubtful nature, possibly hysterical.—K. T., aged thirteen and a half years, German, of a neurotic family. She is a large, healthy-looking girl. Her illness began with what appears to have been an attack of chorea of considerable severity when she was ten years old. This was followed immediately by three groups of symptoms, viz., painful swelling of the legs, painful swelling behind the left ear, and falling attacks, all of which have continued until now.

1. About a year after the onset the condition of the legs is described

1 Transactions of the College of Physicians, Philadelphia, 1892.
by a physician who saw her, as follows: The child was kept to bed; the
pain came on about 8 p.m., and lasted more or less through the night;
the legs from ankle to knee were puffy, swollen, and red, extremely pain-
ful, and very markedly hyperæsthetic. She lost much sleep and ran down
rapidly. This state had developed rapidly after the chorea.

When I first saw her in July, 1885, the painful attack came on in the
middle of the morning, and lasted a couple of hours, and during this
time the condition was much the same as described above, though much
less severe. In the interval the skin had a reddish, mottled, oedematous
look. Some constant pain and excessive hyperæsthesia. As well as
could be made out the sense of temperature was blunted, if not lost.
Knee-jerk present, though slight. The affected area extended from the
insertion of the patellar ligament to ankle, and was sharply defined at
each limit, and extended completely around the legs.

December, 1885. On the whole better. The affected area has become
limited, by the approach of the upper and lower boundaries some two
or three inches nearer each other. Has better and worse days, but for
last year or more has been active in playing about, except during attacks
of pain, and lately these have not been severe or distinct enough to
make her lay up, but all day the condition is as described in July, 1885,
the subjective sense of pain going off when she goes to bed, but coming
on in the morning, sometimes before, sometimes after getting up.

2. Ever since the beginning has had a deep-seated earache, more or
less constant. This is accompanied by redness and swelling over the
mastoid process, which comes and goes, but never suppurates. The
intensity of the pain and swelling coincides.

3. Falling attacks. At first, and for a year, she would fall forward,
two or three times a day, on her hands and head, and unless caught
would roll over on the floor. There was no aura, no convulsion, and
probably no loss of consciousness, but of this she is not sure. Recovery
was quick. For the last two years has always had time to get to a chair
or lounge, never loses consciousness, and it never lasts more than five
minutes, and often only a few seconds. I saw one which consisted merely
in putting her head on her mother’s shoulder, who was sitting near her,
and almost immediately picking it up again. It had the appearance of
being done for my benefit. During these attacks she feels faint and
powerless. Heart-sounds normal.
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