

been elucidated. The results described above do, however, show the prophylactic importance of slow decompression, and suggest that with careful attention to various details the upper limits of pressure, both for caissons and diving operations, can be much extended.

REFERENCES.

¹ Quoted by Paul Bert, *La Pression Barométrique*, 1878, p. 384.
² *Lufdruck Erkrankungen*, etc., by Heller, Mager, and v. Schötter, Wien, 1900, p. 471. ³ *Journal of Physiology*, May, 1905.

A CASE OF EXOPHTHALMIC GOITRE,

WITH REMARKS ON

THE PROBABLE NATURE OF THE DISEASE.

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THE following case has been selected (chiefly because the patient is at present under treatment) from amongst some forty to fifty cases of goitre, both simple and exophthalmic, which have been treated successfully upon the same lines during the past twelve years.

Mrs. R., aged 51, married, of the poorer class, was first seen by me on July 12th, 1905; since then I have seen her eleven times in all.

SYMPTOMS.

A uniformly enlarged right lobe of the thyroid was easily seen and felt, and rather soft to the touch, measuring not quite 4 in. across; on the left side was a prominent hard knot, 1½ in. in diameter, with the appearance and feeling of fibrous or tense cystic tissue. The enlargement on the right side had been noticed by the patient for certainly fifteen months; that on the left had existed for about fifteen years, and had been professionally treated many years ago. The pulsation of the carotids gave an impulse to the swelling on the right side.

Exophthalmos existed in a moderate degree, and von Graefe's sign was present. There was oedema of the eyelids in varying amount at different times. In addition to a general restlessness, shown in fidgety movements of hands, arms and head, a fine tremor of the hands was plainly seen.

The patient complained of palpitation, and it was observed that the action of the heart was rapid, and was increased by excitement or emotion. The pulse, usually regular, has not been below 112. The patient, intolerant of strangers, was chiefly in a state of subdued excitement. She was emaciated, and stated she had lately become thinner, but there was no loss of strength. She had to make a great effort to raise her voice above a whisper. She drove four miles in an open cart, on some of the coldest days, to the surgery, and did not complain of the cold; perspiration was, however, free upon slight exertion. There were pigmentary changes on her face, neck, and hands, and she stated that she was changed in colour. There was no itching. Appetite was good, and the bowels naturally regular.

RESULTS OF TREATMENT.

The treatment given was, I confess, almost entirely symptomatic. Rest, in the horizontal position, during a portion of the day, and in the open air when possible. The drugs given were tincture of belladonna and liquor arsenicalis, of each 5 minims; potassium bromide, 10 gr.; and tincture of digitalis, 8 minims—three times a day, in water, after meals. Liniment of iodine was applied externally, eleven times altogether.

The right lobe is now reduced to little over one half of its former size. The knot on the left is softer and smaller. The exophthalmos is scarcely noticeable. The patient of her own accord has frequently said she was better. There is still the tremor of the hands, but she says she does not notice it when at home. She feels much better when she is quite alone. She complained of dryness of the throat after taking the medicine (belladonna), but not before. Twice I have omitted this ingredient, and twice the arsenic. The pupils are moderately dilated, the left more than the right. She does not complain of palpitation, and the pulse is now just 100. She now has to make no effort to raise her voice.

NATURE OF THE DISEASE.

In certain parts of East Anglia simple goitre is very common. The exophthalmic form is, I think, also frequently seen. In the textbooks the disease is classed with those of glands, but is it not probable that it is essentially a nervous disease? It is well known that many of the symptoms are suggestive of a nervous origin, and that the disease is sometimes associated with other nervous disorders; and, may I ask, is not that nervous origin intimately connected with the disturbances of the circulation? Let us inquire what nervous factors would produce tachycardia, palpitation, pulsation of the carotids, and from these possibly cardiac hypertrophy or dilatation.

The patients are readily upset by a loud noise, or good or bad news; they are irritable, peevish, and easily given

to tears. These symptoms certainly suggest the sympathetic system as the origin, but not more than the others. To what symptoms would disease of the sympathetic ganglia connected with the cardiac plexus, for example, be expected to give rise? To an inhibition of function, certainly; to a loss of tone in the large arteries. This loss of tone, produced by disordered action of vaso-motor nerves, would cause a general dilatation of the large arteries; it would be first felt on the right side and in the innominate artery, the first large vessel arising from the aorta; it would be followed in a direct line into the common carotid, the external carotid, and into the first branch of the external carotid—that is, the superior thyroid artery. Similarly, the loss of tone producing dilatation in the thyroid axis would be continued into the inferior thyroid artery. This would account for the usual prior enlargement of the right lobe of the thyroid gland. The proximity of the middle cervical ganglion which gives off the middle cardiac nerve; the sympathetic nerve at the back of the sheath of the common carotid artery; the upper and lower cervical ganglia with the internal carotid and subclavian arteries respectively are to be remembered.

It seems reasonable to argue that the tachycardia, and possibly the palpitation, may be caused by communication from the last cervical ganglion, through the accelerator nerves, as it is well known that when stimulated these nerves produce a quickening of the heart's beat. It is well known, also, that division of the cervical sympathetic causes vascular dilatation of the face, which is accompanied by increased perspiration.

As regards the exophthalmos, a similar argument will obtain from the contiguity of the sympathetic root of the lenticular ganglion with the ophthalmic artery.

The persistent or enlarged thymus, the enlarged lymphatic glands, the increased connective tissue in the neck, are not these due simply to increased vascularization?

What actual evidence is there that these diseases really originate in the sympathetic ganglia? All the evidence of which I am aware is that found by Dr. Greenfield. He has described swellings of the sympathetic ganglia, invasion of their tissue by leucocytes, and degenerative changes in the ganglion cells. If these morbid changes are constant, what more can we want? In short, may not the hypertrophy and over-activity of the thyroid gland, the exophthalmos, the persistent thymus, the enlarged lymphatic glands, the increased connective tissue in the neck, the tachycardia, palpitation, and tremor, besides the other subjective symptoms, be all the symptoms of a disease of some of the chain of sympathetic ganglia? If so, I see no reason why ordinary simple goitre and the exophthalmic form should not be varieties of the same disease, and that a disease of the sympathetic ganglia.

A CASE OF WIDESPREAD MOTOR PARALYSIS
DUE TO MULTIPLE SYMMETRICAL
PERIPHERAL NEURITIS,FOLLOWING AN UNUSUALLY MILD ATTACK OF SCARLET
FEVER.By FREDERICK W. PRICE, M.B., C.M., M.R.C.P.,
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It is well known that peripheral neuritis may occur as a sequela in many of the specific febrile affections, and Dr. Buzzard, among others, has pointed out that a motor paralysis having a very widespread distribution may be caused by a lesion of the periphery of the nerve trunks. The following is a remarkable example of such a case occurring in the sequel of an unusually mild attack of scarlet fever. When the patient first came under observation it was difficult to make a diagnosis between peripheral neuritis and acute anterior poliomyelitis, but the subsequent progress put the matter beyond all doubt. The case is also interesting, because during its course it presented the features of what looked like a very brief attack of acute nephritis.

REPORT OF THE CASE.

A girl, aged 11 years, was admitted to Westminster Hospital on November 25th, with practically complete loss of power in the legs, and some paresis of both arms.

Family History.—The only points of note in the family history were that the father had died of intestinal obstruction, the mother was suffering from angina pectoris, one brother had died of "brain fever," and one sister had succumbed to scarlet fever.

History of Illness.—The patient had suffered from measles at the age of 4, and had had "influenza" several times. It was stated that she had suffered from an attack of "influenza" two months before admission, but on close inquiry it was discovered that during the illness she had complained of some soreness of the throat, and a week or so after the acute symptoms had passed off the skin of her hands and feet began to peel. About this time she complained of a violent pain in the head, chiefly in the right frontal region. The patient had for years suffered from an occasional feeling of faintness, usually lasting for a few minutes. On November 14th, eleven days before admission, after sitting in a chair for some time, she found that she was unable to get out of it excepting with great difficulty, as there was great loss of power in the legs. There was no pain, and no loss of cutaneous sensibility was noticed. This diminution of the muscular power of the legs continued for three days, when the patient took to bed. On that day she had what was called a bilious attack, and vomited once; there was no headache. The loss of power gradually increased in severity, and also became more widespread in its distribution, so as to involve the arms. There were feelings of "pins and needles" in the tips of the fingers and toes, and it was also noticed that the child did not speak so distinctly. She continued in bed until brought to the hospital on November 25th.

Condition on Admission.—There was practically total paralysis of the lower limbs and of the muscles of the trunk and of the neck. The paralysis was of the flaccid type. Any attempt to raise the patient up from the bed or to turn her on to her left side was attended with great pain in the back. This suggested the possibility of a spinal meningitis, but there were no muscular spasms or other characteristic symptoms of that complaint. As tested by the dynamometer, the grip of the hands was feeble, but the patient was able to perform all movements. There was feeble action of the diaphragm. There was also paresis of both sides of the face, which was more marked on the right side than on the left; the paresis involved the upper part of the face as well as the lower, the patient being unable to completely close her eyes. The soft palate moved very little, if at all, with respiration; there was no tendency to regurgitation of liquids through the nose. The muscles of the limbs were flabby, but there was no evident wasting. The patient complained of a prickling pain at the bottom of the back on attempting to move and paraesthesiae of the feet and fingers. Tapping the spine in the lower lumbar region elicited very diffuse pain, but there was no pain on applying the hot sponge. There was some diminution of sensibility to touch in the soles of the feet. No other sensory disturbances were present. The plantar reflex was absent, the abdominal reflex was faintly present on both sides, the knee jerks were absent, and the supinator and triceps reflexes were diminished. The palatal reflex was abolished. There were no bedsores, or bladder or rectal troubles. The child was very precocious, and there was no loss of memory. The tongue was thickly furred, the pulse was 102, regular, the volume, force, and tension being normal. The apex beat of the heart was in the fifth interspace just internal to the nipple line. There was a faint systolic bruit, localized to the mitral area. The pulmonary second sound was accentuated. The subsequent history proved that the patient had a slight degree of incompetence of the mitral valve.

After-History.—The urine was normal, and the evening temperature was usually about 99°. On December 4th, the urine, which had been repeatedly examined before, was found to contain a large amount of blood and a few hyaline casts. The following day there was a moderate amount of blood and albumen present; on the third day the urine was free. By December 8th there was considerable return of muscular power; there was a moderate degree of foot-drop at that time. Examination of the cerebro-spinal fluid obtained by lumbar puncture revealed no lymphocytosis. On December 11th the electrical reactions were tested, and gave the following results: The face showed partial loss of reaction to faradism, especially on the right side; there was poor reaction to galvanism, but the K.C.C. was greater than the A.C.C. on both sides. The arms responded moderately to the faradic current, and with the galvanic current the K.C.C. was found to be greater than the A.C.C. There was complete reaction of degeneration in both legs.

Recovery.—The patient's condition steadily improved, so that by January 20th she was able to stand with the aid of some support on either side. On January 26th the anterior tibial muscles were still obviously weaker than the posterior tibial group. On March 2nd there was still an absence of knee-jerks, but the improvement had steadily continued, so that on March 11th the patient was able to leave the hospital walking very fairly well.

[I am much indebted to the kindness of Dr. de Havilland Hall for permission to publish this case.]

ITALIAN RED CROSS SOCIETY.—The Italian Red Cross Society has now a membership of 24,000. It has a capital fund of £160,000, and material valued at £80,000.

PNEUMOCOCCIC ARTHRITIS.

BY

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SINCE the isolation of the pneumococcus in 1880 and the subsequent demonstration by Fraenkel in 1884 of its connexion with lobar pneumonia this organism has gradually become recognized as the cause, not only of pulmonary disease, but also of many cases of meningitis, infective endocarditis, arthritis, and other inflammations of the serous and mucous membranes. In these cases, in which structures other than the lungs are infected, the clinical picture is often that of an intense septicaemia, the virulence of the parasite or resisting power of the tissues in such being respectively increased or diminished. In this connexion it has been found experimentally that subcutaneous injections of pneumococcal virus of full intensity into rabbits, mice, and guinea-pigs cause an acute—generally fatal—illness, like septicaemia, with characteristic *post-mortem* appearances, but there is no sign of pneumonia. An attenuated culture introduced beneath the skin does sometimes give rise to pneumonia or pleurisy, or both. As regards different species of animals, it has been found that in those least immune septicaemia is the more likely to occur; in those more immune, a local reaction, such as acute pneumonia.¹

Before the recognition of the pneumococcus various stray references to arthritis occurring in cases of pneumonia may be found. Cave,² however, in 1901, was the first to tabulate in the English journals a series of cases of arthritis in which the micro-organism had been demonstrated in the joint effusions. Thirty-one cases are mentioned, comprising all those published up to that date. Amongst these we find that the joint affection varied from synovitis, with thickening of the synovial membrane and effusion of serous fluid, to intense arthritis with complete erosion of cartilage and baring of the ends of the bones. The severer forms were the more common, the ratio of suppurative cases to serous being as 27 to 5. The larger joints (with the exception of the hip) were more often infected than the smaller. Several articulations were at times affected simultaneously, and often there was a widespread infection; thus 6 cases were complicated by endocarditis, 5 by empyema, 6 by meningitis, 2 by pericarditis, and 1 by peritonitis. Two cases are reported in which the joint affection preceded the commencement of the pneumonia by three and seven days respectively, and in three cases no pneumonia was ever present, but the character of the joint trouble was demonstrated by the pneumococci in the pus. The disease was much more common in males than in females, and affected the upper extremity rather more frequently than the lower; the knee, however, was the commonest joint to be attacked. Ten cases gave direct evidence of previous injury to the affected joint. Out of 31 cases as many as 23 proved fatal.

We have been able to collect 25 cases of pneumococcal arthritis which have been published up to the present time in the English and American periodicals since Dr. Cave's paper. These we give summarized below:

CASE I (recorded by Allen and Lull³).—F., 40. Left knee; suppurative; no pneumonia present; treated by incision; later amputation. Died.

CASE II.—M., 28. Right sterno-clavicular joint; suppurative; pneumonia commenced three days before; complications, right otitis media and abscess of thigh (pneumococci present in pus from both sources); incised. Recovered.

CASE III.—M., 52. Right ankle and sterno-clavicular joint; suppurative; pneumonia two days after; complication, empyema; incised. Recovered with stiff joint.

CASE IV.—F., 49. Right shoulder; suppurative; pneumonia two days before; complications, empyema, cellulitis of shoulder, septicaemia; incised. Died.

CASE V.—M., 23. Right knee; serous; pneumonia two days before; aspirated. Recovered.

CASE VI.—M., 51. Both knees; serous; pneumonia two days before; complication, septicaemia. Died.

CASE VII.—M., 58. Right knee; suppurative; pneumonia three days before; incised. Recovered.

CASE VIII.—M., 42. Right shoulder; suppurative; pneumonia commenced about same time; complicated by cellulitis of shoulder. Died.

(CASES II to VIII recorded by Raw.⁴)

CASE IX.—M., 47. Left knee; suppurative; pneumonia present; no record of treatment. Died.