ON THE PROGNOSIS OF SECONDARY SYMPTOMS AND CONDITIONS OF EXOPHTHALMIC GOITRE.

BY W. HALE WHITE, M.D.,

Assistant-Physician to Guy's Hospital.

I HAVE collected together the following twelve cases of exophthalmic goitre, with a view of discovering what becomes of them after they leave the hospital. Wherever possible, I have visited the patients at their own homes; when that has not been possible, I have written to them.

It will be seen that five, of the twelve who have been in the hospital recently, are still alive. Sophie S. is cured of her Graves's disease, but she is hysterical, and says she suffers from gastric ulcer. She will not allow that she is well, so that it is difficult to say when she recovered, but she was certainly ill eight years. Jane A. is quite well, after three years' illness. Ellen H. I have not seen, but she seems well from what I can hear by writing. Alice M. G. is much better, being able to get about her work; but still has all the three cardinal symptoms. Ellen E. is well, excepting for a slight thyroid enlargement. She considers that she has been well four years, so that the illness would not have lasted more than two. From so few cases, it is difficult to draw any conclusions; but it would appear that, if a case be going to recover, the time in which it will do so averages about four or five years from the onset of symptoms.

Seven of the twelve are dead. Two died suddenly, for which no efficient cause was found on *post mortem* examination; one died from mitral regurgitation; one from a large axillary abscess, and probable blood-poisoning; one from gastric ulcer; one from consumption; and the friends did not know the cause of death in the seventh. The average duration of life, after the first appearance of symptoms, was 3½ years; but this is probably only partially accurate, as the patients cannot always say when the disease began.

It will thus be seen that exophthalmic goitre is by no means a harmless malady; but, of the eleven who died, the death can only be attributed to Graves's disease in two—namely, those which died suddenly; for sudden death is always cardiac; and, as the patients had suffered from palpitation, it is only fair to assume that the same cause as set up the palpitation, in some way was the reason of the sudden death. In the mitral regurgitant case, the mitral disease seemed more related to the antecedent rheumatic fever than the exophthalmic goitre.

With regard to the treatment, Jane A., who did best of all the cases, had no treatment; Alice M. benefited considerably from the local application of iced water; Ellen E. was treated with the continuous current, with a good result; Ellen H. did well on iron, digitalis, and belladonna; and Sophie S.'s account of her treatment, after leaving the hospital, is hardly trustworthy. It is noteworthy that the case which died of consumption was, as regards her Graves's disease, much improved by the application of the continuous current. Iron and digitalis are apparently useless, and there is not sufficient evidence to show the value of belladonna; but two of the successful cases took it whilst under treatment by other means, so, perhaps, it had some share in their recovery. The lesson to be learnt from these figures is, that the prognosis of Graves's disease is bad, for the patients are partly liable to death from sudden syncope, and also seem more likely to die from other causes, apparently unconnected with exophthalmic goitre; and, of those who do not die, many do not completely lose the disease. The best treatment would appear to be the continuous galvanic current and iced water. It was for this prognosis that I collected the cases; but they may be also utilised to show a few other points.

First, is the great preponderance of females, for there has only been one male case during the whole time we have had the twelve females. As regards neurotic tendencies, some patients are hysterical, one nervous, and two are liable to neuralgia; in many cases, no doubt, these points were not asked, for it may be taken that the usually stated association with neurotic tendencies is true; four cases, at least, had menstrual irregularities, and one patient stated that the exophthalmos was greater during the periods. The temperature was slightly raised in some cases (it was so in one in which the report does not mention the fact), and the pulse is accelerated out of proportion to the rise of temperature. The palpitation is usually the first symptom to appear (in two cases, it had existed all the patient's life); the enlarged thyroid and exophthalmos come second in order in about equal proportions,

the exophthalmos being last rather more frequently than the other; as a rule, all these symptoms come on within a few weeks of each other. The case of Alice M. G. is especially interesting, for I learn that the two sisters referred to also have exophthalmic goitre. Although it is not so well brought out as it should be in these abstracts, several of the patients suffer from wasting. In some cases, the eye is painful; but whether that is due to the conjunctivitis, or to the tension of the lids caused by the protrusion, is not stated.

I have grouped all the above facts together, because they are all known to be frequent accompaniments of exophthalmic goitre; but the second group of conditions to which I would direct attention is that of the lymphatic system. Four of the twelve cases died within the hospital; one of these four died from heart-disease, and, of the remaining three, all suffered from some affection of the lymphatic system; thus, in Charlotte S., the thymus was persistent, and Peyer's patches were particularly well marked; in Mary M., the thymus was enlarged and persistent, Peyer's patches and the solitary follicles of the whole intestine were much swollen, injected, and very prominent, and the intestine itself was considerably injected; in Eliza T., Peyer's patches at the lower part of the ileum were of a dark livid character, contrasting most strongly with the surrounding intestine, which was injected. Hitherto, sufficient notice has not been taken of this peculiar lymphatic condition and persistent thymus. At present, we know too little of the pathology of Graves's disease to be able to estimate the value of this condition, but as at Guy's Hospital we have often seen it, it would be well if other observers would see if they can confirm or disprove the observation. In connection with this part of the subject, it is to be noted that two patients had enlarged tonsils.

None of the necropsies on exophthalmic goitre mentioned here throw any light on the pathology of the disease, but all the evidence that is slowly accumulating is going to show that the lesion is central; this is the more probable, as the disease is often associated with mental disorder. With regard to the changes that have been stated to be present in the sympathetic system, anyone may easily convince himself that they do not exist solely in exophthalmic goitre; for, if the sympathetic be examined in a large number of cases, taken quite irrespectively of the cause of death, these changes will be found more frequently present than absent.

Among my five living cases, not one shows any symptoms of myxœdema or thyroid atrophy; this is important, for it has been suggested that the thyroid atrophy is preceded by hypertrophy; if that be so, exophthalmic goitre does not represent the hypertrophic stage.

Appended are the cases, for the use of which I am indebted to several of my colleagues.

CASE I.—Jane A., aged 21, was admitted December, 1880, under Dr. Moxon. The family history was unimportant. Fifteen months ago, her friends noticed the prominence of her eyes, which were sometimes painful; soon afterwards, palpitation was noticed, and soon after that the enlargement of the neck. She was regular, and said that the exophthalmos was increased during the menstrual periods. On admission, there were enlargement of the thyroid exophthalmos, and increased pulsatile cardiac area; hæmic murmur; pulse 84, small, irregular. She remained in hospital only a few days. In April, 1886, I saw this patient; the eyes were hardly prominent. She said she was not troubled with her heart, and that she had no shortness of breath. She considers that she was well two years after leaving the hospital, and attributes her recovery somewhat to going to live at Hendon (she formerly lived in London). The thyroid gland could be felt, but would certainly pass for healthy. There was no palpitation, no murmur, and the heart was regular. She still suffered from neuralgia; no menstrual irregularities. She is unmarried; she has had no treatment.

CASE II.—Ellen H., aged 32, was admitted, under Dr. Habershon, October, 1877. Her family history was unimportant. Four months ago, her attention was called to her prominent eyes and large neck. Two months ago, she began to suffer from palpitation. She had had iron, which she said had benefited her. On admission, she had exophthalmos, with feeling of tension in the eyes. The thyroid body was large, but non-pulsatile; largest at night. There was a large area of cardiac pulsation, with loud hæmic murmur; pulse 124. She was treated with iron and digitalis and belladonna, and improved considerably. She was sent out in two months, with directions to continue to take belladonna. Since leaving the hospital, this patient has continued her work as a domestic nurse. She is better, and is at present in Holland.

CASE III.—Alice M. G., aged 13, had two sisters who had enlarged thyroids; one had a quick pulse. There was no nervous, phthisical, or rheumatic family history. Three years ago, enlarged pulsating neck and exophthalmos were noticed; they increased till now. On admission, there was much exophthalmos; the optic discs were healthy, and

the thyroid body was enlarged considerably, pulsating with a systolic murmur in it. All the vessels of the neck pulsated. There was a very large area of cardiac pulsation, with hæmic basic *bruit*; pulse regular, 136, dicrotic. She was treated with frequent doses of belladonna and ice-water coils over the thyroid gland and heart. She improved very much, and all the three symptoms were much diminished. During the greater part of her stay in the hospital, the temperature was elevated, averaging about 100 or 101; this fell before she went out, which she did in two months. In April, 1886, I saw this patient. The eyes were less prominent; the right was hardly noticeable, the left slightly so. She was much stronger and better, and only had palpitation when she hurried; but there was a loud apical systolic murmur; no dyspnoea. The thyroid could still be seen to be enlarged. She did not suffer from neuralgia. There were no menstrual troubles, excepting that she said that occasionally she vomited blood at the menstrual period, and, when this was so, there were no menses, and she was not anæmic. She still lives at Greenwich, and has taken no medicine.

CASE IV.—Sophia S., aged 34, was admitted, under Dr. Pye-Smith, August, 1877. She was in Clinical Ward for exophthalmic goitre in 1869. Two years before that date, the neck began to swell, and six months afterwards, the exophthalmos was discovered, and then dyspnoea and palpitation. On neither of her admissions at the hospital was she at all benefited by treatment. There is nothing noteworthy about the case. In May, 1886, I saw this patient; the exophthalmos was hardly noticeable, but the patient said it varied. The thyroid would now pass for healthy. She said the palpitation was worse; the heart was regular, and there was no murmur. She complained of pain in the back and dyspnoea, but there was but little doubt that she exaggerated her troubles. She said the doctors had told her that she had gastric ulcer. She has always suffered from menstrual irregularities; now she has enlarged tonsils.

CASE V.—Ellen E., aged 20, was admitted, under Dr. Fagge, June 1880. Her family history was unimportant. In October, 1879, she first noticed thyroid enlargement; she had had exophthalmos for five months. On admission, there were considerable thyroid enlargement and exophthalmos; no excessive cardiac pulsation. Pulse quick and regular; she had amenorrhoea; for some time she was treated first with digitalis and then with ergot, but without any benefit. Then she was treated with the continuous current, as was the other patient, except that it was applied also over the eyelids. Under this treatment for three weeks and a half, the three prominent symptoms decidedly diminished. In May, 1886, I saw this patient, and found that the exophthalmos had so decreased as to be hardly observable; there was no palpitation, but the pulse was 144; this might, however, be due to the excitement of the examination. The thyroid was a little larger than normal. She said she was excitable, but she did not suffer from menstrual irregularities or dyspnoea. There was no Graefe's symptom. She considered that she had been well about four years.

CASE VI.—Emily P., aged 47, was admitted under Dr. Moxon in 1884. She had had rheumatic fever. She came in for dropsy and heart-disease. There was a moderate amount of exophthalmos. She died from her cardiac symptoms. At the *post mortem* examination, no exophthalmos was visible. The thyroid was very much enlarged; on section, it looked normal. There were a thick mitral valve, hypertrophy and dilatation of the right side of the heart, cirrhosis of the liver, and œdema of the lungs.

CASE VII.—Charlotte S., aged 20, was admitted, under Dr. Goodhart, in 1882, with the three usual symptoms of exophthalmic goitre; the palpitation had come on twelve months ago, the exophthalmos two months ago. On admission, a large thyroid body, with a murmur over it, was detected; there was also a hæmic murmur. The patient was up and about the ward, when one day, whilst another patient was having the electric current applied, she asked to be allowed to try it; and, on the current passing, she fell back dead, laughing and talking only an instant before she died. At the *post mortem* examination, the thymus was found to be persistent. The thyroid was much enlarged, extending back behind the œsophagus, so as to leave only a quarter of an inch between the two lobes; on section, it appeared healthy. Both cardiac ventricles were dilated. The cardiac muscle and valves were normal. Peyer's patches were particularly well marked.

CASE VIII.—Kate R., aged 27, was admitted in March, 1881, under Dr. Taylor. One sister died of phthisis. Five years ago, she first noticed prominence of her eyes, and enlargement of the thyroid body, with a humming in the ears. Soon afterwards, palpitation came on. All the symptoms were worse during excitement. On admission, the thyroid body was much enlarged and pulsating, with a murmur over it. There was considerable exophthalmos. The optic discs were healthy. There was a large pulsatile cardiac area; no murmur. She

had amenorrhoea, and was wasted and anæmic. She was treated for a short time with digitalis, but afterwards with a mixture containing fluoric acid, quinine, and iron. She left the hospital in two months, the condition being unaltered. I have heard from her friends that this patient died on October 7th, 1882; but I cannot find out from what disease.

CASE IX.—Clara G., aged 24, was admitted in 1882. She married at 16; had no mental trouble. Her mother died of phthisis; one sister had chorea; there was no family history of exophthalmic goitre. Fifteen months ago, she began to suffer from palpitation of the heart. A year ago, swelling in the neck was observed. She had recently suffered from attacks of loss of speech and epistaxis. On admission, there were much exophthalmos, slight inequality of the pupils, injection of the conjunctivæ, and Graefe's symptom; the sight was good; the eyes were said to vary in size. The thyroid body was very much enlarged; the isthmus was distinctly visible; there was a loud rasping systolic murmur over the thyroid. The pulsatile cardiac area was very extensive. There was a venous hum. Pulse 152. She had amenorrhoea; was not pregnant. She was very nervous and hysterical. The optic discs were normal. She was treated with ten-minim doses of tincture of belladonna thrice daily; and the continuous current was applied, the negative pole being placed over the fifth cervical vertebra, and the positive was moved about over the sterno-mastoid muscle. She remained in five weeks, and left with the exophthalmos and pulsation all much diminished. I visited this patient's friends, and found that she died of "consumption" on November 28th, 1882. After leaving the hospital, the exophthalmos diminished, but the enlarged thyroid body and palpitation remained the same. She drank largely.

CASE X.—Annie E. E. was admitted April, 1877, under Dr. Moxon. Her family-history was unimportant. She had always suffered from palpitation. For some time past, the swelling of the neck and protrusion of the eyes had been noticed. There was much thyroid enlargement and exophthalmos, the left eye being more prominent than the right. There was a large pulsating cardiac area, with pulmonary systolic murmur. Pulse 160. She was treated with digitalis; but left the hospital, after a month's stay, unimproved. I have seen this patient's friends, and they state that she died, in 1884, from "gastric ulcer." The exophthalmos and palpitation increased; the goitre remained the same till three weeks before death, when it disappeared altogether. She suffered much from neuralgia and menstrual irregularities.

CASE XI.—Eliza T., aged 22, was admitted, under Dr. Wilks, November, 1876. Her family-history was unimportant. The patient had always been delicate, nervous, and a sufferer from palpitation. She seemed to become stronger at puberty. Three months ago, she had a severe cold; very soon after this, the thyroid enlarged, became pulsatile, and exophthalmos appeared. About a month ago, these symptoms became worse, diarrhoea came on, and the patient began to lose flesh. On admission, she had much exophthalmos and a large thyroid, pulsatile, with murmur over it. There were crepitation and a basic systolic murmur. Pulse 120; temperature 102.4°. She was treated with digitalis and iron. After a few days' rest, she became better; but soon got into a stationary condition, with a temperature about 100° and pulse about 120. After she had been in the hospital four months, a large axillary abscess developed; it was opened, but she sank and died. At the *post mortem* examination, the orbits appeared quite normal; there was no marked excess of fat. The heart weighed 10 ounces and was healthy. There was a considerable amount of double basic broncho-pneumonia. The whole of the intestine was intensely injected, and the Peyer's patches at the lower part of the ileum were of a dark livid character, contrasting most strongly with the injected intestine. There was nothing noteworthy in the abscess in the axilla. Dr. Goodhart, who made the *post mortem* examination, was inclined to look upon the case as one of blood-poisoning, accidentally complicating exophthalmic goitre.

CASE XII.—Mary M., aged 21, was admitted, under Dr. Fagge, in July, 1880. Her family-history was unimportant. She had bronchitis two years ago. Three months ago, the thyroid body began to swell; exophthalmos appeared. These had increased rapidly, and so also had her great weakness. On admission, there were much exophthalmos and thyroid enlargement, and an enlarged pulsatile cardiac area. Pulse 112, very irregular. Ergot was injected into the gland. After she had been in three weeks, she died quite suddenly. At the *post mortem* examination, it was noticed that the thymus was enlarged and persistent; it was fully four inches long. The thyroid body was much enlarged. The heart weighed nine ounces, and seemed normal. The tonsils were flabby, large, and succulent. Peyer's patches and the solitary follicles of the whole intestine were much swollen, in-

jected, and very prominent; the intestine itself was considerably injected.

THE TREATMENT OF FRACTURES OF THE PATELLA.

By FREDERICK TREVES, F.R.C.S.,

Surgeon to, and Lecturer on Anatomy at, the London Hospital.

THERE are few fractures upon the treatment of which more ingenuity has been expended than upon fractures of the patella. Every period of surgical activity has added to the number of curative appliances at the disposal of the surgeon. Within the last few years, certain operative procedures have been devised for the treatment of this lesion that, although they have been extolled by many, have not been accepted by all, and have certainly not passed into the undisturbed territory of routine practice.

From these facts, it is to be inferred that the methods for dealing with this common injury are not yet entirely satisfactory, and that the discussion of the subject is not yet closed. There are certain cases where the fracture is transverse, and where the fibrous expansions by the side of the bone are untorn, that present so little disturbance of parts, that the mere securing of the limb upon a straight back splint is a fairly sufficient treatment. It must be owned also that, in examples of this lesion of a less uncomplicated character, satisfactory results are obtained by the various combinations of splints and strapping that are very generally in use. The employment also of Malgaigne's hooks applied to felt discs, moulded over the two fragments, has met with a certain success. Of these various measures, however, it may be said that their use requires constant care, that the results obtained in cases of apparently equal severity are not uniform, and that, in not a few instances, they prove more or less inefficient.

The operative measures recently introduced are thus thrust into notice. The first of these is that known as Lister's operation. Here the knee-joint is opened, and its contents evacuated, the broken surfaces are well bared, and the fragments united by a wire inserted through drilled holes. To ensure the success of this operation, the knee-joint must be carefully drained. One great point in its favour is that it allows the surgeon to get rid of certain real or supposed obstacles to sound union—the fibrous fragments that may find their way between the bone ends, the effusion in the joint, and the blood-clot.

The objections to the measure are these. The operation is somewhat extensive, and not without risk; an anæsthetic is required; one median suture is employed, and, where the fracture is irregular, that alone may not serve to maintain true contact. In some cases, this treatment has failed. I have employed it in one instance only. The patient was a muscular man, engaged as a mill-stone maker. All the ordinary means to secure apposition failed. With the suture (that was retained) perfect contact was brought about, and the parts healed without disturbance, and without rise of temperature. Two years have now elapsed, and the man, although engaged in very laborious work, has what is, apparently, a normal patella, and full use of the knee-joint.

In the second operation, no skin incision is made, and the joint is not drained. By means of a long curved needle in a handle, a silver wire is passed through the joint under the fragments, and is so adjusted that, when the two free ends are twisted together over a pad on the skin, the broken bones are drawn into contact. In this measure an anæsthetic has to be employed; a wire seton is carried through the articulation, the fragments are held together in one line only, and, in irregular fractures, this may not serve to maintain the most perfect position. This plan appears to have met with substantial success in the hands of several surgeons, and it would be premature to criticise it until more data are forthcoming.

The mode of treatment that I would propose, and that, I think, is the most satisfactory, is one that I have now adopted in all cases admitted into my wards at the London Hospital during the past twelve months. It consists, simply, in the employment of Malgaigne's hooks in the manner in which they were originally intended to be applied.

Theoretically, it is difficult to conceive a better means of bringing the fragments of a broken patella together. Upon simple mechanical grounds, the hooks can certainly claim an advantage over the single median wire. The points of the hooks are sufficiently wide apart to secure a good and even hold of the bones. The fragments are rigidly held, and are forced together in a horizontal plane. Any yielding on

the part of the bones or the instrument can be met, if necessary, by a daily screwing together of the hooks to an extent to compensate for that yielding. A faulty application, in the first instance, can be rectified without difficulty at any subsequent period, an advantage that the wire does not possess. Since a wider hold is obtained of the fragments, Malgaigne's hooks can be used in examples of irregular fracture, and even in certain cases of starred fracture. The hooks, when once applied, require little or no attention, and the whole apparatus is of the simplest character.

Malgaigne's instrument has met with little favour, and the use of it was practically abandoned within a short time of its introduction. Its failure depended simply upon this. The points of the hooks excited suppuration, and, as the upper pair of hooks is probably always passed through the synovial membrane, that suppuration often spread to the joint, and led to the most calamitous results. Apart from this, the inflammation excited about the punctures was an abiding source of discomfort, even if it kept beyond the limits of the joint. These causes of failure have been removed by antiseptic surgery, and with their disappearance must vanish the chief objections to this, the most perfect mechanical appliance for adjusting the fragments of a broken knee-cap.

The other advantages of this mode of treatment may be briefly stated. No anæsthetic is required; the maintenance of the apparatus causes no inconvenience, and, before the hooks are inserted, the fluid in the joint can be conveniently evacuated.

The following is the method that I adopt. The limb is secured upon an ordinary straight back-splint, so as to keep the knee fully extended. The splint has a foot-piece, which prevents any shifting, and is secured to the limb by straps and buckles. Neither in this nor in any other fracture do I use plaster for the purpose of securing splints. Straps of fine webbing hold well to the limb, and can be adjusted, tightened, or loosened, as often as required. The lavish use of plaster in some compound fractures of the lower limb has much to answer for. The knee, after being washed, is well purified by carbolic acid. The position of the patella is carefully marked out in pencil on the skin, and the sites for the points of the hooks indicated. It is important that the hooks should enter the bone at equal distances from the median line. Four punctures are now made with a sharp tenotome at the points at which the hooks are to enter. In each case, the instrument should be passed down to the bone. The two upper punctures will open the synovial cavity, and through them the fluid in the joint is very easily evacuated. The two lower punctures are without the joint. As soon as all fluid has escaped, the hooks are applied. They should be scrupulously clean, and highly polished, and should be kept in carbolic water while the punctures are being made. The two parts of the apparatus must be separated, and each portion applied by itself. It is not until the hooks have acquired a good hold of the bones that the two segments of the instrument should be screwed together. It is better to apply the lower hooks first. When well fixed, they must be kept firmly in position by an assistant. There is often difficulty in inserting the upper hooks. Finally, the two segments are screwed together, so that the fragments of the patella are brought into close contact. There is a disposition for the upper end of the apparatus to "ride" a little. This is corrected by passing a tape over the upper hooks and under the knee, and fixing it by a leaden clamp. This tape can be tightened, if necessary, from time to time.

I have always performed this little operation under the carbolic spray. In no case has an anæsthetic been administered, and no patient has complained that the pain of the proceeding was other than could be well borne. After the hooks are secured, the spray is discontinued, and the four punctures are well covered with iodoform. It is advisable to see that the screw of the apparatus is protected from the powder, and kept well oiled, so that the hooks may be readily moved if occasion should arise. The limb is now placed upon an inclined plane, to which the splint is lightly secured.

One matter remains. I think it very important that the limb—or, at least, the knee—should be kept always fully exposed to the air. In all cases of wound or ulcer of the lower extremity, and in all cases of compound fracture of that part, I make it a rule that the damaged region be kept open to the air, or, at least, never covered by the bed-clothes. It is notorious that wounds and ulcers of the lower limb do not heal so readily as do like lesions of the arm and forearm. This can hardly be explained by the condition of the circulation in the two parts. Any adverse influence in this direction can, to a great extent, be met by supporting the leg upon an inclined plane, and so giving to the venous circulation the assistance of gravitation. The real cause of the differences in the progress and character of the healing is more probably to be ascribed to the atmosphere in which the