recovery. In our opinion the sooner the operation is done after this date the better.

4. A suppurative causal condition producing an infective neuritis renders the prognosis after operative treatment less favourable than in cases due to trauma.

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CASE OF BRAIN TUMOUR.

By A. C. DUTT, B.A., M.B.CANTAB.,

With Remarks by D. LOWSON, M.D.,

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ON Sunday, October 19th, 1902, I was sent for in the evening to see S. P., aged 39, who, I was told, was in a "fit." On my arrival I found him lying on the sofa, unconscious, cyanosed, and breathing stertorously. His friends thought it was a "bilious attack," to which he was subject at intervals.

History.—Eleven years ago he had had a similar attack, with violent headache and delirium, when he kept to his bed for a fortnight. As a child he had had "rheumatism" very badly. Six years ago he had pleurisy on the right side. Every few days he had headaches; when an attack came on out-of-doors his wife said "he crawled along the road as if he could not see." He had been getting thinner. Last winter in Belgium he had a severe headache, when he walked about in his bedroom for three hours. His mother died when he was 10 years old; cause of death unknown. Father died of pneumonia. Of his two brothers, one died of phthisis. His two sisters are alive and well. The patient was a traveller for his brother, a fruit merchant in this city, and had been in America several years, where he had had a rough and arduous life. He had great business capabilities, and was the trusted adviser of his brother, who valued his services highly. He has several young children, quite healthy, and of normal development. His wife said he was very irritable at times, but this was attributed to a "sluggish liver."

State on Examination.—The patient was of medium height, spare build, and very dark for an Englishman. The attack was undoubtedly epileptiform. He was ordered to be put to bed, and a mixture of bromides with belladonna was prescribed—with 3 gr. calomel at bedtime. In the morning he was considerably better, and conversed rationally and intelligently. Some years ago, he used to take alcohol freely, and at the age of 19 had contracted syphilis in America for which he had been treated for two months or so. There was no history of any other serious illness, except a slight attack of ague abroad, and several influenzal seizures at home. As he complained of indigestion and sickness a mixture of bismuth and salol with pepsin was ordered. The improvement being maintained, on October 22nd I gave nitromuriatic acid with strychnine before, and pepsin pills after meals. On the 23rd there was a good deal of flatulence necessitating the use of sodium bicarbonate and Bragg's charcoal which gave temporary relief. On the 24th violent headache was complained of, and the dyspeptic symptoms were worse. Phenacetin and caffeine relieved the headache; $\frac{1}{2}$ m creosote pills relieved the flatulence better than the charcoal powder. From this time the patient could not do without the phenacetin powders. Mercurial ointment was ordered to be rubbed into the axilla for three or four nights and a 5 per cent. ointment of oleate of mercury was applied to the scalp. This quickly produced stomatitis and had to be abandoned. On October 31st 3 ss. of pot. brom., 10 gr. chloral, and 10 m tr. hyoscyamus was given for insomnia, but it did not produce the desired effect. The draught was repeated and 12 gr. of sulphonal given—producing two hours' restless sleep. On November 3rd quinine and phosphoric acid was tried, but this had no effect on the "neuralgia" (as the patient called it) and made him worse. All this time there was no tenderness of the scalp anywhere; mercurial inunction was begun again, but the next day the mouth was as bad as ever. On the 4th blisters were put behind the ears, which seemed to do a little good. The patient now remarked he could only see one of my eyes and half my face, and that the ornaments on the mantelshelf seemed double. Every remedy having so far

failed to ameliorate the symptoms, and mercurial inunction being impracticable, I thought of the possibility of a syphilitic growth in the brain, and on November 5th prescribed potassium iodide beginning with 5 gr. t.i.d. The temperature so far had been subnormal, and the pulse 60 to 68; respirations 16 to 20. The iodide was increased by 2 gr. t.i.d. every second day till he took 20 gr. t.i.d. without apparent discomfort. There was now homonymous hemianopsia, defect of colour vision, and alexia or word blindness.

On November 8th Dr. Lowson saw the patient with me, took great interest in the case, and agreed with me in my diagnosis of an intracranial growth. On November 18th the teeth were tender and the mouth inflamed. Washing the mouth and brushing the teeth with "listerine" greatly improved this condition. Dr. Daly saw the case with me on November 27th and during my absence on the two following days; his opinion coincided with ours. In addition to alexia, the patient was apraxic—that is, forgot the use and significance of common objects, for example, knife and fork. Both alexia and apraxia pointing to a lesion in the angular gyrus extending back into the occipital convolution, we came to the conclusion it was probably a gumma. The patient could not call to mind objects named and point them out at request. He could recognize letters, but could not form them into words—for example, he could name the letters in *Yorkshire Post*, but could not say the name of the paper; he would call red and green blue. He could understand spoken words, but not words written or printed. He could not read, and could not recall objects when the names were shown to him. He could write voluntarily and at dictation fairly well, but could not copy, there being some paraphasia, "ryadd" being written for "Sunday"; there was no power to write the names of objects seen, heard, felt, tasted, or smelt; knife, spoon, fork, not being recognized. There was no power to read aloud or inaudibly, but he could write his name well and read it. He could also read my signature. He could not recognize a letter when traced with a pencil on the palm of his hand. The power to call up mentally the appearance of an object was absent, but he could read figures, calculate, and count both money and in numbers. There was papillitis more marked in the left optic disc. Occasional twitching of the left hand, and frequent retching were complained of, but never any sickness, the patient eating two or three good meals a day. Sometimes he was troubled with irritation in the left nostril and deafness in the left ear. There was some paraphasia, persistent insomnia, and occasional delirium. The headache was worse; he would knock his head on the wall to get relief.

On the December 20th the temperature was 100°, and stiffness of the neck was superadded to the other symptoms. Localized sweating of the scalp was noticed on December 26th. On December 27th the temperature was 102°, and Drs. Lowson and Daly saw the patient with me again. On the 28th he complained of difficulty and pain in passing water, a few drops being passed frequently.

A prolonged course of potassium iodide having failed to do any good, and the prognosis being desperate, I pointed out to the patient's friends that the case was hopeless, the only prospect—and that a very slender one—of alleviation being an operation. Their consent having been obtained, Dr. Lowson operated on December 31st, chloroform being the anaesthetic chosen. A cap of lint, soaked in 1 in 20 carbolic had been worn over the shaved scalp twelve hours before, and a quarter of a grain of morphine was injected hypodermically an hour before the operation. According to Treves the morphine has the effect of contracting the arterioles of the brain, and hence of lessening haemorrhage; it also allows less ChCl, to be given.¹

Operation.—A single flap was raised at the region of the left angular gyrus perpendicular to Reid's base line. The outline at the flap formed a shallow curve, being free below. The pericranium being separated by the rugin over the area exposed, and all bleeding arrested by pressure forceps (there being some difficulty owing to the thickness of the scalp), the trephine was applied and a disc of bone removed. Immediately the dura bulged out, due to great intracranial pressure. But on incising the dura no growth was seen. Dr. Lowson put his little finger into the wound, and felt some adhesions about $1\frac{1}{2}$ in. to 2 in. posterior to the opening made. The hole was enlarged by chipping off the bone all round, and the dura opened at this spot. On passing a grooved director, much pus-like material oozed out. This was subsequently kindly examined by Dr. Daly, who pronounced it to be most probably the debris from a breaking-down gummatous growth.

by injuring the corpus striatum and the posterior portion of the cerebral cortex.³ The maximum temperature (about 2° above normal) is reached five hours after operation and lasts twenty-nine and a-half hours. As a fresh rise may be produced by a fresh puncture, Lazarus-Barlow thinks that sepsis cannot play any part in this thermal change.⁴

6. I cannot explain the dysuria, as there were no signs of cystitis and the urine was normal. No mention is made in the textbooks about this symptom.

7. Though there was paraphasia, and therefore damage to the cheiro-kinaesthetic centre, the patient could write his own name perfectly late in his illness. The fact, that he could write numerals correctly shows the possibility—as suggested by Bastian⁵—that numerals may be registered in some region of the general visual centre apart from the visual word centre.

8. Both in visual aphasia and mind-blindness the lesion involves the cortex of the angular gyrus and supramarginal lobule.⁶ Some hemiataxia and hemianaesthesia are very often associated with this condition, but were entirely absent in my case.

9. Recently Abbe and Schley, quoting Collins,⁷ have declared that "scarcely more than one case in twenty of brain tumour is amenable to surgical interference." From the point of view of a cure this may be true. But in a hopeless case even palliation brings freedom from a certain amount of pain and discomfort, and on those grounds the operation was fully justified.

REMARKS BY DR. LOWSON.

In this case, so carefully recorded by Dr. Dutt, the principal difficulty the operator had to face was the question of localization. The optic path was evidently interrupted somewhere between the thalamus and the occipital lobe on the left side, while at the same time the presence of mind-blindness pointed to lesion of the angular gyrus. There was a doubt in my mind whether the tumour had grown forward from the occipital region, where it had first caused right homonymous hemianopia, and subsequently destroyed the angular convolution, or whether the growth had appeared at its onset in the optic radiation deep in the white substance of the parietal lobe, and, gradually approaching the surface, had at last affected the inferior parietal lobule and produced the mind-blindness. In the latter case the skull would have to be opened behind the upturned end of the fissure of Sylvius $\frac{3}{4}$ in. below the parietal eminence, while in the former the trephine would have to be applied farther back.

Ultimately I determined to start work over the site of the angular gyrus. On removing a disc of bone, however, and afterwards incising and reflecting the dura for some distance, no sign of tumour was found, though the brain bulged out to the size of a small orange. Finding no lesion at this part I introduced my finger as detailed by Dr. Dutt, and passing it in a backward direction, I came upon an adhesion which gave me hope that I should find what we were looking for in the occipital lobe. Cutting away the bone for $1\frac{1}{2}$ in. or 2 in. backwards, and then opening the dura there, a yellowish protuberance was disclosed, and as it seemed to fluctuate I laid it well open. At first a thin, clear, straw-coloured liquid escaped, followed by what looked like pus, but subsequently proved broken-down gumma. It was unfortunate that no necropsy was permitted, as the case was one full of interest, more particularly with regard to the aphasia, the peculiar details of which Dr. Dutt has spent so much care in elaborating.

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GRAVES'S DISEASE IN ASSOCIATION WITH RHEUMATOID ARTHRITIS.

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As far back as 1888 Spender referred to points of affinity between rheumatoid arthritis and Graves's disease; and in Bath one has opportunities of verifying the accuracy of his observations.

Buzzard, in his article on tremor in the *Encyclopaedia Medica*, states: "The four diseases—neurasthenia, rheumatoid arthritis, paralysis agitans, and Graves's disease, are purposely placed together, because they appear in more ways than one to be

related and to belong to a group of which the pathology is still obscure."

The result of my experience seems not so much to suggest an affinity between the two diseases, but rather to indicate that they frequently coexist. This statement seems justified by the fact that I have seen cases which, in addition to rheumatoid arthritis, showed the four cardinal symptoms constituting the so-called complete type of Graves's disease.

In the table of examples, the heading "vasomotor phenomena" is meant to indicate that some of the patients suffered from varying degrees of local syncope and asphyxia in their extremities.

As regards ocular symptoms—in addition to proptosis—the signs of Stellwag, von Graefe, and Moebius, together with slight ptosis and weakness of the external recti were very marked in some cases, in others less so. In the complete types there was a tendency to intermittency as regards Stellwag's sign. The thyroid swelling was usually of moderate grade, and certainly varied in size from time to time. Tremor in the complete types was as a rule general, and is often more marked in limbs affected with joint swellings; but, as Buzzard states, it may be hemiplegic or diplegic in distribution.

Rapid cardiac action is, as is well known, a feature of some early cases of rheumatoid arthritis; and this coexistence of Graves's disease raises the question whether the quickened pulse-rate is a feature peculiar to the former, or one due to a larval manifestation of the latter.

It is interesting and possibly significant that many of the so-called secondary features of Graves's disease occur in the subjects of rheumatoid arthritis, and, moreover, in cases where none of the cardinal symptoms of Graves's syndrome are present. Increased pigmentation is fairly common. Leucoderma and scleroderma are occasionally met with—the former, in my experience, being more commonly on the arms, the latter on the outer side of the legs—and usually in long-standing cases. Urticaria is also met with in both diseases. Oedemas, fixed, transient, and of irregular distribution, are met with in both maladies. Lately I saw two cases, with two symptoms of Graves's disease, in whom solid oedema of the whole of both lower extremities was present; in one the arms also were affected, and their appearance suggested myxoedema. Rapid, widespread, and painful oedema of a limb sometimes marks the onset of acute forms of rheumatoid arthritis. It declines with the acuter phase, except in periarticular regions. Transient oedema of the face and eyelids is also met with. In the muscular system, sudden weakness of the legs—"letting them down," as patients phrase it—and painful "cramps," are points of similarity. Disturbances of the digestive system, of menstruation—amenorrhoea or menorrhagia are met with in both—likewise leucorrhoea. Unilateral flushing, subjective feelings of heat, excessive sweating, and extreme emaciation are also features common to both disorders.

In some of the cases in the table the Graves's syndrome preceded the joint affection—in one the thyroid swelling disappeared before spindle swellings appeared. In the majority the two diseases, as far as ascertainable, arose together. In a few Graves's syndrome was of more recent date than the rheumatoid arthritis.

Reviewing the etiology of the two diseases, one notes that quinsy and rheumatism are frequent antecedents of both maladies.

Clinical research distinctly suggests some obscure relationship between rheumatism and rheumatoid arthritis, and I venture to suggest that the following factors may determine this sequence in some cases:

1. A fundamental element in the form of a neuropathic diathesis, in evidence of which I would cite this coexistence with Graves's disease in some cases; not to mention the fact that in many other clinical features it resembles diseases of nervous origin.

2. An accidental element in the presence of a possible source of toxæmia—for example, oral sepsis, chronic indigestion, gastric ulcer, sometimes dilatation of the stomach or chronic diarrhoea, sore throats, etc.

Chorea is another disease with which Graves's disease enters into relationship, and the same may be said of rheumatoid arthritis. The sequence is usually rheumatism, chorea, rheumatoid arthritis; but I have known chorea followed by rheumatoid arthritis without a previous history of rheumatism.

Passing on from etiological factors to a brief consideration of the clinical features of the two diseases, one notes that involuntary spasms or "cramps" are found both in rheumatoid arthritis and Graves's disease. Now, tetany has been