two strong sutures through an incision in the loin, carrying them more deeply into the kidney substance than I had done in the previous case, and bringing them out through the loin tissues, except the skin, one at each edge of the loin wound, which I left gaping open without sutures and dressed from the bottom with gauze. The result in this case was satisfactory, and the patient was able to do her work quite well. I last saw her about a year ago. I did not again perform the operation till January, 1893, when I operated upon a woman whom I saw in consultation with Dr. MacLagan. In this case I adopted the method which I have since followed, making a longitudinal incision from an inch and a half to two inches long well through the true capsule of the kidney, whereupon the wound gapes, and I then pass four sutures, one at each side and one at each angle, well into the substance of the kidney, and then through all the tissues of the loin wound at its upper and lower angles and in each side, as in the renal wound, and tie them externally, including a small edge of the skin. I then put in a rubber drainage-tube up to the kidney, and carefully suture the loin wound round it. I arrived at this method of operating from a study of the literature of the subject and a consideration of the importance of involving in the newly formed adhesions some tissue less yielding than the loose cellular tissue and fat around the kidney. The true fibrous capsule is an excellent material, and its cut edge curls back and comes into close union with the other cut fibrous tissues in the loin wound when the sutures are tied. Since adopting this plan I have had uniformly satisfactory results. I always clip away all the loose fat and cellular tissue which is pulled into the wound in exposing the true capsule of the kidney, as I think the contraction which results from its cicatrisation aids in retaining the kidney in its place. I have only performed the operation eight times altogether, but my results since adopting the above method have been so encouraging that I have no hesitation in recommending it in any case in which the kidney is not only mobile but is a cause of inconvenience or of suffering. I have no doubt that undue mobility of the kidney is much more common than is supposed, and that it is a cause of many obscure pains and nervous conditions which are put down to fancy or hysteria.

(To be continued.)

THEORETICAL AND PRACTICAL CONSIDERATIONS ON WHOOPING-COUGH,

WITH AN INQUIRY INTO THE THERAPEUTICAL VALUE OF COCAINE IN UPWARDS OF 300 CASES.

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THERE are many features in the history of whooping-cough, such as its fairly definite incubation period, its infectiousness, and the immunity conferred by one attack, suggesting a microbic origin, and various specific parasites have been described by Poulet,¹ Letzerich,² Ischmer de Gratz,³ Burger,⁴ Moncorvo,⁵ Afanassiew,⁶ and Ritter;⁷ but we are not at present in a position to state that any bacillus has definitely been proved to be the cause of the disease. Other investigators regard whooping-cough as purely a neurosis, and a few cases have been recorded where the post-mortem appearances

seem to lend support to this view. The late Dr. Sturges⁸ was a strong supporter of the primary nervous nature of pertussis. On analysing the clinical history of a large number of cases spread over a considerable period of time the fact that the disease is very infectious becomes remarkably obvious, and the frequency of incidence shows curves similar to those for other infectious diseases.⁹ After infection there is an incubation period of about twelve days, then the temperature rises, the child becomes peevish, there are inflamed conjunctivæ, running at the nose, sneezing, and the symptoms of bronchial catarrh. These persist for a varying length of time, averaging perhaps a fortnight or less. Cases may occur in families of which other members have well-marked pertussis that show these symptoms, but never have the spasmodic whoop. In a typical case after or gradually developing out of the catarrhal stage there arises the paroxysmal stage when the whooping inspirations occur that give the disease its name. There may be other signs of vagal excitability, such as sudden and frequent vomiting, during the paroxysms even momentary stoppage of the heart's action (Steffen), the child may faint, and nerve symptoms, such as twitching of the muscles of the face, convulsions, and strabismus, occur, while ascending paralysis has been observed in a few cases to follow whooping-cough. Constipation is frequent. Such symptoms as ecchymoses, turgid veins, or cerebral hæmorrhages, which are probably produced by the mechanical strain of the paroxysms, do not concern our present purpose; but the well-known fact may be mentioned that at the end of the attacks a little mucus is usually expectorated. It is very remarkable that with the onset of the violent whoopings the temperature, elevated in the catarrhal stage, becomes normal, the appetite may be good even when there is vomiting, the peevishness disappears, and, except for the paroxysms, the child appears quite well; but in a large number of cases slight causes, such as the taking of food, produce whooping, which is followed by vomiting, or there may be frequent vomiting without preceding paroxysms. The child, finding from experience that food often produces the distressing attack, refuses it, and consequently becomes emaciated, while the loss of sleep due to the exacerbations of cough at night tends in the same direction. When rises of temperature occur in this stage they are almost always due to concomitant broncho-pneumonia.

It seems to us that the disease may be explained on the assumption that it is due to some microbe (whether this be the particular bacillus described by Afanassiew or not is immaterial) which has a local habitat in the respiratory mucous membranes, and by its presence and the products of its activity produces the catarrhal stage of the disease just as the diphtheria bacillus produces membrane locally and general pyrexia. We believe the pertussis microbe also fabricates some virus, which taken into the circulation acts as an irritant poison to the nervous tissues, especially the respiratory and vagal centres, rendering them far more easily excitable than normal. We therefore regard the catarrhal stage as the period of microbic activity and the whooping one as due to the after-effects of a poison generated by the microbe. This affords, if true, a complete reconciliation between the bacillary and neurotic theories of the disease. We are not at present in a position to give experimental proofs, but think the following clinical facts point strongly in favour of our theory. The onset, infectious nature, and subsequent immunity are quite similar to those of diseases commonly accepted as due to microbes, while the absence of pyrexia and often improved general condition of the patient during the whooping stage, its chronic and variable course, the fact that lesions have been found post mortem implicating the medulla, brain, and vagi,¹⁰ and that the whooping when once fully established becomes chronic, tending to slow and sure recovery, not to increased violence, together with the observation that remote nerve lesions are occasional sequelæ, all seem to point to the effects of chemical traumatism of nerve tissues rather than to the presence of active bacilli. The strong resemblance in some respects to the clinical history of post-diphtheritic paralysis seems to show that it is possible a somewhat similar condition obtains to that which Martin has shown occurs in diphtheria. It may be objected that in diphtheria subsequent paralysis

¹ Comptes-rendus de l'Académie des Sciences, 1837.

² Ueber Lungenmycose bei Keuchkusten, nebst Angabe einer Methode zur Heilung der letztern. Virchow's Archiv, 1873, Band lvii.

³ Jahrbuch für Kinderheilkunde, Band x., Heft 4, 1870. Schmidt's Jahrbuch, No. 1, 1874.

⁴ Berliner Klinische Wochenschrift, 1883.

⁵ De la Nature de la Coqueluche et de son Traitement par la Résorcine. Rio de Janeiro, 1883. Della Tosse Convulsiva e della sua Cura con la Resorcina (Archivio de Patologia Inf., Napoli, 1885).

⁶ St. Petersburger Medicinische Wochenschrift, 1887, Neue Folge, iv.

⁷ Berliner Klinische Wochenschrift, No. 50, 1892.

⁸ Lectures on some of the Distinctive Characters of Disease in Early Life. Medical Times and Gazette, July 4th, 1885.

⁹ Ransome: Proceedings of the Manchester Literary and Philosophical Society, vol xix., No. 8, 1879-80.

¹⁰ Aberle: De Tusse Convulsiva, p. 45. Vindobona, 1843.

is only an occasional result, while in pertussis this view demands that the nerve poisoning should be constant. It is quite possible that such is actually the case, but one must remember that the catarrhal stage of whooping-cough is unrecognisable from many cases of simple cold, and perhaps the disease without the subsequent paroxysms is far more common than we at present have any idea of; indeed, according to Goodhart pertussis in very young children is often not attended by any whoop. Another possible difficulty is that in diphtheria a paralysing lesion occurs, while here an irritating one is suggested; we do not, however, consider the conditions identical, but only analogous. It may also be objected that, given the presence of irritating bacilli in the respiratory mucous membrane, there is no necessity to invoke the aid of any nerve poisoning in explanation of the symptoms; but we fail to see how the vomiting, which is often quite out of proportion to the whooping, the stopping or slowing of the heart's action, the constipation, the facial convulsions, strabismus, &c., can be explained on the simple presence of an irritant in the respiratory tract, or why the disease should show two such different stages, for if the presence of the microbes were the sole cause why do the pyrexia and first constitutional symptoms not continue during the paroxysmal stage? The fact that the whooping is often started by draughts, irritating vapours, and especially by taking food is exactly what would be expected on the assumption of an increased excitability of the respiratory and vagal centres, while the observation that children not suffering from pertussis sometimes whoop quite fits in with the above view, for what is claimed is a hyperæsthetic condition of part of the medullary centres comparable to the condition of the spinal cord in strychnine poisoning. Probably in some cases the microbes may exist in the respiratory tract for a long period after the catarrhal stage has passed off in the same way that Löffler's bacilli may be present in the throat of a diphtheria patient some weeks after the clinical signs have disappeared; and this supposition would account for those cases which apparently suffer relapses from chills during recovery. The mucus that is expectorated after an attack of whooping is probably due to the congestion of the lungs produced during the paroxysm; very likely each attack, by congestion, secretion of mucus, and other mechanical effects, helps to prepare causes of irritation which give rise to the next by acting on afferent nerves going to the too easily excited centre. In this connexion it may be mentioned that we consider the congestion and mechanical injury done to pulmonary tissue by the spasms of whooping, together with the debilitated state of the child from vomiting, as the chief causes of broncho-pneumonia and other pulmonary diseases in these cases, rather than any subtle influence of the specific cause of pertussis. After examining a large number of cases, and consulting a copious literature on the disease, we do not know of any symptoms which may not be explained on the above hypothesis or as the mechanical effects of the paroxysm.

Treatment.—If the views we have stated be correct the best method of treatment would obviously be by some agent which should destroy the microbe and counteract the effects of its poison. Such a drug is unknown and would have to be applied early in the catarrhal stage, when cases, as a rule, are not seen and cannot be diagnosed with certainty, so we must look for some drug which will antagonise the effects of the poison. It should have a paralysing action on the vagal (vomiting) and respiratory centres, or should stimulate nerves antagonistic in action to those involved, and should, if possible, lessen the sensibility of the peripheral terminations of the afferent nerves from the respiratory and gastric mucous membranes to the medulla. If it hinder the secretion of mucus so much the better. We have a drug which will do all these things in cocaine. This agent has been recommended by many writers as a local application in whooping-cough. Moncorvo¹¹ in a series of papers recommended the application of resorcin to the mucous membrane of the pharynx, the parts having first been rendered insensitive by hydrochlorate of cocaine. Barlow,¹² pursuing the same line of treatment, obtained satisfactory results in fifty cases. Holt,¹³ using 4 per cent. solutions of hydrochlorate of cocaine in five cases of children aged three months, four months, six months, eight months, and twenty-one months old respectively, and after that resorcin, obtained toxic symptoms in all, the chief being restlessness, convulsive movements,

dilated pupils not responding to light, rapid pulse, and delirium. These results are certainly exceptional, though the dose, which appears to have been at least a grain, is, we consider, large, taking into account the age of the children. Possibly the nurse used more than Holt knew, or perhaps the drug was impure. It is not surprising to hear that none of the children received notable benefit. Prior¹⁴ painted the pharynx and larynx with 10 per cent. solutions of cocaine, and also gave inhalations of 20 per cent. solutions. He obtained good results, but less so with the spray. Michael¹⁵ found it of some value. Schech,¹⁶ using $\frac{1}{2}$ per cent. and 1 per cent. solutions, found it of doubtful value. Pott¹⁷ obtained excellent results from painting the pharynx with 5 per cent. solution. He has no fear of evil consequences even with infants six months old. W. L. Carr¹⁸ has frequently swabbed the throat with 4 per cent. solutions, and never totally failed to obtain benefit. He has never seen a case of poisoning. It will be noticed that all these observers use the drug purely as a local application. In this way it is apt to give rise to dryness of the throat, and is not nearly so likely, according to our view, to be of service as if given internally, for the too irritable centres are to be attacked rather than the small area of peripheral endings which one can hope to affect locally. Even on the theory of local action the method of swabbing, and still more so of spraying, the throat leaves comparatively untouched the nerve endings in the stomach, and vomiting is certainly one of the most troublesome symptoms of the disease. It is noticeable that more satisfactory results have been obtained by swabbing than spraying, as we should expect, for more of the drug is swallowed in the former method. Our practice is to give doses of hydrochlorate of cocaine in water based on the standard of a one-grain dose for an adult, three or four times a day by the mouth. We determined to try cocaine in whooping-cough on account of the following facts. Death in cocaine poisoning results from respiratory failure; Stockman,¹⁹ in his extensive investigation on the action of the coca alkaloids, says: "It is difficult to analyse the action of cocaine on the mammalia owing to the early occurrence of death from paralysis of the respiratory centre." H. M. Biggs²⁰ draws attention to the same fact in frogs and recommends the drug as indicated both in tetanus and strychnine poisoning. Many other observers might be cited in support of this paralysing effect. The question arises, What part is affected? We are inclined to think that the drug either paralyses the vagal centre or else excites some part antagonistic to it. Many of the effects of cocaine may be explained on the assumption that it acts on the sympathetic system, particularly the vaso-constrictor nerves; thus it dilates the pupils, causes peripheral vaso-constriction, and acceleration of the heart. In many respects we know that the sympathetic and vagus are antagonistic nerves, at any rate as far as the heart and intestines are concerned. In support of the sedative action of the drug, at least on a part of the respiratory centre, may be urged the good results which Mosler²¹ obtained from subcutaneous injections in cases of asthma. Many observers say cocaine increases the respiration; this we are not sure of; still, it is quite reconcilable with what has gone before, for possibly with a less excitable centre the respirations become more rapid and less deep. It is known that emotion, which one may conceive excites both the respiratory and cardiac centres, causes the respirations to be fewer and the heart's beats more frequent. Laborde²² found on injection of the hydrochlorate into the veins of rabbits that insensibility of the mucous membranes of the pharynx, larynx, and tongue appears. Most observers are agreed that it lessens the secretions, and its efficacy in vomiting is well known. Finally, it is remarkable that in some respects cocaine resembles atropine in its action, and belladonna is the drug which at the present time is perhaps most in favour for treating whooping-cough. Lauder Brunton,²³ speaking of cocaine, says: "The quickness of the pulse appears to be due to paralysis of the vagus, and the action of cocaine on both pulse and blood pressure is very like that of atropine." Unfortunately from the conditions

¹¹ Loc. cit.¹² THE LANCET, May 22nd, 1886.¹³ New York Medical Journal, Oct. 23rd, 1886.¹⁴ Berliner Klinische Wochenschrift, 1885, No. 45.¹⁵ Deutsche Medicinische Wochenschrift, 1885, Jahrgang xii., p. 74.¹⁶ Der Fortschritt, May 20th, 1886.¹⁷ Jahrbuch für Kinderheilkunde, 1886, Band xxiv., Heft 1.¹⁸ New York Medical Journal, Nov. 6th, 1886.¹⁹ Brit. Med. Jour., vol. i., 1889, p. 1112.²⁰ THE LANCET, March 7th, 1885.²¹ Brit. Med. Jour., July 17th, 1886.²² Ibid., Dec. 27th, 1884.²³ Pharmacology, p. 379.

under which the observations were made it is impossible to present our results in a tabular form. When the children recovered the mothers frequently ceased to attend, though in as many cases as possible they were induced to continue for from six weeks to two months after the symptoms of whooping-cough had disappeared, so we are enabled to state that the improvement was permanent and not merely a temporary lull in the course of the disease. As whooping-cough is not admissible into the wards of the Hospital for Sick Children, Great Ormond-street—at which the cases were seen—a considerable number of cases were those of severe disease, with attendant broncho-pneumonia. The total number treated was 323, and as all first came under observation during the most unfavourable months of the year—namely, the late autumn and early winter of 1894—one would expect the course of the disease to be as long and unfavourable in these cases as it ever is; however, only two cases died, both under six months; one from broncho-pneumonia, and the other, in which cocaine was only tried as a last resource when other remedies had failed, from persistent vomiting, and the drug was only given for about two days before the fatal termination, which could in no way be attributed to its use. We may here mention that we have never seen any marked evil effects follow the use of cocaine; the only symptom which could in any way be construed as unfavourable was in some cases slight relaxation of the bowels, and this, we consider, rather beneficial on account of the constipation so often found in whooping-cough. The average duration of the disease under cocaine treatment is about three weeks; in slight cases it may be a fortnight or less—indeed, it seems as if pertussis may be made to abort in many of the slighter cases if the patient is seen and treated early. Of course, severe and more obstinate cases do occur where the disease is somewhat more protracted, but if these numbers are compared with the usual course it will be seen that the drug has a very marked effect in lessening the duration, which is generally stated at from six weeks to two or three months. The child, as a rule, when taking cocaine, soon begins to show great improvement in its general condition; the sickness, when present, stops, the anorexia disappears, the cough becomes less frequent, the sleep at night improves, and restlessness vanishes, but the whooping, while diminished, may persist for a fortnight, when it usually stops, never to reappear. The mothers, on coming a week after the commencement of the treatment, very often say: "The child is much better; it still whoops sometimes, but I do not mind that, for it is less frequent, and otherwise its health is much improved; the vomiting has stopped and appetite is good." Naturally, one does not expect that cocaine will cure broncho-pneumonia when that has developed, but even in these cases of complicated whooping-cough it seems to be of benefit, and children under its action do better than without. We now give notes of a few of our cases; these have not been specially selected, and give a very accurate representation of the whole number.

CASE 1.—A girl aged six years attended at the Hospital for Sick Children, Great Ormond-street, on Oct. 19th suffering from cough, which was worse at night, accompanied by either vomiting or expectoration, and when severe followed by whoop. The physical signs exhibited a few moist râles in the chest. The temperature was normal. There were loss of appetite and constipation. The patient was ordered cocaine hydrochlorate, a third of a grain three times a day. On Oct. 26th her mother described her as "almost well." The cocaine was increased to half a grain three times a day. On Nov. 9th the pertussis was quite cured. She was then ordered cod-liver oil and Parrish's food.

CASE 2.—A boy aged three and a half years attended at the Hospital for Sick Children, Great Ormond-street, on Oct. 16th suffering from well-marked whooping-cough. He had been ill with a "cold" and now had a severe spasmodic cough accompanied by whoop and expectoration. There were moderate constipation and anorexia. The temperature was normal. Cocaine hydrochlorate, one-fifth of a grain three times a day, was ordered. On Oct. 23rd the mother described the child as "much better." The cocaine was increased to one-quarter of a grain. On Nov. 2nd the cough was quite cured and the vomiting had ceased. Cod-liver oil and Parrish's food were prescribed, which the child continued to take for about a month, and he was then discharged.

CASE 3.—A boy aged five and a half years, brother of the preceding patient, attended on Oct. 23rd suffering from

whooping-cough. The symptoms were well marked. There were cough, whoop, expectoration, vomiting, and constipation. The temperature was normal. The eyelids were puffy, with suffused conjunctivæ. One-third of a grain of cocaine hydrochlorate was ordered three times a day. On Nov. 2nd the patient had improved in all respects. On Nov. 10th the cough was quite gone and there was no vomiting. The patient was then given cod-liver oil and Parrish's food. He was kept under observation for a month and then discharged.

CASE 4.—A girl aged three years attended on Nov. 5th suffering from whooping-cough, which had also attacked several other members of the family. The symptoms were severe spasmodic cough accompanied by whoop and always terminated by the expectoration of thick ropy mucus; he occasionally also vomited. There was constipation, the face was puffy, and the eyes were injected. One-fifth of a grain of cocaine hydrochlorate was ordered three times a day. After this the child improved so much that, contrary to instructions, the mother did not attend for a fortnight. On Nov. 19th the patient was greatly improved. The cough was still severe, but the vomiting had quite ceased. The dose of cocaine was increased to a quarter of a grain. On Nov. 29th the cough was much less, but the child was not yet quite well. On Dec. 3rd the cough was quite cured. She was given cod-liver oil and Parrish's food for six weeks and then discharged.

CASE 5.—A boy aged two years and seven months attended on Oct. 15th suffering from severe rickets complicated by pertussis. The child looked ill. There were some general bronchitis and severe night cough accompanied by whooping and vomiting. He was ordered a purge and one-sixth of a grain of cocaine hydrochlorate three times a day. On Oct. 22nd he was better, but the cough was still severe, and the medicine was repeated. On Oct. 31st the patient was still improving, but was not well, whoops still continuing. The cocaine and purge were repeated. On Nov. 9th he was much better and coughed very little. The medicine was repeated, and cod-liver oil, one drachm three times a day, was ordered. On Nov. 16th the cough was quite cured. He was given cod-liver oil and Parrish's food for a month, and then discharged.

CASE 6.—A male infant aged eight months was brought to hospital on Oct. 9th suffering from the effects of injudicious feeding and rickets, for which he was suitably treated. On Oct. 13th he was very ill and was heard to definitely whoop. There was general bronchitis and some broncho-pneumonic patches. The temperature was 101.6° F. There were vomiting and restlessness. The patient was given a purge, a cotton-wool jacket, creosote as a dry inhalation, and one-sixteenth of a grain of cocaine hydrochlorate three times a day. On Oct. 15th he was much better. The temperature was 99.4°; the cough was still severe, but the vomiting had ceased and the severer lung symptoms had abated. He was given a purge and the medicine was repeated. On Oct. 18th he was seen again, and improvement was continued. The temperature was 99.2°. He still coughed, but the child's general condition was vastly improved since the 13th. The dose of cocaine was increased to one-twelfth of a grain. On Oct. 25th the temperature was 99.2°. There was still some general bronchitis, with bronchophony over the right base. There was no vomiting, but occasional whooping. The cough was worse at night and of the pertussis type. General improvement was great, and the dose of cocaine was increased to one-tenth of a grain thrice daily. The purge was repeated. On Nov. 2nd the temperature was still 99.4°. The patient coughed much less, but occasionally whooped. The medicine was repeated, and one drachm of cod-liver oil was given twice daily. On Nov. 9th the temperature was normal, the cough had quite disappeared, and the child was perfectly well. Cod-liver oil and Parrish's chemical food were given for one month, after which the patient was lost sight of.

CASE 7.—A boy aged five years, brother of the preceding patient, attended on Oct. 15th suffering from pertussis. The case was a straightforward one, not complicated, like the preceding, by broncho-pneumonia. The temperature was normal. There were some fulness about the palpebral region and suffused conjunctivæ; spasmodic cough, worse at night; choking, terminating by expectoration; and frequent vomiting almost immediately after meals. There was no definite whoop. The patient suffered from anorexia and constipation. He was given a purge and a quarter of a grain of cocaine hydrochlorate three times a day. On Oct. 25th the mother described the child as "very much better." The vomiting had quite stopped, and the child coughed "scarcely at all." He had, however, definitely whooped after the last

visit. The cocaine was increased to one-third of a grain. On Nov. 2nd the child had quite recovered. He was given cod-liver oil and Parrish's chemical food for eleven weeks; he then ceased to attend.

CASE 8.—A boy aged two years and two months attended on Nov. 7th suffering from whooping-cough. The patient was a small, weakly looking child, somewhat rickety, with severe cough lasting several minutes. It was worse at night and produced vomiting. There were no definite lung symptoms beyond a few moist sounds. He was given one-sixth of a grain of cocaine hydrochlorate three times a day and dry inhalation of creosote. On Nov. 14th he was reported to be "much better"; the cough was much less frequent and less violent, and vomiting had ceased. He coughed and whooped occasionally. Cocaine was increased to one-fifth of a grain. On Nov. 21st there was continued improvement. On Nov. 28th he continued *in statu quo*. On Dec. 5th there had been a little more bronchitis since the last visit, but the whoop was practically absent. The medicine was repeated, and one drachm of cod-liver oil three times a day was ordered. On Dec. 12th the patient was better, and scarcely coughed at all. On Dec. 19th the cough was quite cured. Cod-liver oil and Parrish's food were given and continued for five weeks. The patient was then discharged. (The longer period of treatment necessary in this case was caused by a chill contracted either just before or after Nov. 28th; this complicated the results.)

CASE 9.—A girl aged four and a half years attended on Oct. 28th with symptoms of an ordinary cold. The temperature was 99.4° F. There were cough and slight watery condition of the eyes, but no rash; some moist sounds in the chest were present, but no consolidation. On this occasion it was not recognised as pertussis. The patient was given a purge, a cotton-wool jacket, and ipecacuanha mixture. On Oct. 30th she was no better, but there was no whoop or vomiting. The medicine was repeated. On Nov. 8th it was found that since the last visit the cough had changed in character and become spasmodic, being worse at night; on some occasions she had been heard to whoop. There was considerable expectoration. One quarter of a grain of cocaine hydrochlorate was given three times a day. On Nov. 23rd the child had improved so much on the cocaine that the mother, instead of attending in a week's time, allowed a fortnight to elapse, during which she continued the cocaine, and the cough was now quite cured. The patient was given cod liver oil and iron, and kept under observation for five weeks. She was then discharged.

CASE 10.—A girl aged three and a half years, sister of the preceding patient, attended on Nov. 23rd suffering from severe rickets, for which she was given cod-liver oil and Parrish's food. On Dec. 6th it was found that since the last visit the child had developed a cough, but there were no distinctive characters of pertussis. There were a few moist sounds in the chest. Ipecacuanha mixture was given. On Dec. 20th the temperature was 99.4° F. The cough was worse, accompanied by whoop and vomiting, and most severe at night. There was some general bronchitis. The patient got red in the face from the violence of the cough. One-fifth of a grain of cocaine hydrochlorate was given three times a day, also a purge and a dry inhalation of creosote. On Dec. 28th the cough was quite cured. She was given cod-liver oil and iron for a week, when the child was reported as "recovered."

CASE 11.—A boy aged five years attended on Oct. 16th suffering from severe symptoms of pertussis. The child looked ill. The temperature was 99.8° F. There was some general bronchitis, but no definite consolidation. The cough was severe and frequent, lasting several minutes, accompanied by whoop and terminated by expectoration or vomiting. Ingestion of food was always followed by vomiting. The patient suffered from constipation and had a furred tongue. The cough prevented the child getting any rest at night. He was given a purge, a cotton-wool jacket, and one-third of a grain of cocaine hydrochlorate three times a day. On Oct. 23rd he was reported to be "much better." There was no vomiting and the cough was less. The temperature was normal. On Nov. 2nd the temperature was 100.8° and the child looked very ill. There was general bronchitis, and broncho-pneumonia at the right base. The cough was very violent and was accompanied by epistaxis and hæmoptysis, with continual vomiting. The cocaine was increased to two-fifths of a grain; one drachm of cod-liver oil three times a day, and a dry inhalation of creosote were given, and the purge was repeated. On Nov. 13th he had much improved in general condition, though

the temperature was 99.2° and the cough severe. All the remedies were repeated and the cocaine increased to half a grain. On Nov. 20th the temperature was 100.6°. The cough continued, but the child was much better. On Nov. 27th the temperature was 99.2° and the cough much less. On Dec. 4th the temperature was 98.8° and the cough very slight and seldom. On Dec. 11th the patient still coughed occasionally, but otherwise was quite well. On Dec. 18th the cough was quite cured, and he took medicine and cod-liver oil for fourteen days and then ceased to attend. (It will be observed that this was a very severe case and complicated by broncho-pneumonia; hence the longer period of treatment necessary before recovery.)

CASE 12.—A boy aged three years attended on Sept. 24th suffering from follicular tonsillitis, which was suitably treated. On Oct. 3rd the throat was well, and tonics were ordered, which he took for a month. On Nov. 2nd the child began to exhibit symptoms of pertussis, severe "tearing" cough with occasional whoop, worse at night, and accompanied by expectoration, which on two occasions was blood-stained. He was ordered one-fifth of a grain of cocaine hydrochlorate three times a day. On Nov. 9th he was better, the cough was less, and the expectoration very slight. There was no vomiting, and the cocaine was increased to one-third of a grain. On Nov. 16th the patient was much better and coughed very seldom; he had decidedly put on flesh. The cocaine was increased to half a grain. On Nov. 23rd the cough was completely cured. The cocaine was stopped and the boy was given tonics. He was kept under observation for two months and then ceased to attend. (It will be observed that this case is one in which whooping-cough arose while the child was under observation for another affection.)

CASE 13.—A male infant aged three months was brought to hospital on Aug. 11th suffering from congenital syphilis and wasting, for which he was suitably treated and seen at intervals until Oct. 27th, when definite symptoms of pertussis declared themselves. There were cough and vomiting, and the patient again commenced to waste. There were some bronchitic sounds in the chest, and the mother said that the "cough nearly choked the child." One sixteenth of a grain of cocaine hydrochlorate was given three times a day. On Nov. 3rd the patient's condition had greatly improved. There were still coughs and whoops, but the sickness had ceased. The cocaine was increased to one-fourteenth of a grain. On Nov. 10th there was continued improvement; the cough was now only slight and occurred much less frequently. The cocaine was increased to one-twelfth of a grain. The improvement in the child's condition was so well maintained that the mother omitted to attend in a week's time, and the date of her next visit was Nov. 24th, when the cough was completely cured, so the child was ordered tonics, which he took for eight weeks and then ceased to attend. (This, like the preceding case, is one in which whooping arose during treatment for another affection.)

It will be observed that in most cases the children were kept under observation long after the symptoms had ceased. We hope these results may stimulate other observers to give cocaine a lengthened trial in similar cases, so that our conclusions may be either confirmed or refuted, and we feel we may say with Sir Thomas Browne: "This is the tenour of my belief, wherein, though there be many things singular and to the humour of my irregular self, yet if they square not with maturer judgments I disclaim them, and do no further favour them than the learned and best judgments shall authorise them."

A HEAVY BRAIN.

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IT is now fairly well recognised that "superiority of size of brain cannot be regarded as a constant accompaniment of superiority of intellect."¹ Nevertheless, it is still a popular impression that there is a connexion of some sort between the size of the brain and the intellectual capacity of its possessor. The following case is of interest both on account of its being, so far as I can find, the heaviest recorded in Scotland, and because it may throw some light on the above question.

¹ Wagner: Vorstudien zu einer wissenschaftlichen Morphologie und Physiologie des menschlichen Gehirns als Seelenorgan.