

the purpose of rendering the resisting envelope of the spore permeable and readily penetrated by the staining solution. The desired result was found to be actually brought about by the alkali employed, and the resulting preparations showed the spores sharply stained, whilst the cell body was uninjured and might readily be tinged with a counter stain if necessary.

Briefly, then, the process consists in preparing a film in the usual manner and fixing it by heat or by other means. Solution of sodium hydrate is then flowed over the film and allowed to act for some seconds, after which the still wet (and alkaline) film is flooded with carbol-fuchsin solution and heated as usual. This heating, which adds considerably to the intensity of the staining, need not be at all prolonged, a few minutes being amply sufficient. It will be found that a precipitate is produced by the soda solution in the carbol-fuchsin stain, but this may be neglected, as it will to some extent disappear as the temperature rises, and in any case does not appear to damage the preparation.

The ordinary 25 per cent. hydrochloric acid is next flowed over the film and allowed to act for a second or two, then washed thoroughly off and the film flooded with 1 per cent. aqueous solution of methylene blue, which may be slightly heated if an intense stain is required. Thereafter nothing remains but to wash, dry and mount as usual.

This method has given good results in my hands and has been used in some research work carried out in the University of Bristol by Mr. A. E. Lechmere, who tells me that he has found it of service.

The exact strength of the soda solution which gives the best and most constant results is being ascertained, but it has been found possible to vary the strength within wide limits without spoiling the result.

Bristol.

A CASE OF CEPHALIC TETANUS (KOPF-TETANUS OF ROSE).

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THE patient, a boy 5 years old, was admitted to the Royal Berkshire Hospital under the care of Mr. W. J. Foster, assistant surgeon to the hospital, on Sept. 22nd, 1909, as the result of an injury occasioned by a fall from a wagon. A large flap of the scalp had been torn from the skull, exposing a portion of bare bone about one square inch in extent, situated over the parietal region of the right side in the neighbourhood of the parietal eminence. The whole area was covered with mud, which was ingrained into the tissues. Apart from this there was no evidence, on admission, of any cerebral disturbances or fractured bone. On the 29th it was noted that the child's condition was satisfactory and the wound was granulating up. On the following day, however (the 30th), slight facial paralysis became evident on the right side. Four days later this paresis was more marked, and slight head retraction with rigidity of the arms and legs was noticed. The child lay quietly in bed but resisted movement of his limbs. The possibility of septic infection of the meninges or a cerebral abscess was discussed, and it was decided to trephine.

The operation was performed by Mr. Foster, and an area of bone was removed at a point three-quarters of an inch above and behind the right external auditory meatus. The meninges bulged and pulsation was slight. No exudation was found on incising the dura mater, and a grooved director passed into the cerebral tissue and downwards towards the base of the brain located no pus. On the day following the operation (Oct. 5th) three spasmodic attacks occurred, during which the patient was quite conscious. There was also now some rigidity of the abdominal muscles between these attacks, and tetanus was diagnosed. Ten cubic centimetres of the antitetanic serum were injected, and the child was transferred to the isolation block.

I saw the patient on Oct. 7th. He was quite intelligent and took interest in his new surroundings. There was marked right-sided paralysis of the face. The masseter on both sides was very tense, and the interval between the upper and the lower teeth was just sufficient to admit the handle of an ordinary scalpel. The pupils were equal and

rather dilated. Respiratory movements were embarrassed and "stuffy." The abdominal muscles were very rigid, the recti presenting a board-like resistance; the arms could be freely moved, but movement of the legs, which were kept flexed, was resisted. The knee-jerks could not be satisfactorily obtained, and there was no Babinski's sign. In the evening of the same day I was called up to find a spasmodic attack in full effect. The body was arched (opisthotonos), the abdominal muscles were tightly stretched, the face and lips were blue, and the pupils were widely dilated. The jaws were firmly clenched, and the child was conscious and evidently terrified at his condition. As it was urgently necessary to relax the spasm I administered chloroform. The patient objected to the smell of the anæsthetic, and the spasm for a few seconds increased in intensity, relaxing, however, again after a short interval. The abdominal muscles became flaccid, the colour improved, and the child slept for one hour afterwards. One minim of the injectio morphinæ hypodermica was given subcutaneously. Towards early morning of the next day (Oct. 8th) it was again necessary to induce anæsthesia, and several spasmodic attacks occurred during the day, making the patient very exhausted. He sweated profusely after each one, and the pulse showed a tendency to intermit. Brandy (half a teaspoonful four-hourly) was ordered, and a mixture consisting of potassii bromidi gr. v., chloral hydratis gr. ii., aquam menthæ piperitæ ad 3ii. every four hours was prescribed. Ten cubic centimetres of the serum were injected in the evening. This occasioned a spasm and so was completed under chloroform. On Oct. 9th eight spasms were noted, three severe enough to call for anæsthesia. The effect of the inhalation of amyl nitrite was tried, but without much success. Oxygen was of use in improving the patient's colour, when the intensity of an attack lessened. The antitoxin was again given on this day. The usual procedures of darkening the room and absolute quiet were enforced, but although some of the attacks could be attributed to external stimulus, others occurred without any evident ascertainable cause. On the 10th and 11th antitoxin was repeated, and four spasmodic attacks occurred on either day. It was necessary to give nutrient enemata for some days as it was now difficult to get the child to take nourishment, owing to a tendency of the pharyngeal muscles toward spasm when swallowing.

On Oct. 13th, eight days from the onset of the first spasmodic seizure and 14 from the day on which facial paralysis was first seen, I noted that the severity and frequency of the spasms were less, though at intervals a sudden jerking of the body with clenching of the jaw would occur. The condition of the right side of the face continued about the same. During the next week improvement continued, and there was only one severe spasmodic attack. The occasional clenching of the jaw was still present, but the mouth could be opened wider. The scalp wound was slowly granulating up. No alteration in the facial paresis could be seen. The child was bright and intelligent, and interested in his own improvement. Tinctura strophanthi (1 minim) was added, and chloral was omitted from the mixture, as the pulse tended to be weak. The only complaint was of some pain in the throat on swallowing. After Oct. 22nd no twitchings or spasms occurred. Some rigidity of the jaw muscles continued till Jan. 1st, after which date the mouth could be fully opened. The muscles of the right side of the face did not regain their power, however, for a longer period still, and it was not until the middle of January, a little over three months from the onset of symptoms, that they could be said to be again quite normal. The child has been seen as an out-patient quite recently, and was in excellent health.

The interesting point in the above case is the association of facial paralysis with tetanus. This condition is described by Professor Osler under the name of "cephalic tetanus or Kopf-tetanus of Rose." This, he states, "originates usually from a wound on one side of the head, and is characterised by stiffness of the muscles of the jaw, and paralysis of the facial muscles on the same side as the wound, with difficulty in swallowing." All these points were displayed in the above case. Rose and Carless state that the paralysis is due to an ascending neuritis of the facial nerve which becomes compressed in the aqueduct of Fallopius. The mortality in the acute forms is given as four recoveries out of 45 cases. In the chronic forms eight out of 32 succumbed. The condition is uncommon. Osler states that the use of the antitetanic serum

is disappointing in man. Altogether five injections of 10 cubic centimetres were given in this case. Improvement appeared to follow the fifth injection, but it is difficult to say whether it was due to the beneficial action of the serum or to a natural tendency toward recovery.

The origin of the paralysis of the facial muscles may be suggested as due to other causes apart from tetanus. An isolated facial palsy, due to involvement of the cerebral cortex or internal nucleus, as a result of injury is uncommon. There is usually hemiplegia as well. Damage to the nucleus of the seventh nerve from hæmorrhage is likewise unusual. There were no signs of concussion or affection of other nerves to suggest a fracture of the base of the skull. A very localised patch of meningitis involving the seventh nerve, or hæmorrhage, affecting the face centre only from contre-coup, might be possibilities. There was no evidence of any bruising or damage at the level of the stylo-mastoid foramen to occasion an injury of the nerve there. There were no signs of ear disease, or involvement of the eighth nerve, and paralysis of the face of this duration due to cold is not common, so far as I have noted, in children. After considering all the above points, I think the diagnosis was correct, and that this was undoubtedly an unusual form of infection with the tetanus bacilli—cephalic tetanus.

My thanks are due to Mr. Foster, who very kindly gave me permission to publish the particulars of this case.

Reading.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

MEDICAL SECTION.

The Pancreatic (Cambridge) Reaction.

A MEETING of this section was held on May 24th, Dr. J. MITCHELL BRUCE being in the chair.

Dr. P. J. CAMMIDGE read a paper entitled "A Consideration of the Results of the Pancreatic (Cambridge) Reaction in 1475 Cases." The results of the analysis of over 1500 specimens of urine from 1475 cases were considered, particularly with reference to the so-called pancreatic reaction. They were divided into nine groups, according to the pathological findings and clinical condition:—(1) Acute or subacute pancreatitis, 17; (2) chronic pancreatitis, 859; (3) pancreatic calculi, 4; (4) pancreatic cysts, 4; (5) pancreatic infantilism, 1; (6) cancer of the pancreas, 73; (7) miscellaneous, 467; (8) normal, 50; (9) cases re-examined after operation, 55. The conclusion arrived at was that, while the "pancreatic" reaction in the urine was not pathognomonic, its presence was strongly suggestive of active degenerative changes in the pancreas, and when taken in conjunction with the history, symptoms, and an analysis of the fæces, the findings are of very considerable clinical value. Clinical experience and the results of experiments point to the reaction being due to the destruction of substances with a glyco-nucleo-proteid content, and, since the pancreas contains nearly five times as much pentose as any other organ of the body, calculated as percentage of the dry weight, and it was more loosely combined than the corresponding sugar in other tissues, the reaction was obtained with much greater frequency, and more constantly in lesions involving degenerative changes of that organ than in others. The affections that were likely to give rise to a positive reaction were usually so readily differentiated from pancreatic disease clinically, and by an examination of the fæces, that there was little or no risk of confusion. No reaction was obtained in most affections in which the pancreas was not involved, also in quiescent cirrhosis of the gland, some cases of pancreatic calculi and cysts, and in 67 per cent. of cases of cancer of the pancreas, since in those there was no active degeneration of the gland substance to set free the glyco-nucleo-proteid content of the cells, unless there was also a secondary inflammatory change due to pressure effects or obstruction of the duct. In conclusion, Dr. Cammidge said that the published experience of many observers, both clinical and experimental, tended to confirm those con-

clusions and to show the clinical value of the test and its dependence upon inflammatory and destructive lesions of the pancreas.

Dr. CAMMIDGE also read a paper on the Diagnostic Value of an Analysis of the Fæces in Disease of the Pancreas.—In the ensuing discussion Dr. MITCHELL BRUCE, Dr. H. D. ROLLESTON, and Dr. A. F. HERTZ took part, and Dr. CAMMIDGE replied.

MEDICAL SOCIETY OF LONDON.

Annual Oration and Conversazione.

A MEETING of this society was held on May 23rd, Dr. SAMUEL WEST, the President, being in the chair.

The annual oration was delivered by Mr. W. H. BATTLE, who took as his subject Internal (Intraperitoneal) Injuries. He said that if it were possible to ascertain the exact part of the body struck by the force which caused the injury, then one could make an approximate guess as to the organ ruptured, for it was generally lying beneath, and incision over that area gave direct access to the damaged structure. In all cases it was advisable to follow a certain routine in the examination of the patient. Ascertain when the last meal was taken, when the bladder was emptied, and if the patient was in good health before the accident. Inquire as to the position and extent of pain, and then examine the abdomen carefully for dullness and see if that is fixed or shifting. They will then have found out if there is rigidity of the muscular wall, whether it is general or local, and would know the amount of tenderness, its position and extent. The state of the pulse and also the temperature must be noted. From the practical point of view, they need not consider those cases which were admitted with intense shock from which they never rallied, patients in whom there was evidently a gross lesion but one which it was beyond surgical skill to attempt to remedy. The others could be arranged in fairly typical groups as they presented themselves clinically. In the first of those there were shock, acute abdominal pain with great tenderness over the part struck, and board-like rigidity of the abdominal wall. All those symptoms were present, but they varied somewhat in their intensity; at one time shock was the main thing, at another time it was the pain, and so on. With those there should be present a certain amount of localised dullness on percussion. In the second group there was no evident shock, and perhaps the patient walked to the hospital or went home, congratulating himself that he had had a "narrow escape." He may have vomited soon after the accident which made him feel sick, but there were no marks of injury on the abdominal wall, or they were but slight. He had considerable local pain, and there was rigidity of muscle sometimes confined to the side of the abdomen which was struck. There was tenderness on pressure and perhaps localised dullness, but he felt that he would soon get over it. In a third group the symptoms were rather indefinite; there was a history of abdominal injury, probably of the kind which sometimes produces a rupture of the intestine, but the shock was trifling, there was no vomiting, local pain was slight or absent, there was little tenderness, no rigidity of muscle, whilst percussion gave no change in note. After a variable time there might be a rising pulse with that change in facial aspect which indicated to the experienced eye the presence of grave peritoneal inflammation. It might not be easy to say at what moment that commenced, but "a change had taken place." It might develop after an attack of vomiting. In some instances where there was a definite history of the kick of a horse it would be judicious to operate at once, as recommended by Mr. Bernard Pitts, without waiting for symptoms. Should the escape of intestinal contents be very restricted, possibly in consequence of the smallness of the perforation, the symptoms might be limited to occasional sickness, with uneasiness in the abdomen, gradual distension and general tenderness, caused by a slowly extending inflammation of the peritoneum which might become localised, and result in the formation of an abscess. It must be remembered that a general meteorism might follow an injury to the abdomen without any rupture of the intestine or internal organ. A rigid condition of the abdominal muscles was a very important sign; it practically always meant serious underlying damage. Cases in which it