when the embryo becomes aborted or dies prior to the suppression of the phorozoon or larva, the latter, the chorion, may go on growing indefinitely and may give rise to what pathologists and gynaecologists recognise as a form of cancer, placentoma, or chorion-epithelioma (Marchand). For years now I have recognised—and in homologising this structure with the larval skin of an amphibian Hubrecht has gone a long way in the like direction—that the human chorion represents the main portion or whole of the asexual generation or phorozoon here. In certain cases therefore we here witness the conversion of the chorion—i.e., of the asexual generation, or larva, into a malignant tumour, a carcinoma.

What other proof could be asked for? That this proof of the nature of cancer is not in agreement with accepted views of normal development cannot be set down to the fault of the writer. He holds, and has alone long maintained, such views to be false and unfounded in fact, and, moreover, it has been attempted to indicate the right way. The arguments and conclusions have been neither refuted nor confirmed, but have been ignored. But embryologists are living, and have long been existing therein, in a mental universe, where but a tithe of the facts observed are explicable under their views. Under the conception of development as an antithetic alternation of generations, especially as laid down in "Heredity and the Epicycle of the Germ-cells," all the known facts of development fit in, all are capable of easy and natural explanation. And the elucidation of the etiology of carcinoma follows as a natural corollary to the law of the developmental cycle. The embryologist and the pathologist may ignore and neglect the plain and palpable fact, but on no theory of direct development—a thing only existing for the metazoan animals in the human imagination—can any explanation whatever of the nature of carcinoma be advanced. The cause of this would long ago have been clearly recognised had some embryologist taken the trouble, as the writer has done during 14 years past, to trace out in full the details of the life-cycle of one of the higher metazoa from egg to egg. The idea of direct development, accepted within examination of the evidences, and the erroneous belief in the somatic origin of germ-cells have retarded the advance of knowledge to an extent difficult to estimate.

The nature of the argument employed in the present writing may be summarised as follows. Granted the facts of the origin, migrations, and history of the germ-cells of vertebrates, and assuming the course of the life-cycle to be that previously indicated, by hypothesis cancer is derived from vagrant primary germ-cells, which, instead of forming a more or less complete embryo or embryoma, skip this and give rise to a larva or phorozoon of indefinite unrestricted powers of growth. This is, of course, purely hypothetical, but it becomes the true explanation by the following facts. On the one hand, as my researches have shown, the hypothetical "verirrte Keime" or "lost germs" of pathologists not only exist but they are numerously represented and by things capable of abnormal development, the vagrant primary germ-cells. On the other hand, the carcinomatous nature of such an abnormal growth of a larva or phorozoon has been abundantly demonstrated by Marchand for the instances of the pernicious growth of the chorion, chorion-epithelioma. If such a chorion the representative more or less complete of the asexual generation, when robbed of its embryo or when it fails to form such, can—and this is established—give origin to a malignant carcinomatous tumour the nature of cancer is clear. The vagrant primary germ-cell is the seed, while its fruit, sometimes represented by an embryoma, may on occasion take the form of a carcinoma.

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13. The Determination of Sex in Animal Development (abstract), *ibid.*, vol. xx., 1902. 14. The Germ-cells of Pristiurus, *ibid.*, vol. xx., 1902. 15. The Numerical Law of the Germ-cells, *ibid.*, vol. xxi., 1902. 16. The Germ-cells, Part I., Raja batis, with two plates, Zoologische Jahrbücher, 1902. 17. Heredity and the Epicycle of the Germ-cells, Biologisches Centralblatt, 1902, and Transactions of the Botanical Society of Edinburgh, 1902. 18. The Determination of Sex in Animal Development, with figures, Zoologische Jahrbücher, 1902. 19. The Germ-cells, Part II., Pristiurus melanostomus, with plates (almost ready for the press), *ibid.*, 1902.

A CASE OF DIFFICULT DIAGNOSIS WITH A RARE COMPLICATION.

BY H. J. MACKAY, M.D. EDIN.

THE patient was a married woman, 37 years of age, well-developed and healthy, of a sensitive, highly-strung temperament, and with an excessive dread of pain and illness. No previous illness threw any light on the present attack. The family history was unimportant except as revealing the fact that two brothers and a cousin had died from enteric fever. The illness started, it was supposed, with a chill, but of this there was no proof. On Jan. 16th, 1902, having experienced for a day or two previously an ill-defined sense of malaise, she felt generally ill and was drowsy, shivery, and giddy. Headache was present, as was nausea which went on to vomiting. Cough, sore-throat, and coryza were absent. After three days in this condition she sought advice and was seen for the first time on Jan. 19th the fourth day of actual illness. The symptoms already mentioned were then present and in addition she felt weak, faint, and depressed. She had gastric pain and felt sick. She was constipated. The tongue showed a thin white fur which afterwards became thick, grey, and creamy. The pulse was 96, regular, but weak. The temperature in the early afternoon was 99.6° F. and it rose in the evening to 101°. She had slept badly. Some cases of influenza of the gastro-intestinal type had occurred in the household about this time and it was thought that the patient was suffering from the same complaint. For the next five days the course of illness corresponded well with the diagnosis that had been made. The morning and evening temperatures from the fourth day to the tenth day, and a four-hour chart from the tenth day to the sixteenth day, are appended. On Jan. 25th some tenderness in the right iliac region was complained of. It being now the tenth day of illness and the sixth of ascertained pyrexia the possibility of typhoid fever had to be entertained. A search for spots and splenic enlargement revealed nothing. The bowels had acted on this day in response to a gentle aperient and four yellowish stools had been passed, but otherwise constipation had been the rule. All precautions were, however, taken and the patient was placed on enteric diet. An examination for Widal's reaction was clearly desirable at this stage but the patient shrank from the discomfort of the trifling puncture and in her weak state it was not insisted on. On the 27th, the twelfth day of illness, the diagnosis was still in doubt. The onset, neither sudden nor insidious, had given no clear indication either way. The facial expression showed impatience rather than apathy. Hectic flush was absent. The pupils were of normal size. The tongue, though furred, was not parched. Abdominal tenderness was trivial. Constipation was present and meteorism was absent. The heart sounds showed increasing weakness of the heart muscle. The pulse, weak, occasionally irregular, of low tension, but not yet palpably dicrotic, varied from 96 in the morning to 120 in the evening. At this date it was too early to suggest typhoid myocarditis; the heart weakness fitted well with poisoning of the myocardium or of the vagus centre by the toxin of either disease. In other respects the patient on this day expressed herself as feeling much better and begged to be lifted for a few hours out of bed on to her couch. The wish was gratified to her great comfort and apparent benefit. At 7.30 P.M., while resting quietly, she was threatened with a sudden action of the bowels. In endeavouring to accommodate herself to the utensil she, forgetting previous warnings, actively co-operated with the nurse by raising her hips and trunk from the bed while in the dorsal position. She was immediately seized with abdominal pain, followed by pain in both legs from the middle of the thigh downwards. To this succeeded tingling in the legs and feet and soon afterwards numbness and coldness of the extremities. Examination shortly afterwards showed that the

A, Aperiënt. B, Out on couch from 4 to 7.30 P.M. embolic attack at 7.30 P.M.

lower extremities were cold from the toes to the knees. The feet and the legs were pale. Pulsation was present in both femorals at the groin and in Scarpa's triangle, and the impulse was more forcible and larger than usual. Pulsation was absent in the popliteals, in the posterior tibials, and in the dorsales pedis. Anæsthesia to touch, pain, and temperature was present over the area involved. The legs were wrapped in warm alembroth gamgee, and while the gravity of the outlook was recognised it was hoped the arterial obstruction might not prove to be of a permanent nature. On the following day, however, the condition was unchanged, except for the ominous addition of purple mottling over both legs. Inspection of the trunk on this day—the thirteenth day of the illness—revealed four scattered roseolar papules two to three millimetres in diameter on the back and loins. Splenic enlargement could not be made out. The patient was seen in consultation at this time by Dr. J. Michell Clarke who was of opinion that embolism of the abdominal aorta had occurred and who agreed as to the difficulty of making a decided diagnosis as to the nature of the primary disease but considered the balance of evidence to be in favour of enteric fever. On the two following days—the fourteenth and fifteenth days of the illness—the abdominal symptoms became more pronounced. Peritonitic tenderness developed over the cæcum with some general tympanites. No further spots appeared. Frequent vomiting rendered nutrition difficult. On the 31st—the sixteenth day of the illness—at 4 A.M., a sudden drop of temperature from 101° to 97·6° occurred. Coldness of the hands and failure of the pulse at the wrist ensued. The patient sank and died at 11 A.M. A necropsy was not obtained.

Most authorities recognise the difficulty that may arise in endeavouring to distinguish between gastro-intestinal influenza and enteric fever. Watson,¹ Murchison,² Dreschfeld,³ Goodhart,⁴ Leichtenstern,⁵ and Curschmann,⁶ to name a few only, admit and discuss the difficulty. Goodhart affirms the occasional impossibility of distinguishing between the two diseases until some characteristic development occurs. The bacteriological test is, of course, the crucial one. But there are hypersensitive patients to whom even a needle puncture at the base of the nail is objectionable, and Pfeiffer's bacillus is not easily sought for in cases where no respiratory catarrh is present. In the case described diagnosis appeared possible only after the appearance on the thirteenth day of four roseolar spots. The subsequent lighting up of abdominal symptoms and the fatal drop in temperature on the sixteenth day appear to agree with the diagnosis of typhoid fever but do not confirm it. For apart from the fact that Dr. Michell Clarke is of opinion that these may have been due to thrombosis of the mesenteric artery, with subsequent necrosis of the bowel, there are none of the symptoms mentioned that would not fit equally well with the diagnosis of influenza.

Influenzal typhilitis and perityphilitis have been described by Teissier⁷ and Leichtenstern.⁸ Peritonitis "grippalis," so called, was a frequent complication in the pandemic of 1890 (Kelsch and Antony⁹ and Leichtenstern¹⁰). Ulceration of the intestinal mucosa with hæmorrhage was noted by Mosler.¹¹ As regards the roseolar spots, Curschmann,¹² quoted by Leichtenstern, found a roseola present in 1·2 per cent. of the cases of influenza admitted into the Leipsic clinic. Whether this was an initial or a late rash is not stated. The late rashes, however (from the eighth to the fourteenth day), that have been described have been scarlatiniform, urticarial, erythematous, or herpetic. A roseolar, papular exanthem of a few spots only, resembling those of enteric fever and occurring during the second week, has not, so far as I am aware, been described as occurring in influenza.

The deplorable complication recorded above—viz., symmetrical blocking of both femoral arteries, is one of extreme rarity in this country, to judge from the scarcity of references to it in our medical literature other than that of quite recent date. The whole subject of typhoid gangrene, indeed, has

¹ Lectures, vol. ii., Lecture xlix.

² Continued Fevers, p. 593.

³ Allbutt's System, vol. v., article Enteric Fever.

⁴ Ibid., article Influenza.

⁵ Nothnagel: Specielle Pathologie und Therapie, Band iv., Hälfte 1, article Influenza.

⁶ Ibid., Band iii., Theil 1, article Unterleibstypus.

⁷ La Grippe, Paris, 1893.

⁸ Loc. cit.

⁹ La Grippe dans l'Armée Française, Archives de Médecine Militaire, 1890.

¹⁰ Loc. cit.

¹¹ Influenza in Greifswald, Deutsche Medicinische Wochenschrift, 1890.

¹² Leichtenstern, loc. cit.

received but scanty notice in the text-books. Murchison had seen a few cases, Flint and Trousseau had not seen a case; Fagge, Reynolds, and Bartholow make no allusion to it; Welch¹³ gives numerous references to the subject, but they are almost exclusively to continental and American observers.

Of the rarity of the complication there can be no doubt. Curschmann¹⁴ in a large experience at the Leipsic clinic had seen (1898) two cases, occurring in the legs, both being unilateral, and he states that unilateral plugging is almost invariably the rule. Höltscher, quoted by Welch, does not report a single case in 2000 fatal cases of enteric fever at Munich, while Bettke in 1420 cases found only four, limited to the toes. A full discussion of the subject based on 1700 cases of enteric collected by Keen and Westcott of Philadelphia is to be found in a recent work by the former.¹⁵ In 115 cases of typhoid gangrene which figure in this series 61 were of arterial, as distinct from venous, thrombosis, and of these 12 were bilateral, but not necessarily of the extremities. The legs, however, constitute the site of preference. Of 214 cases of gangrene of all varieties following typhus and typhoid fevers the lower extremities were affected in 126 cases. As regards time of occurrence the gangrene was found to occur most frequently during, or just after, the time of greatest cardiac weakness. Of 41 arterial cases 18 occurred in the second or third week. As regards etiology Keen is disposed to attribute the chief share to imperfect emptying of the cavities of the heart and to a sluggish circulation. In this connexion the case described above possesses interest as being closely illustrative of Dr. Keen's views.

It appears likely from the history of the case that a heart thrombus, probably lævo-ventricular, had formed during the period of observed cardiac asthenia and that by the exertion of raising the body the thrombus, or a portion of it, had been swept into the aorta. Impinging on the bifurcation of the aorta the clot was either broken into two portions of approximately equal size, one of which became impacted in each femoral about its middle third, or, being detained as a riding clot at the bifurcation, it became the nidus of a thrombosis which descended into the femorals and blocked them. To my mind the patency of the femorals at the groin for at least three days after the occurrence appears to favour the former supposition, but Dr. Michell Clarke is of opinion that the latter hypothesis is quite as likely to be the correct one. In a case recorded by Hayem, quoted by Keen, two days after observed alteration in the heart, symptoms of gangrene—viz., pain, with sensation of cold—commenced in the legs. Pulsation then ceased, first in the dorsales pedis, then in the popliteals, and finally in the femorals. Amputation subsequently showed, however, that though no pulsation could be detected the femoral was only partially blocked and a feeble circulation was proceeding. Here, then, even partial obstruction by an incomplete clot was accompanied by absence of pulsation at the groin.

If, finally, it be asked what light the femoral thrombosis throws on the question of diagnosis the answer must be—none.

Arterial thrombosis, according to Welch, though rare, is yet more common in influenza than in any other acute infection, and symmetrical gangrene following plugging has been frequently recorded. In discussing the etiology of these catastrophes Leichtenstern observes¹⁶ that embolism as a cause of thrombosis must be taken into account in cases where aortic arterio-sclerosis or endocarditis is present in the course of influenza, but that even where no gross change can be detected clinically or anatomically the embolism may still occur by means of thrombi dislodged from the left side of the heart.

Devizes.

¹³ Allbutt's System, vol. vi., article Thrombosis.

¹⁴ Nothnagel, loc. cit., p. 155.

¹⁵ Complications and Sequels of Typhoid Fever. London: Rebman, 1898.

¹⁶ Loc. cit., p. 154.

CHURCH SANITARY ASSOCIATION.—The Bishop of Stepney, speaking at a recent meeting of the National Health Society, said that the laws of health, no less than the principles of religion, represent the laws of God. The Church Sanitary Association has for 10 years been seeking to raise public opinion throughout the empire to this high level. Local honorary secretaries are wanted in all parts of the empire to help in the extension and deepening of the work of the association. Full information as to methods of working may be obtained at the London office, Church House, Westminster.

LARGE MALIGNANT GROWTH OF THE PYLORUS; POSTERIOR GASTRO-JEJUNOSTOMY; PATIENT IN PERFECT HEALTH 15 MONTHS AFTER OPERATION.

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A MAN, aged 43 years, was sent to me on March 7th, 1901, complaining of great emaciation, loss of strength, and inability to digest or retain anything but the smallest quantity of nourishment. His present illness dated back some two and a half years when he was troubled with vomiting after meals, flatulence, a heavy feeling in the stomach, and much distension. The bowels were always constipated. 18 months before he had been an in-patient at Guy's Hospital. There, he stated, he was dieted and treated with medicines and his stomach was washed out twice daily. Whilst there he improved but on leaving hospital the vomiting returned. At this time he was able to take more food and liquids but the vomiting and discomfort continued and he was palpably getting worse. He lost flesh rapidly, his usual weight being 11 stones 4 pounds. He was now only 8 stones 6 pounds. Whilst in Guy's Hospital he had learned to pass the stomach tube and wash out his own stomach. This he had done ever since three times a day as the only means of obtaining a small measure of comfort. His present condition was evidently one of extreme gravity and urgency. He was so weak that the exertion of walking from the cab to my consulting-room was followed by partial collapse. He was extremely emaciated and cadaverous in appearance and had evidently abandoned all hope of improvement or recovery. His family and personal history were unimportant except for the fact that he was said to have suffered five years before from peritonitis and inflammation of the bowels following what was described as a strain experienced during his arduous work as a blacksmith. Palpation and examination of the abdomen revealed a definite lump or hardness in the right epigastric and hypochondriac region of the size of a small fist. This apparently moved with the liver and was evidently a part of, and attached to, the pylorus. I was not satisfied that I could make out any definite enlargement of the stomach. A consultation was held with Dr. G. Herschell and my opinion was confirmed in every respect except that he was able to make out some considerable enlargement and proptosis of the stomach. We advised immediate operation as the only means of prolonging life.

The patient was admitted into the North-west London Hospital and there, with the aid of my colleague, Mr. J. Jackson Clarke, I performed the posterior gastro-duodenal, or, rather, gastro-jejunal, operation, thus short-circuiting the stomach. The growth was of considerable size, involving the pylorus and the adjacent part of the stomach to the extent of two or three inches. The pylorus with growth was firmly adherent to the liver and gall-bladder and the whole of the structures were matted together by old adhesions. The patient did excellently well and on April 27th he left the hospital much improved in weight, health, and appearance. Five months afterwards he was shown at a meeting of the Metropolitan Counties Branch of the British Medical Association held at the hospital. He weighed 12 stones, looked very fat and well, and expressed himself as quite fit, and said that he had returned to his work as a blacksmith. On May 29th, 1902, just 14 months after leaving the hospital, he reported himself as enjoying the best of health and strength and as quite well. He was doing a full day's work at the forge and was able to eat and to drink most kinds of simple food with ease and comfort. He looked the picture of health, though somewhat thinner than before. The growth could still be felt in the old position, not much, if anything, decreased, but there was no tenderness or pain.

The object of publishing this case is to accentuate the fact, well known to some hospital surgeons and physicians, that the course pursued by malignant growths in the abdominal cavity after operation differs essentially from what one expects to experience in other parts of the body. The