

in excess of the absorption; and we have also seen that all forms of ascites are not dependent upon increased transudation from the peritoneum. In addition it has been shown that the tendency of modern investigation is to assign to the cells of the peritoneum a more active rôle in the production of ascites, while at the same time instances have been brought forward of ascitic production not dependent upon the peritoneal cells but resulting from the activity of certain epithelial cells developed in tumours both of the ovaries and of the Fallopian tubes.

Lastly, we realise that the ascites accompanying tumours of the ovary may result from certain necrotic changes undergone by the tumours, from torsion of their pedicles, or from mechanical irritation of the peritoneum by tumours of extreme hardness. At other times the fluid in the abdomen may be accounted for by concurrent disease, or may require an explanation which is so far not forthcoming, while in certain tumours the ascites is actually the product of the epithelium of these new growths, as, for example, superficial papillomata and cystomata with ruptured walls.

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THE INDIVIDUAL PLASMA.

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MANY writers have maintained, among them Nägeli and O. Hertwig, that the body cells of every organism must contain a special modification of the living substance or protoplasm peculiar to itself. This Nägeli called "Idioplasm." In this special form of protoplasm the characteristic properties of the particular organism must be contained—e.g., the protoplasm of the cat must be different from that of the dog or hare, and so forth, as is indicated by the chemical differences in the fat, bile acids, blood colouring matter of different animals, as well as by their different susceptibility to certain diseases.

In my opinion it is a logical necessity to go further and to assume that in the cells of each individual there must be a special form of protoplasm which I propose to call "individual plasma." This individual characteristic specific form of protoplasm must be already contained in the fertilised ovum cell of each organism. In it must be present all conditions necessary for the complete development of these cells into the individual organism which is ultimately to proceed from it. In other words, there must be present in this individual plasma the predisposing conditions (*Anlagen*) which determine the development of all the inherited characteristics which are to be subsequently observed in the particular individual in question. It follows then that every child of every pair of parents must have a different individual plasma and the individual plasma may therefore be defined as the specific protoplasm of the individual. The behaviour of different individuals towards infections, the occurrence of individual immunity towards many diseases, the specific smell—i.e., the specific exhalation—of every individual which can often be so clearly distinguished, as, for example, by dogs, all speak in favour of these views. The adult organism naturally transmits its own individual plasma to the germ cells produced by it whether ovum or sperm.

The individual plasma is evidently, like all forms of protoplasm, to be regarded as a living organised substance formed of different albumin-like chemical groups. Weismann has stated that each heritable characteristic in a species or individual—e.g., the black spots in apple-mould, the special tufts on the wings of a butterfly, and so on—must correspond with a slight modification in the properties of the ovum or sperm. Weismann supposes that every such characteristic—e.g., every hair and every scale in such a spot—is represented in the germ-cell by a more or less isolated corporate particle which he calls a "*determinant*" (Darwin's "gemmules," de Vries's "pangenes"). I do not, however, believe that these separate determinants (*Anlagen*) require such isolated material particles, but perhaps only special atom-groups, or it may be only special arrangements of atoms or atom-groups, in the molecules of the individual plasma.

According to my view a change in the position of an atom or atom-group in the molecule of the individual plasma would be sufficient to bring about such a change in development that in the fully developed organism some special mark—e.g., a white bundle of hairs in any part of the scalp—would develop, which might afterwards be inherited. The individual determinants are then, in my view, intra-molecular in the individual plasma. According to my hypothesis there must be as many different kinds of protoplasm as there are individuals upon the earth. This might seem impossible. As a matter of fact, Herbert Spencer believed that the ultimate life-units could not be composed of separate molecules, because so many different molecules could not exist, but that they must be differently constituted molecules and consequently the life-units were specifically different.

Modern chemistry shows that a molecule of albumin contains 40 asymmetrical carbon atoms—i.e., carbon atoms with which four different atoms or atom groups are combined. If this be the case then within that molecule about a billion different arrangements in space, so-called stereoisomers, are possible. To these must be added almost as many arrangements for the nitrogen atoms and unsaturated groups. Yet with all these intra-molecular changes the percentage composition—i.e., the empirical molecular formula—would remain the same. It is therefore no chemical impossibility, but on the contrary theoretically

easy, to conceive that for each living individual a peculiar specific individual form of protoplasm should exist.

It is not difficult on this theory to understand how the one or other predisposition (determinant *Anlage*) in an individual may become active, pre-valent, or dominant, if we suppose that in dependence upon the surroundings the cell juice, &c., in one case this, and in another that, specific atom-group enters into reaction. We can imagine that for generations particular atom-groups in the individual plasma may behave as perfectly stable—i.e., remain latent—and then all at once under appropriate conditions again enter into action and thus permit a throwback or reversion to appear in the individual. In the same way we may easily imagine that such atom-groups occasionally split off once and for ever and so special characteristics may be lost completely. Again, sports (*Sprungweise mutationen*) can be easily explained as due to intra-molecular changes in neighbouring atom-groups in the highly complex molecule of the individual plasma. In a similar way I conceive that there may take place in the cell quite of itself a reduction in the heritable characteristics—i.e., of the heritable predisposing conditions (*Anlagen*)—that is, a self-regulation of the heritable mass (*Erbmasse*).

Weismann has stated, as is well known, that in the so-called maturation division of the sexual cells before fertilisation—i.e., in the so-called (*Richtungskörperbildung*) reducing division of the nucleus—a reduction in the number of the heritable units must occur, so that the heritable characteristics do not run on into infinity by the union of the germ and sperm threads. This view is accepted by almost all authors. I hold, however, that such a process is *a priori* improbable. Fertilisation takes place, in my opinion, by no means according to a mere arithmetical summation of two individual plasmas (the male and the female), but is much more apparently, to some extent, a chemical reaction between two forms of plasma. By this reaction in fertilisation a new individual plasma arises, the individual plasma of the new organism (*Keim*). Each individual plasma is thus the product of a genealogical synthesis, for in the constitution of the individual plasma of the ovum the continuance of the female parent is provided for by characteristic atom-groups and similarly in the constitution of the individual plasma of the sperm the continuance of the male parent is provided for.

It is obvious also that the new individual plasma might build up anew of itself the atom-groups which the individual has inherited from distant progenitors without containing in its own body any individual chemical molecules of such progenitor. This genealogical synthesis in the copulation of the sexual cells is evidently the object of fertilisation, for in this way new kinds of individual plasma can come into being which may be useful in the struggle for existence.

Clinical Notes :

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

TWO CASES OF STRANGULATION OF THE TRANSVERSE COLON: ONE IN AN INGUINAL AND THE OTHER IN A FEMORAL HERNIA.

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THOUGH strangulation of the transverse colon in an inguinal or femoral hernia does not present any symptoms by which it can be distinguished, clinically, from strangulation of the colon in any other region, the fact that such contents may be found in a hernia situated at a considerable distance from the normal situation of the transverse colon may be emphasised by placing on record two cases which have occurred in my hospital practice within the last few months.

The first case was that of a well-built muscular man, 34 years of age. This patient for some years had suffered from a hernia which he could always reduce till about ten hours before he was admitted to hospital when it suddenly became larger, painful, and irreducible. Soon afterwards symptoms

of strangulation appeared. When admitted the hernia presented as a smooth, tense, elongated tumour, extending from the left inguinal canal into the scrotum, the skin of which was tightly stretched. The temperature and pulse were only slightly above normal.

When the sac, which was of the congenital variety, was laid open at the operation, the contents were found to consist of practically the whole omentum with about eight inches of colon. There was no definite band producing the strangulation as the canal was wide enough to permit the little finger to be passed along its whole length with the bowel still unreduced and yet there was sufficient interference with the circulation to cause not only marked congestion of the hernial contents but also numerous small hæmorrhages into the wall of the colon. The affected piece of bowel was greatly distended with gas. There were no adhesions between the sac and its contents. After a series of ligatures had been applied the omentum was removed and attempts were then made to reduce the colon through the comparatively wide canal, but these being unsuccessful the structures surrounding the neck of the sac were fairly freely divided. A finger now passed through the wound into the abdomen could easily trace the continuation of the colon from the hernia upwards, one limb of the loop passing almost directly upwards and the other running towards the right side of the abdomen. The bowel was now replaced and the radical operation completed. Recovery was uninterrupted and the patient was dismissed at the end of a month.

The second case occurred in a woman, aged 50 years, who had been the subject of a left femoral hernia for eight months before the onset of acute symptoms. During these months the hernia had varied in size from time to time and though it could never be quite reduced it did not cause any inconvenience till on making a sudden straining effort it increased in size considerably and became irreducible. When seen by me, nine hours later, the symptoms of strangulation were well marked though the bowels had moved once slightly after strangulation had taken place. The pulse and temperature were normal.

When the sac was opened it was found to contain a loop of deeply congested colon, about four inches in length, measured over the loop. Depending from its lower margin and forming the greater part of the hernial contents was a large piece of the omentum, between which and the sac there passed several firm adhesions. To relieve the constriction, which again was not very tight, Gimbernat's ligament was incised. Through this enlarged opening the finger could trace the limbs of the loop as in the former case. The omentum was removed, the colon was returned into the abdomen, and the radical operation was performed. The patient was dismissed from the hospital three weeks later with the wound healed.

In neither of these cases was there a tight constriction at the neck of the sac and yet there was sufficient interference with the circulation to produce not only congestion in both but even hæmorrhages in one of them. Further, though the canal was comparatively wide it was only after it had been enlarged by free incision that reduction was effected.

Herniæ of the large intestine seem to be specially liable to strangulation as symptoms of this condition are frequently found in cases where the neck of the sac can scarcely be regarded as narrow.

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A NOTE ON SOME UNUSUAL CASES OF TRICHOPHYTIC INFECTION.

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I BELIEVE the following cases of ringworm to be worthy of report on account of certain peculiar features which might easily lead to an error of diagnosis and actually did so in one case.

CASE 1.—A man who had spent a large part of his life in China was brought to me in consultation by Dr. Ernest Playfair complaining of eczema of the soles of his feet and roughening of the toe-nails. The affection was first noticed three years ago and eight years after his return from China. He had tried several remedies and had been treated by one