ANALYSIS
OF
A QUANTITY OF FLUID
DRAWN OFF FROM
A HYDROCELE
OF SOME YEARS' STANDING.
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IN September last, Mr. Earle put into my hands a quantity of fluid which he had drawn off from a hydrocele of some years' standing. It was of a reddish-brown colour, of a thick and viscid consistence, with some masses of mucus floating in it, while, at the bottom of the vessel, there was a stratum of what appeared to be a white matter, in the form of pearly scales. When the fluid was agitated, these scales were diffused through it, giving the whole a shining and glossy appearance, while, by rest, they again slowly subsided. I immediately recognized the fluid as resembling some of which we have a notice in the early volumes of

our Transactions, the first by Dr. Marcet*, and the others by myself†; the former obtained from a diseased thyroid gland, the latter from tumours seated in the muscular parts. Dr. Marcet ascertained that these white particles were inflammable and partially soluble in alcohol; my observations, in a great measure, coincided with his, and led me to conclude, that it was a substance intermediate, in its chemical properties, between albumen and wax; I therefore named it albumino-cereous matter. A substance of the same appearance has been since detected by M. Breschet and by Dr. Christison in various morbid fluids, which in its chemical relations was found to resemble cholesterine‡; so that this white scaly matter appears to be occasionally formed in various parts of the body, and in connexion with various structures. But as the above substances, although agreeing in their leading properties, both physical and chemical, differed in some minor points, I thought the matter in question deserving of a more detailed examination.

* Vol. II. pp. 374, 5.

† Vol. IV. p. 83—87.

‡ Turner's Chem. p. 741, 2. I have been favoured by Dr. Turner with a more particular account of the substance examined by Dr. Christison. He informs me that it was "found to possess all the characters of the cholesterine, prepared from biliary concretions; the same lustre and appearance, solubility in hot alcohol, from which the white brilliant scales were deposited on cooling; infusible at 212° ; and not converted into soap by potash."

The basis of the fluid was albuminous, being coagulated by heat, the mineral acids, the bi-chloride of mercury, and alcohol ; it was also miscible with water, and slightly alkaline. The scaly matter was, in the first instance, completely enveloped in the mucous flakes, but, after a few days, a degree of putrefactive decomposition began to take place, some bubbles of gas attached themselves to the masses of mucus, and, as I presume from this cause, the white scales now rose to the surface. They were skimmed off by a card, and when dried by exposure to the atmosphere, formed a white, shining, pearly mass, of a consistence partly unctuous and partly friable. In order to obtain the white matter free from the scum and mucus, the mass was digested for some days in water, the water being frequently changed, and being then dried on bibulous paper, was made the subject of examination.

A portion of the white substance was gradually heated on bibulous paper over the spirit lamp ; distinct fusion could not be perceived, but it shrunk up and left a greasy stain. A portion was held on a leaf of platina, in the flame of the lamp ; a degree of fusion was observed at the edges, it became black, seemed to shrink up, and at length burned with a bright flame.

A portion of the substance was kept for some time in boiling water, it was broken down into fine

particles, but it was not fused or otherwise changed; no part of it was dissolved. A portion was boiled in alcohol; it was broken down into fine particles, which were suspended in the fluid, but, as it appeared, no part of it was dissolved; the alcohol was filtered while hot, but no precipitate occurred on cooling, nor was any precipitate produced by the addition of water. A portion of the alcohol was evaporated, but none of the white matter was left behind; there was obtained only a very small quantity of a brown viscid substance, which was soluble in water, deliquesced on exposure to the atmosphere, had an acrid taste, and which appeared to be the peculiar extractive matter, procured from various animal substances, technically termed osmazome.

The white matter was boiled in sulphuric ether; no precipitation took place on cooling, but a precipitate was produced by the addition of water, and a small quantity of the white matter was left by evaporation. The white matter was heated with potash; it was broken down, but not dissolved or combined with the alkali; on cooling it rose to the surface, and the fluid after filtration, yielded no precipitate, when supersaturated with muriatic acid. Upon the whole, it appeared that the white substance, after being kept for some time in boiling water, boiling alcohol, and boiling potash, when filtered and dried, had not experienced any change; it was still partially unctuous and inflam-

mable, and left a greasy stain when heated on bibulous paper.

The above experiments seem to prove, that the white scaly matter which was formed in the fluid in question, was not precisely similar to any of the proximate principles generally recognized ; it was essentially different from albumen, from adipose matter, from osmazome, from adipocire, and from cholesterine. It may be briefly characterized as a substance disposed to assume the form of thin plates or scales of a white colour and pearly lustre, of a somewhat unctuous consistence, fusible at a high temperature, inflammable, and burning with a bright flame. It is not soluble in water or in alcohol, nor is it capable of being saponified by potash, but is partially soluble in ether.

It would appear that a substance of the same *general* nature with the white scales described above is occasionally found connected with the solids, as well as with the fluids of the body. Besides its existence as the principal constituent in the biliary calculi, it seems to be not unfrequently found in the substance of the liver, in certain diseased states of this viscus*, as well as in tumours and morbid depositions of various kinds†. We may conjecture that this peculiar substance is

* See my experiments in Dr. Bright's Reports, p. 108, et seq.

† Turner's Chem. pp. 742, 3.

immediately derived from the albumen of the blood, and we may further conjecture that it is an extra-vascular production, that it does not exist ready formed in the blood, or any of its component parts, as long as they are under the influence of the circulation. It would appear probable, that when an albuminous secretion is deposited in a cavity, and retained there for a certain length of time, a part of its animal matter is converted into this substance. We have not indeed been able hitherto to form it out of the body by any artificial means, but its nature and the situations in which it is found favour this supposition. The process we may regard as analogous to that by which the muscular fibre is converted into adipocire*, the substances produced bearing a certain relation to each other, and the principal agents in both cases, being certain states of moisture and temperature. As it is always convenient to have a specific name

* An opportunity lately occurred to me of proving decidedly, that adipocire is the immediate production of the muscular fibre, not, as has been supposed by some eminent chemists, a mere residue of the fat, after the destruction of the muscle. I obtained a portion of a human thigh, which, in consequence of long maceration in water, had undergone the change in question, the form of the muscles was preserved, and there was no apparent loss of substance; there was even an indistinct appearance of the fibrous texture. On heating portions of this substance with alcohol and with ether, the whole was dissolved, except the cellular web, which was left exhibiting its ordinary structure, and forming one-twelfth part only of the whole. An observation of nearly a similar kind had been previously made by Dr. Thomson; Ann. Phil. XII. 41.

for every substance which possesses specific properties, I propose to retain the appellation, which I formerly suggested, of albumino-cerous matter, which may at least be employed as a temporary or provisional term, until we have one that is more appropriate.

According to this view of the subject, the substance in question must be regarded, rather as the cause than the consequence of disease; the primary morbid change not being in the fluid, but in the organ into which it is deposited; the substance, after its deposition, giving rise to farther derangement, either by unduly distending the parts, or by mechanically obstructing the vessels. We possess no agent by which the substance, when once deposited, can be removed, nor are we acquainted with any means of preventing its formation. Fortunately, however, in most cases, the situation and the mode of its deposition place it out of the reach of the more active and vital parts of the system, and render it rather an object of physiological curiosity than of medical treatment.

Upper Bedford Place,
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