hydrate may vary within fairly wide limits, not only in different individuals, but in the same individual. The important point to consider is whether, with ordinary diet, the urine always contains a small excess of sugar. If it does so, the case is suspicious, and the ultimate prognosis very doubtful—probably bad. If the sugar is of but temporary occurrence, it can be said that in the majority of cases its presence is of no importance. This temporary increase of sugar is often observed in cases of mental disturbance. The teaching that urines containing sugar are of high specific gravity, while generally true, is not always so. In connexion with this, it is interesting to note that a sample kindly sent me by Dr. A. W. Macintosh, of the Aberdeen Royal Infirmary, contained about 1 per cent. sugar, and yet the specific gravity was, on passing, only 1005, and after cooling, 1010. On the other hand, urines of high specific gravity, such as 1030, suggest at once a suspicion as to the probable presence of sugar. This, of course, is the ordinary textbook statement, but, unfortunately, is often misleading. If, on testing such a urine with Fehling's solution, a modified reaction is obtained, this is often held as confirmatory. As a matter of fact, almost all urines of such high specific gravity as 1030 give some reaction with Fehling's test, but a little consideration would at once show that if the high density were really due to sugar, then the amount necessary to cause this would give a very decided reaction indeed. If glycuronic acid is suspected it can be separated by basic lead acetate. In doubtful cases other tests must be made use of, and in a future publication I intend to give an account of my experience of some of these tests and their results, as well as some methods by which the exact amount of sugar present can be determined. The above will serve to show the nature of Fehling's reaction, and to render intelligible certain reactions of which I have not hitherto seen an explanation. The fact that every urine contains a certain amount of sugar; that the amount normally present varies with different individuals and probably for the same individual, and that the test is at best but a relative one, indicates that the occurrence of an ambiguous reaction in a concentrated urine is generally of no clinical importance, and though largely due to carbohydrates does not usually indicate an abnormal condition. In urines of low specific gravity these ambiguous reactions do generally indicate a slight excess of sugar, but its probable bearing and importance can only be ascertained by watching the case, and by repeated examination of the urine at short intervals. In many cases it will be found to disappear, and give no further trouble; in a few it may show the starting point of a true diabetes mellitus, and in such cases early detection of the true condition is exceedingly important.

In conclusion, I would express my thanks to the various medical men who were kind enough to supply me with samples of urine from time to time during the last few years, and would particularly mention Drs. Souter, Copeland, and Chalmers, residents at the Aberdeen Royal Infirmary.

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LIGATURE OF COMMON CAROTID FOR ARTERIAL DILATATION AND EPILEPSY.*

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The following case of arterial dilatation of the left side of the head, attended by epilepsy and right hemiparesis, relieved by ligature of the left common carotid, is of interest from several points of view:

An unmarried woman, aged 32, was admitted into the Liverpool Royal Infirmary in November, 1905, suffering from a dilated and strongly pulsating condition of the arteries of the

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left side of the head for fifteen years, epilepsy for ten years, some frontal headache, and a dull expression, with slow mental processes. It was presumed that similar vascular derangement existed inside the skull, affecting portions of the brain, and probably accounting for the epilepsy. She was put into a medical ward, under the care of Dr. Abram, for observation and report previous to operation.

It was there ascertained that the dilated vessels were first noticed on the left forehead at the age of 17, and had since spread over that side of the head, with increasing pulsation and headache. The fits began at the age of 22, and had latterly been as many as thirteen in a week. There was no aura, but complete loss of consciousness. She had bitten her tongue, but had not passed urine or faeces during a fit. There was a certain amount of right hemiparesis, but sensation was normal; Babinski's sign and ankle clonus were present in the right foot and triceps-jerk in the right arm. The pupils varied and the fundus oculi was normal. Besides the great general dilatation of blood vessels on the left side of the head, confined to the arteries, and specially affecting the main trunk, there was a thrill felt and a murmur heard. The vessels elsewhere were normal. Four days after admission she had six fits, which appeared to start in the right leg.

In the matter of treatment by operation, as the vascular changes outside the skull involved branches of the external carotid, and as those inside might possibly have concerned the middle meningeal—itsself also a branch of the external carotid—it was suggested by Dr. Abram that ligature of this division of the main trunk might wisely be attempted.

With that view on November 27th, 1905, seventeen days after admission, the left common carotid was exposed and its bifurcation sought in the usual place, but no sign of it found there. The wound had been freely made in the line of the vessel, and was now extended at right angles. It was eventually found that there was an unusually high division of the carotid at the level of the jaw. The external carotid was barely within reach of the finger and could hardly, if at all, have been accessible for ligature. Moreover, pressure on it did not control the strong pulsations outside the head. They were only allayed by compression of the common carotid, which was then tied with prepared catgut. The vessel was much widened, as surmised before operation.

The wound healed simply and quickly by first intention; the patient was immediately relieved of her headache and all other inconvenience, and remained without fits for a time. On April 5th, 1907, she came to hospital, and was then examined by Dr. Abram and Mr. Parker. Her sister said that the fits returned about three months after operation, but much more mildly and seldom. Although during the period after their return she had sometimes been free for as much as three weeks at a time, they had latterly become more frequent, and now numbered about one a week. Her memory, also, and power of speech were failing; but in other respects she was healthy and cheerful, in great contrast with her condition before operation. Examination of the fundus oculi showed again no abnormality, and Babinski's sign was no longer present in the right great toe.

The total disappearance of outside arterial dilatation, the cessation of wild pulsation, mitigation of the right-sided hemiparesis, together with the improvement in her appearance and comfort, are quite conspicuous; but the ten years' epilepsy before operation has permanently affected her mental powers, the further deterioration of which was notably arrested during the three months' total freedom from fits. The vascular changes are not likely to have been confined to those perceived outside the left side of the head; the accompaniment of right hemiparesis, epilepsy and headache having been probably due to some such internal derangement.

ON THE CULTIVATION OF THE MENINGOCOCCUS IN THE PRESENT EPIDEMIC OF CEREBRO-SPINAL MENINGITIS IN BELFAST.

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DURING the present epidemic of cerebro-spinal meningitis in Belfast we have made bacteriological examinations of the fluid obtained by lumbar puncture during life (that is, during the first week of illness) from 31 cases, from 27 of which we obtained the *Diplococcus meningitidis* of Weichselbaum by culture on appropriate media. (See below.) One of the negative cases showed intracellular, Gram-negative cocci in the pus cells; and another negative