the stained cloth is present. If the solution be heated after the reagents have been added, a clear ruby-red colour is quickly given. It is a wise precaution to remove the stained cloth before adding the reagents if the material be dyed a deep reddish hue, lest the dye coming into solution impart a pinkish colour, simulating a positive reaction when blood is absent. Stains composed of pig, ox, and sheep blood were also tested, but no difference in reaction from that of human blood of the same age was revealed.

Conclusions.

From my experiments with the test applied medico-legally, it would appear that it is very delicate and reliable in the detection of haemoglobin. It is apparently a worthy substitute for Day's test, which possesses many fallacies, requires fresh reagents, frequently fails to act when only small quantities of blood are present, and in certain cases gives only a faintly positive reaction, creating doubt in the mind of the examiner whether such should be regarded as positive or negative. With the Kastle-Meyer test there are no "border-line" results. The reaction is well marked, is practically immediate, and time is economized in not having to await soaking of the stains before applying the test, if the watch-glass method is utilized. This becomes an important consideration when there are many productions to be examined. The age of the stain does not apparently affect the delicacy of the test. It must not be forgotten, however, that, having regard to the extreme delicacy of the test, the greatest care must be taken to ensure absolute cleanliness of all vessels used in the medico-legal examination of the stains, in order to exclude rigidly extraneous contamination of the vessels as the result of a previous examination. The apparatus should be boiled, the test tubes and watch-glasses carefully scrubbed with a suitable brush and thereafter wiped with gauze.

The results of the foregoing experiments indicate that the test is one of superior value for the detection medico-legally of haemoglobin. The test should be used in conjunction with the microscopic examination of stains for the detection of the presence of mammalian blood corpuscles, and the precipitin or serological test in determining the source of the blood, provided the examiner has by experience of the latter test acquired sufficient knowledge to determine in an accurate manner the results obtained.

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MALDEVELOPMENT OF OESOPHAGUS.

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A MARRIED woman was under my care recently during her second pregnancy. The first child is a healthy boy, aged 3, and is said to have weighed 9½ lb. at birth. She was not a robust-looking woman, and suffered from a series of bad colds with a little bronchitis throughout the eighth month of pregnancy. Towards the end of December she developed hydramnios, so that it became almost impossible to make out the lie of the child. She complained a great deal of thirst. The urine contained no albumin or sugar.

At term labour started with the sudden rupture of membranes and escape of a large quantity of liquor amnii. On my arrival I found the cord in the vagina; the vertex presented and the cervix admitted only two fingers; labour pains were absent. Under anaesthesia I replaced the cord, which was pulsating rather slowly, put on a tight binder, and raised the foot of the bed. Pains came on a few hours later, and about six hours after rupture of the membranes a male child, weighing only 5½ lb., was born. There was a great deal of mucus in its mouth and it was rather blue, but soon recovered. Delivery of a normal placenta caused no trouble.

The next day I was told that the baby had vomited a lot of mucus and most of the water it had been given to drink.

Although it was rather a lean and undersized infant it cried vigorously, and at first there seemed to be nothing much wrong with it. The reports as to the nature of the vomiting were contradictory, but by the third day it was apparent that the child was not keeping much down. As yet it had passed nothing but meconium. I noticed that, after a drink of water, it seemed to choke and soon regurgitated, rather than vomited, all of the water, mixed with mucus. The abdomen was sunken a little, but was otherwise normal. No peristalsis was noticed and no tumour could be felt. A catheter failed to pass more than about 4½ inches from the mouth down the oesophagus. A diverticulum or an impervious oesophagus was therefore diagnosed, and it was realized that no operation was possible that would benefit such a puny infant.

The next day it was reported that some flatus had been passed, besides a little more meconium. X-ray examination showed that an opaque bougie passed down the oesophagus only as far as the level of the fourth dorsal vertebra, and that a barium feed filled up a little pyriform sac at the same level and did not get into the stomach. In the stomach there appeared to be a bubble of air.

It was therefore concluded that we had that type of malformation of the oesophagus which is clearly described by Professor Arthur Keith in his *Human Embryology and Morphology* (p. 250). He states that it is not uncommon. The paratracheal or upper part of the oesophagus, which is developed together with the trachea from the hinder part of the primitive pharynx, ends blindly, while the retrotracheal or lower part, which arises from the primitive alimentary canal, opens from the trachea and is covered by non-striated muscle. This, of course, explained the presence of air in the stomach and the passage of flatus.

The child lived six and a half days, gradually becoming weaker, passing fair quantities of urine, and crying only at long intervals for a feed. It suckled well and could swallow about two or three drachms easily, and sometimes kept it down nearly an hour. Invariably, however, the feed, mixed with mucus, was regurgitated, and occasionally nearly choked the child.

Post-mortem examination exactly confirmed the diagnosis. The oesophagus ended abruptly with a slight dilatation just above the level of the bifurcation of the trachea, having no connexion with the latter at that point. At the same level, in the middle line posteriorly, a narrow tube with a lumen of about 1 mm. opened from the trachea and gradually widened until it joined the cardiac end of the stomach. The stomach and duodenum were normal. The first six inches of the jejunum was collapsed, while the rest of the intestines were somewhat distended with air and contained a little meconium. The bases of both lungs were oedematous. No further abnormalities were discovered. The emaciation was great.

This malformation may, of course, be "not uncommon" as congenital abnormalities go, but luckily it is rarely met with in practice. It is interesting from several points of view.

First, the baby continued to pass a good deal of urine, although the urine was rather highly coloured. Probably, therefore, the pharynx and oesophagus were able to absorb some fluid, as no rectal salines were given.

Secondly, it is proved that a newborn infant, and a puny one at that, can exist for six and a half days on absolute starvation.

Thirdly, this case may have some bearing on the theories as to the purpose and fate of the liquor amnii. That the liquor amnii consists largely of foetal urine is, of course, no longer believed. It is generally supposed that the liquor is secreted by the amnion. That the foetus does swallow some of it is apparently admitted by all authorities, since lanugo hairs can often be demonstrated in the meconium. In this case there was a large excess of liquor amnii, well over a gallon being discharged, and the question arises whether the excess of liquor might not have been a result of the foetus being unable to swallow and absorb the liquor. It seems quite reasonable to believe that normally the foetus swallows liquor amnii, deriving fluid from it wherewith to dilute the waste products of its metabolism and excrete these by way of the placenta.

Although the mother's general condition was not very good during the last few months of pregnancy she remained fairly well nourished. Her condition, therefore, could have had little to do with the undersized child she produced. The placenta macroscopically presented no abnormalities. Again, excessive intrauterine pressure on the placenta came into play only during the last few weeks of pregnancy, so that that could not have had much to do with the small size and insufficient nourishment of the infant.

It seems likely, therefore, that normally the swallowing of liquor amnii is an essential part of the foetal metabolism—not, indeed, for the solids contained in this fluid, but merely to provide an internal fluid supply to the baby.