

laced the daughter is likewise; *i. e.*, the daughter's lacing comes from the father's side of the house only.

The explanation is simple on the assumption that the lacing is linked with the sex-chromosome, following the scheme of transmission of the sex-chromosome as worked out by Stevens, Wilson and Morgan. While the male of poultry must have two somatic sex-chromosomes the female has only one. Therefore, while all sperm possess a sex-chromosome, only half of the eggs do. In the fertilized egg or zygote that has only one sex-chromosome, this is derived from the father and the zygote becomes a daughter. Hence the daughter "inherits" from the father only.

The hybrids have been bred together and a second generation has been obtained. When the hybrid male is mated to a white-laced hybrid female all the sons are white-laced while half the daughters are white-laced and half red-laced. But when the hybrid male is mated to a red-laced female half of the sons are white-laced and half red-laced while half of the daughters are white-laced and half red-laced as in the reciprocal mating. This result accords with the hypothesis.

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The gastric and pancreatic secretions of the newborn.

By **ALFRED F. HESS.**

[From the Department of Health, New York City.]

I have been able by means of a simple duodenal catheter to obtain for the first time access to the duodenum in the living infant. This has enabled me to investigate the secretion of the upper part of the small intestine. This catheter is, in brief, merely a Nelaton soft rubber catheter No. 14 (F). That I actually do reach the intestine is proved by X ray photographs which I show.

The present report concerns solely newborn infants, which had never obtained any nourishment. I have found some interesting conditions not only as concerns intestinal secretions but also regarding the secretion of the gastric juice. It is noteworthy that there have been no previous investigations in this regard; in fact I have been able to find note of only one test of the gastric secretion of the newborn before it has been given food.

I found that in almost all cases hydrochloric acid is present in the stomach of these newborn infants whether they are examined one half hour or twenty hours after birth. The hydrochloric acid varies from $\frac{1}{2}$ cu. cm. to about 7 cu. cm., and is not in direct proportion to the age of the child. This hydrochloric acid is not stimulated merely by the passage of the tube, for it was obtained within a minute or two after the catheter was introduced. It, therefore, must have another origin. I believe that it is a reflex due to the sucking of the tube. The longer the catheter is kept in the stomach the more juice is obtained; in one hour 14 cu. cm. was obtained; in an hour and 50 minutes 17 cu. cm. This gastric juice has an acidity on an average of about 50. Pepsin and rennet were also present in considerable amount.

These facts show that the infant at birth is prepared to digest food. The large amount of hydrochloric acid may be present in order to digest the high percentage of proteid of the colostrum and it may also serve the purpose of a bactericide, for we have found it to possess high bactericidal power.

The duodenum also was entered by means of the catheter. It can be entered almost as easily and quickly as the stomach in the newborn infant, and the contents aspirated. It was found that in the newborn infant there is very little to be aspirated from the duodenum compared to older infants. In spite of the fact that a large amount of hydrochloric acid is present, this does not seem to stimulate to a proportional degree the flow of the duodenal secretion. However, I have been able by this method to find protease, lipase, and amylase in the duodenum before any food was ingested, and, therefore, can state that the hydrochloric acid is sufficient hormone to stimulate these ferments. Amylase was found with least regularity. Frequently no secretion at all was obtained. In all about 35 tests were undertaken.

It is of special interest to note that bile was not found in these tests. It was expected that this would be quite otherwise, as the meconium is rich in bile, and we know that bile is found in the gall bladder of the fetus by the fourth month. I have not tested for the presence of the bile salts. Many other problems suggest themselves for investigation by this method; with some of these I am at present occupied.