propagation certain families, which were more resistant to certain diseases or which were naturally more prolific or otherwise favored by accidental conditions began numerically to preponderate in later generations. In some cases such families or substrains differed in their tumor rate from the main strain and thus as a result of selection within a strain differences in the tumor rate appeared in the course of continued inbreeding.

Our further investigations confirmed and still further emphasized our previous conclusion that on the whole in the mice with a higher tumor rate the tumors appear at a relatively earlier age than in those strains in which the tumor rate is lower.

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Sulpho-conjugation as a test of hepatic function.

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It was demonstrated by Baumann and others that the toxic carbocyclic radicals split off from the proteins by the growth of intestinal bacteria are conjugated in the liver with sulphuric acid and thus detoxicated. It is also known that a portion of these aryl compounds are detoxicated by conjugation with glycuronic acid.

It is obvious that in testing for the functional capacity of the liver it is essential not only to test the glycogenic, ureogenic, biligenic etc., functions, but also to examine the detoxicating power of the hepatic tissue, in order to ascertain the complete working power of the gland. This is done in the following manner: The patient receives a dose of castor oil to evacuate his bowels. He is then kept on a known diet for two days, during which time the urine is collected, preserved and analyzed for total sulphur and ethereal sulphates. On the third day the patient receives a capsule containing 0.5 gm. thymol. The urine is collected for the next two days, preserved, and again analyzed for total sulphur and for ethereal sulphates.

If all the thymol were absorbed, and if all the thymol were

conjugated with sulphuric acid and none with glycuronic acid, the 0.5 gm. thymol would be excreted as 0.766 gm. of thymol sulphuric acid. This would cause a marked increase in the percentage of ethereal sulphates in the urine. If the detoxicating power of the liver were below par, the thymol would not be conjugated, and the percentage of ethereal sulphates would be only slightly different from what it had been on the first two days—before the thymol administration.

We have found that this detoxicating function of the liver usually runs parallel with the other functional derangements of this organ. In some cases, however, the conjugating power of the gland is markedly reduced, whereas the other functions do not show any disturbances as determined by the methods at our disposal. In still other cases the sulpho-conjugation is entirely normal (as determined by the test here described), while the other tests show a reduction of hepatic functional capacity.

It is possible that each individual cell of the liver tissue takes part in all of the liver functions; it is also possible that different portions of the liver lobule, and different conglomerations of liver lobules may have specific functions. In the former case, it is most likely that a reduction in the ability of the liver to perform one function will be accompanied by a proportional reduction in all the liver functions; in the latter case one or more functions of the liver may be disturbed without affecting the other hepatic functions.

It is essential, in studying hepatic disease to examine all the functions of the liver by the various methods at our disposal, and it is important to examine the detoxicating power of the liver before drawing any conclusions as to the type and extent of hepatic involvement.

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The relation of the intestinal flora to the scurvy of guinea pigs and of infants.

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The question recently has been raised as to whether scurvy in guinea pigs and in human beings is due to constipation and to the putrefactive activity of the bacteria in the intestinal tract. In