

the heterochromosome-complex or "X-element" (Wilson), contributed by the spermatozoön, as an inhibitor to male sex. Regarded in terms of Mendelian concepts, however, an apparent contradiction results in that the *presence* of a determiner (inhibitor to maleness) would here have to be recessive to its *absence*. But in terms of a quantitative interpretation two X-elements in the zygote would prevent, one X-element permit, the development of male sex. Similarly with respect to the phenomenon of sex-limited heredity: the X-element may act as the inhibitor in the female to the male-limited character.

15 (711)

A comparison of chemical with microchemical methods for the determination of varying amounts of glycogen in the liver.

By G. Y. RUSK.

[From the Hearst Laboratory of Pathology and Bacteriology, University of California.]

In collaboration with Dr. F. P. Gay, a study has been made of the glycogen in the livers of 22 rabbits, comparing the chemically determined amount with the histological appearance with a view to finding the value of the latter for comparing small differences in glycogen content. Pflüger's method was employed as far as the conversion of glycogen to glucose and for the quantitative estimation of the latter Bertrand's method was used. For the histological picture, Best's carmine method and Langerhans' modification of Ehrlich's iodine method were employed.

The following table gives the comparative results. The chemical factors are reduced to a common denominator, viz., the amount of copper which is reduced by 100 gm. of liver, and arranged from the highest to lowest amounts. The histological results are placed in a parallel column. While in the main there is fairly close correlation, yet there are two striking discrepancies (No. 23 and No. 24).

This study presents, so far as we can determine, the first attempt to correlate chemical and microchemical findings with a view to utilizing the latter for comparing slight differences of glycogen in the liver. The results do not warrant the assumption

of parallel results between the chemical and microchemical results; hence the histological method is not available for accurate comparative work.

TABLE.

Liver of rabbit number	Chemical determination of glycogen (copper gms. per 100 g. liver).	Liver of rabbit number	Histological amount and distribution of glycogen.
23	13.940	20	Throughout lobule; most marked about central vein and in single layer of cells at periphery.
20	11.072	21	Very marked in inner two-thirds of lobule; trace in outer one-third.
22	5.688	22	Inner half of lobule shows well-marked glycogen; also single layer about periphery.
18	5.014	12	Much the same distribution as No. 21 but less in quantity.
12	4.172	15	Same general distribution but slightly less.
19	3.612	18	Slightly more diffuse in distribution but less intense.
21	3.609	13	Narrow border about central vein shows glycogen well marked.
26	3.098	19	Somewhat less.
47	2.604	26	Rather diffuse and pale in inner third.
15	2.380	48	Somewhat less.
28	2.371	44	In thin strip of 1 to 2 cells about central and sublobular veins is well-marked glycogen.
42	2.317	39	Trace.
43	2.161	25	Trace.
48	2.152	42	Trace.
39	1.895	28	Trace.
38	.978	47	Trace.
41	.942	43	None.
27	.836	41	None.
44	.720	27	None.
24	.560	24	None.
25	.484	23	None.
13	.366	38	None.