that it may be enzyme action, is the experiment in which the plasma or pus heated at 57° for 1 to 2 hours no longer inhibited insulin action. Similar experiments with blood cells were not as convincing as was plasma or pus.

4112

Standardization of Liver Extract.

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When rabbits are injected intranarrowly with *B. welchii* toxins according to the Torrey-Kahn[1] technique, they rapidly become anemic and exhibit many of the characteristic blood changes described in reports of pernicious anemia in man.

There is a rapid decrease in the number of red cells (for 5 rabbits: 31, 32, 38, 38, 41%) and in hemoglobin content (for 5 rabbits: 29, 30, 30, 31, 37%), the lowest values being reached between the fifth and tenth days. Following this, there is a compensatory period of 10 to 15 days during which time the experimental animals show definite increase in the number of red cells and hemoglobin. Beginning with about the thirtieth day after injection of the toxin, the experimental animals show a progressive decrease in the number of red cells and in the hemoglobin content.

If an aqueous solution of liver extract is given by stomach tube to these anemic rabbits while they are at the lowest point in red count and hemoglobin (about the fifteenth day), there is a definite increase in each. This is, however, the period in which the animals are making a strong effort to compensate for the injury to the hematopoietic system and one does not obtain such striking results as when liver extract is given in the stage of progressive decline (35 days, or later).

There can be no doubt as to the beneficial effects of liver extract in this type of experimental anemia. Our results with some 20 animals indicated a rough proportionality between the amount of liver extract given and the increase in the number of red cells and in

[1] A paper by John C. Torrey and Morton C. Kahn, "Progressive Effects of a Single Intra-tibial Injection of *B. welchii* Toxins," read at the joint meeting of the American Association of Pathologists and Bacteriologists and the American Association of Immunology, Washington, D. C., May 1st, 1928. We are greatly indebted to Drs. Torrey and Kahn for many suggestions.

TABLE I.

Comparison of Red Count and Hemoglobin of Anemic Rabbits with and without Liver Extract (expressed in % of original normal values).

Rabbit No.	Red cells	Hemoglobin (Dare)	
	%	%	
108	90	97	Received 68 gm. of liver extract in 42 days
110	87	97	Received 78 gm. of liver extract in 43 days
111	88	98	Received 78 gm. of liver extract in 43 days
113	67	80	Control—no liver
120	73	76	Control—no liver

the hemoglobin content. This at once suggests the use of such experiments as a means of standardizing commercial liver extracts. Further work is in progress.

4113

Secondary Rays from Lipiodol and Bismuth Subnitrate Paste on Staphylococcus aureus and Bacillus coli communis.

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Attempts have been made to inhibit the growth of microorganisms by using secondary rays. These secondary rays are emitted from metals when they are exposed to x-ray. It has been shown that the higher the atomic weight of a metal, the greater is the bactericidal power of the secondary ray.[1, 2, 3] Many substances have been used with varying clinical success by different investigators.[4-10] Holthusen[11] has pointed out that there are many difficulties in the

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