

their investigations: Calgonizing, Chromium, Cotton Yarns, Draft, Slag, and Tar Acids.

During the calendar year 1939, 7 bulletins, 26 research papers and 54 other articles came from the institute. Thirty-two United States patents and 35 foreign patents on fellowship inventions proceeded to issue. The total publications for the 29 years ended December 31, 1939, have been 18 books, 140 bulletins, and 1,734 journal contributions; 755 United States

patents and 811 foreign patents were granted during the same period. Bulletin No. 4 in the institute's bibliographic series, which was published in the fall of 1939, lists the books, bulletins, journal contributions, and United States and foreign patents of the institutional membership, 1911-1938, inclusive.

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SPECIAL ARTICLES

FACTORS AFFECTING THE INSULIN CONTENT OF PANCREAS

IN 1939 Best, Haist and Ridout¹ reported that fasting or feeding fat produced a fall in the insulin content of pancreas of rats and that the subsequent provision of a balanced ration led to the restoration of the insulin level to normal values.

Similar experiments have been carried out in hypophysectomized rats. The insulin content of the pancreases of rats 26-66 days following the removal of the pituitary glands was slightly less than that of intact animals fed *ad libitum*, but did not significantly differ from that of control animals receiving the same caloric intake. The average values obtained were 20.4 units of insulin per group of 10 rats for the hypophysectomized animals and 20.1 units of insulin per group of 10 rats for the "paired-fed" controls.

Feeding fat for one week to hypophysectomized rats led to a fall in the insulin content of pancreas in those which survived. This decrease was slightly greater than that of the control group. Feeding a balanced diet for 7 days to hypophysectomized rats previously fed fat for one week led to the restoration of the insulin content of pancreas to normal values.

These experiments demonstrate that the lowering of the insulin content of pancreas as a result of feeding fat and the restoration to normal as a result of feeding a balanced diet can be obtained in hypophysectomized rats. It is suggested that the production and liberation of insulin, according to the need for it, can be regulated by the pancreas in the absence of the pituitary gland.

We have recently found that partial pancreatectomy in dogs produces no change in the insulin content of the pancreas unless enough pancreatic tissue has been removed to cause diabetes. In this case the insulin content shows a marked decrease.

The daily administration of insulin to fasted rats decreases the insulin content of the pancreas to levels appreciably lower than those secured by fasting or fat feeding alone. These findings, considered in conjunction with histological results, suggest that the β cells

¹C. H. Best, R. E. Haist and J. H. Ridout, *Jour. Physiol.*, 97: 107, 1939.

of the islets of Langerhans are "rested" by fat feeding, fasting and insulin administration.

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TOXICITY OF EXTRACTS OF THE POSTPARTUM RABBIT UTERUS¹

It is unusual that crude saline extracts of a tissue are toxic on administration to animals of the same species. Extracts of the postpartum rabbit uterus, however, taken one to fifteen hours after delivery, were found to be extremely toxic to normal rabbits.

In some unpublished data obtained in this laboratory, it was observed that the uterus of the pregnant rabbit becomes markedly edematous two to three days before delivery, and that this edema slowly recedes during the next six to eight postpartum. Four different, crude, saline extracts were made from such edematous uteri, taken within fifteen hours after delivery. These were prepared so that 1 cc of solution represented one-half gram of tissue. They were then injected into a total of 15 animals. Death resulted within 2 minutes in 12 animals on intravenous injection of 8 cc or less. Of the remaining two animals, one survived a 10 cc injection but succumbed on the following day after administration of an additional 1 cc. The second animal survived a 10 cc injection but also died on the next day after being given an additional 4 cc.

These extracts were also toxic when administered intraperitoneally, although a large dose was required and a longer time elapsed before death occurred. Three animals injected by this route were given three daily doses of 10 cc and each succumbed after receiving a total of 30 cc.

Extracts prepared in the same way from uteri of non-pregnant animals were not toxic. Four such extracts were injected intravenously in daily doses of 10 cc until two animals each received a total of 50 cc, a

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