bility of the membrane. Due to the necessary handling of these membranes, sterile filtrates were obtained in 12 instances only. The results on animal inoculations showed the virus to be present in 2 filtrates but in each of these the filtrate was not sterile and the membrane failed to retain the precipitinogen. Here again, re-inocluation with an unfiltered virus in a hen which had received 10 filtrates with negative results, resulted in typical lesions.

*Summary:* By following the method of Mudd it was found that the virus of *Avian molluscum* was not obtained in filtrates through Berkfeld V, N and W types, Mandler, Seitz and neutral plaster filters. In one instance it was obtained in Chamberland Ll (bis) filtrates. Adult hens were used in each case as test animals. After tryptic digestion the virus was not found in a filtrate from a Berkfeld V filter. This was also true with collodion membranes which would retain a precipitinogen.

## 4226

## Isolation of Insulin in Crystalline Form from Fish Islets (Cod and Pollock) and from Pig's Pancreas.*

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(Introduced by John J. Abel.)

*From the Pharmacological Laboratory, Johns Hopkins University.*

We have succeeded in obtaining insulin in crystalline form with relative ease from the islets of fishes. These crystals are practically identical in physiological activity and in sulphur content with the crystals prepared from beef insulin.

The crystallization of insulin from pig's pancreas is more difficult. About 2 years ago Professor Abel encountered difficulties in crystallizing insulin from several of the Lilly preparations. He subsequently learned that these extracts had been made from the pancreatic tissue of both pigs and beeves. Following this observation extracts made only from the pancreas of beeves were used until the present opportunity of working with extracts made from the islet tissue of fishes[1] and from the pancreas of the pig,[2] pre-

* This investigation was carried out under a grant from the Carnegie Corporation of New York.

[1] The islet material was kindly collected for us by the General Foods Company, Gloucester, Mass.

[2] The material for this work was kindly supplied to us by the Lilly Research Laboratories, Indianapolis, Ind.

sented itself. We have now succeeded in obtaining crystalline insulin from an extract made from pig's pancreas only. The main difficulty appears to us at present to be due to the higher content of fats and lipoids in pig's pancreas. It seems advisable to use beef pancreas exclusively to readily obtain crystalline insulin, unless fish islets can be obtained in considerable amounts.

It might be added that the crystallization of the products referred to above is effected by the methods previously described in papers on insulin from this laboratory and that the methods of defatting pancreatic extracts made from the pig's pancreas are those generally used.

Further detailed studies are now in progress, and at a later date a comprehensive paper will be published.

## 4227

## Effects of Aconitine in the Rat.

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The primary purpose of these experiments was to determine the effects of aconitine on the pulse rate of the rat. In addition the lethal dosage was determined. Commercial crystalline aconitine (Lilly) was used.

In order to reduce bodily movements the rats were given 0.6 cc. of a 15% solution of urethane per hundred gm. of body weight. After the pulse rate had become constant various dosages of aconitine were injected intraperitoneally and the heart rate taken by an ausculatory method.[1] The dosage of aconitine administered in each case is stated in terms of mgm. per 100 gm. of body weight. What was estimated to be a lethal dose of aconitine, 0.032 mgm., was administered to each of 3 rats under urethane. One rat died in 41 minutes, the second in 79 minutes, while the third lived over 120 minutes.

Ten animals were given 0.0064 mgm. Under urethane the average heart rate was 337 beats per minute. Following the administration of the alkaloid the average of more than a hundred determina-

[1] Hoskins, R. G., Lee, M. O., and Durrant, E. P., *Am. J. Physiol.*, 1927, lxxxii, 621.