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Puffer fish oil; a very potent antirachitic; its elaboration by fish deprived of sunlight.

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The most potent source of the antirachitic factor is fish oil, that from the liver of the cod having been found to be most active. In the course of an assay of various foods, etc., it was ascertained that the liver of the puffer fish (*Spheroides maculatus*) not only contains a large quantity of oil, but that this oil has exceptional antirachitic power. The oil was prepared from the liver by means of steam, by a method similar to that which is made use of in extracting oil from the livers of the cod. On testing this puffer fish oil biologically, it was found to be at least 15 times as potent as the most active specimens of cod liver oil. Such was the case in preventive tests in which the Sherman-Pappenheimer diet was fed, as well as in curative tests in which the McCollum diet was employed as a basal ration. No doubt if the stearine had been removed, the activity of the oil would have been proportionately increased.

No investigations have been carried out to ascertain whether the remarkable antirachitic potency of fish oil is due to the diet of the fish or to the intensity of the solar rays to which they are

subjected in nature. In order to study this question, oil was prepared from the livers of puffer fish which had been maintained in an aquarium in a tank for a period of 3 months. The fish were of the same batch which had been previously tested. During this period of captivity no active ultra-violet radiations had access to the fish, as the windows of the building were closed at all times. In spite of the fact that the fish were deprived for 3 months of activating rays, quantitative tests showed that their livers contained oil equal in potency to that which had been prepared shortly after they had been removed from the sea. The diet of these fish consisted largely of herring, which is very rich in antirachitic substance.

That the oil in the livers had been elaborated during the period of observation and was not merely residual oil which had been in the liver previous to captivity, is demonstrated by the fact that the livers became exceptionally rich in oil during the time the fish were deprived of ultra-violet rays. The average amount of oil which could be extracted initially was less than 5 per cent, whereas three months later 55 per cent of oil was extracted.

From this experiment we infer that the antirachitic factor can be elaborated in undiminished potency by fish deprived of sunlight for long periods, and that this characteristic quality of fish liver oil is dependent on the diet of the fish, rather than on the action of ultra-violet radiations.

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Action of ultra violet light upon bacteriophage and filterable viruses.

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The theories concerning the nature of bacteriophage are well known. D'Herelle¹ has maintained from the very beginning that

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¹ d'Herelle, F., *The Bacteriophage*, Fr. Edition, Oct., 1921; Eng. Edition, March, 1922.