from superficial roots. The very thick bark is resistant to fire, and after all the branches have been burned, the surface of the trunk may soon be covered with a mat of small twigs developed from dormant buds. In course of time, some of these twigs will replace the destroyed branches. Because of the favorable growing conditions in the redwood forest, which permit almost uninterrupted growth, the young forest is soon established.

The redwood probably never attains the enormous age of the Sierra big trees, some of which have been estimated to be 3,000 to 4,000 years old and greatly exceed in bulk the trunks of the largest redwoods. Jepson gives 400 to 1,300 years as the age of the mature redwoods, the maximum diameter of which is 16 feet compared with 30 feet in *S. gigantea.*

During the past years there have been active efforts to save what remains of the original forests—of special note are the activities of the ''Save the Redwoods League''—which have resulted in the purchase of large areas of the finest redwoods, especially in northern California. As a result, these unique forests are probably secure for the future.

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Survival Time of Hypertensive Rats Receiving Fish-oil Extracts

The demonstration by A. Grollman (*J. Pharm. exp. Therap.*, 1945, 84, 128) that the blood pressure of animals with experimentally induced hypertension can be reduced by the oral administration of various extracts derived from oxidized oils raises the question as to the beneficence of this form of therapy. It is obviously important to know if the decline in blood pressure is accompanied by any deleterious effects such as are noted following the injection of many noxious agents which are also capable of reducing the blood pressure. We have therefore determined the effect of administering an oxidized crude fish oil on the survival of rats rendered hypertensive by the procedure of Grollman (*Proc. Soc. exp. Biol. Med.*, 1944, 57, 102).

The animals used for the experiment were a piebald strain reared in the laboratory and weighing 150 to 400 grams. A week following the operation on the right kidneys, the animals were divided into two groups, alternately, according to the level of their blood pressure. One group received the normal laboratory diet; the other, the same diet plus the addition of 10 grams of oxidized fish oil daily for the group. Two weeks following the first operation, the left kidneys in both groups were removed. Blood pressures were determined twice a week.

Observations were continued for two months following the nephrectomies. At the end of this period 21 of the control group of 44 animals had died, while only 11 of the 42 rats in the treated group had died. The average blood pressure of the control group was 134; that of the treated group, 129. The observed drop in blood pressure was, thus, apparently insignificant, due to the relatively small amount of activity present in the doses of oil used, as well as to the fact that the average blood pressure of the animals was not greatly elevated above normal.

A more convincing experiment was carried out on a group of 24 mice, the right kidneys of which were constricted and the left extirpated. Half of this group was treated with a more potent extract than was available in the case of the experiment on rats, which probably accounts for the better response observed. Of the 12 control animals, 10 had died at the end of a six-week period of observation, compared to only 2 in the group of 12 treated animals.

The experiments cited suggest that the administration of extracts of oxidized fish oil prolongs the life of animals with chronic hypertension.

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Logic and the Science Curricula

Mr. Churchman (*Phil. Sci.*, Vol. 12, 158) has pointed out that it is possible to enlarge our formal theories of logic so that they may meet with actual observations by including the between-group and within-group variance concept of the statistician in the formal theory. He might also have pointed out that the means of closing this gap between formal logic and the data of observation have been at hand since the concept of constancy of measured results through statistical control was introduced 20 years ago. The slowness with which this concept has penetrated the natural sciences, both biological and physical, is bewildering in this day of rapid progress. Perhaps it is to be expected in the physical sciences, where, due to the relative ease with which their experimental procedures can apparently be controlled, there is some smugness about the need of any statistical control. Mr. Kosolapoff (*Science*, 1946, **103**, 235) has done well to call attention to the fact that this control is not as effective as it appears.

The reason that many scientists reject the role of statistics as essential in the experimental method may be due to their failure to recognize the logical implications stemming from the fact that the value of all research lies in its significance for the future. This would indicate a serious deficiency in our science curricula, especially at the graduate level. Expectation that the student will acquire by spontaneous impregnation from his laboratory courses or from his elders a knowledge of the logic of the so-called scientific method is not realized; it is necessary that he take at least one course in logic and one in the philosophy of science. In the great majority of educational institutions this is not the case, even though the Ph.D. degree may be the reward for three years labor in science.

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