

PUBLIC HEALTH

Good Health for 1936

This is a Prediction as Well as a Toast; No Serious Epidemics Expected; Better Economic Condition Helps

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LAST December I predicted for Science Service that 1935 would enjoy good health conditions. My optimism was fully justified. In the first place, the death rate for eleven months of this year, among a large cross-section of the population—that is, approximately 17 million Industrial policyholders of the Metropolitan Life Insurance Company—was 2.5 per cent. below that which obtained for the same period in 1934; and 1934 was the record health year of all time in this insured group. Furthermore, figures published by the United States Bureau of the Census showed that in 86 large cities the death rate, up to the week ending November 16, was identical with that for the same period of 1934. These are excellent indications that 1935 made one of the best, if not the very best, records for mortality ever registered.

Early in 1935 there was, to be sure, an appreciable increase in sickness from influenza and pneumonia, but no serious epidemic developed, and it now appears that the influenza death rate for the year will be actually below the average for a number of recent years.

Increase of Measles

In the spring there was a marked increase in sickness from measles and scarlet fever, but the death rates from these diseases remained low. In May, an epidemic of poliomyelitis started in North Carolina. It spread northward to all the states bordering the Atlantic Ocean. Nevertheless, the case fatality rate remained unusually low, and the disease caused relatively few deaths. In New York City, for example, there were only 4.2 deaths per 100 cases for 50 weeks of the year. The closest approach to this figure in the past for poliomyelitis was 9.4 deaths per 100 cases in 1923.

For the first time in several years there has been a sharp increase in the incidence of smallpox. In fact, there were about one-half again as many cases reported for the first eleven months of

1935 as during the same period of 1934; and there were one-fifth more cases than in 1933. The increase was confined principally to certain of the Midwestern, Northwestern and Pacific Coast States. It is fortunate that the disease was, by and large, of a mild type, and that there were few deaths. The important thing is that so large an increase in cases of smallpox signifies that the disease is still far from completely controlled in this country. Certain States are still not alive to the menace of smallpox. There we find much organized opposition to vaccination. If this could be overcome in parts of the West and Middlewest, as it has been in New England and the Middle Atlantic States, there would be no smallpox problem in the United States.

Will Probably Continue

During 1936 I expect the continuance of good health conditions as they have prevailed in 1935. It is, however, necessary to safeguard the prediction with one or two reservations. First, we always have to reckon with weather conditions and these cannot be predicted. Again, there is always the possibility of epidemics such as the great pandemic of influenza which swept the whole world during the latter part of 1918 and the early months of 1919, with a severe recrudescence in 1920. Nothing approaching the mortality of those years from influenza and pneumonia has been observed before or since, although there have been minor outbreaks for which a certain degree of periodicity has been observed. The point is that a widespread epidemic of influenza, or of some other disease, would cause many deaths, and one must make allowance for the possibility of its occurrence—remote as that possibility may be.

Aside from this possibility, public health workers regard the danger of wide-spread epidemics of other diseases as almost negligible. All of the old menaces like typhoid, smallpox, measles, scarlet fever, whooping cough and diphtheria have become minor causes of death. The chance is very remote indeed that any of them will ever again assume sufficient importance in the mor-

tality tables seriously to affect the general death rate.

I believe that the tuberculosis death rate will continue its downward course in 1936. I am looking forward, indeed, beyond that year—i.e., to 1940. By that time the tuberculosis death rate in the general population of the United States should drop to 40 per 100,000 population—or even below 40. Fifteen years ago it was 114 per 100,000; by 1934 it had dropped to 56.6, less than one half the 1920 figure. If the same rate of improvement prevailed in the general population during 1935 as has been observed among the millions of Industrial policyholders of the Metropolitan Life Insurance Company, the tuberculosis death rate for the country should be about 52 per 100,000 in 1935. It is easily seen that if anything like the same rate of decline is maintained up to 1940, the tuberculosis mortality rate for that year will fall well below 40 per 100,000.

There is no guarantee, of course, in these predictions. The hardest job in the war against any disease is to maintain the same rate of improvement after the mortality has been reduced to a mere fraction of what it once was. Certainly there is no excuse for a let-down in our efforts to conquer tuberculosis. Despite the gains we have made, it is still the most important cause of death in early adult life. In several states, however, the death rate for this disease has been reduced to very low figures. The lowest in 1934 was that for Iowa (24.9), and 6 other States reduced their rate to 30 per 100,000 or less. What these States have accomplished can be done anywhere if the effort is expended.

Fewer Accidents

As for certain other diseases which play an important part in the mortality picture, the 1935 record has been exceedingly encouraging among Metropolitan policyholders and this probably has applied to the country as a whole. We have observed in this insured group some improvement in the mortality from heart disease, cancer, cerebral hemorrhage, and, more particularly, from chronic nephritis. In addition there have been fewer fatal accidents. These five causes of death, taken together, account for more than one half of the mortality from all causes combined. The automo-



IN A GLASS HOUSE

This apple tree in the orchards at Cornell University has been entirely enclosed for a study of its life processes. The little house at the left is the control unit which draws off carbon dioxide from the experiment chamber and measures the photosynthesis.

bile death rate is 4.8 per cent. lower than 1934. We are earnestly hoping that these improvements will continue in 1936. If these gains do extend into that year, a splendid health record is assured.

The country is surely coming out of the depression. Millions of people are improving their economic condition and this should materially help in the drive for better health and a still lower death rate. Communities will now be better able to support their official and voluntary health agencies—services which have proved their worth during these trying years. Now that the country is returning to normal, it should be more easily possible to restore the various health facilities which the enforced economy of the earlier years curtailed. It was never truer than now that public health is purchasable and that expenditures made to support approved health agencies are a good investment, bringing large returns to communities that take the health obligations of their people seriously.

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PHYSIOLOGY

Ear's Pattern of Nerve Cells Like Player Piano Record

LIKE the paper record for a player piano."

That was the graphic description of the mathematically precise arrangement of nerve cells in the little known basilar membrane of the inner ear given by Dr. Dorothy Wolff, of Washington University Medical School, speaking before the American Association for the Advancement of Science.

This tiny ear membrane, a most important part of the hearing apparatus, is like a wire bent to form a rather angular C but also coiled spirally so that it is in three planes, Dr. Wolff said. The wire is not smooth, but is strung with "beads" which are nerve cells. These beads are grouped in clusters as are grapes on a stem, the "bunches" growing largest at the lower part of the middle turn of the spiral and at the top.

In the ears of lower mammals, the nerve cells are more closely packed into the canal that holds them than they are

in man or monkey. In rats they are so close that they are forced into a hexagonal shape. In man, they are round or oval.

Nerve fibers are not like straight wires running direct from one point to another, according to Dr. Wolff's description. Instead, they interlace in the most complicated fashion.

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PLANT PHYSIOLOGY

Whole Apple Tree Caged In Glass House For Study

AN APPLE tree that lived in a glass house for a whole growing season, for the sake of science, was described at the meeting of the Botanical Society of America by Dr. Arthur J. Heinicke of Cornell University.

The tree was a normal eight-year-old McIntosh apple tree in the Cornell University orchard at Ithaca, N. Y. It was entirely enclosed in a large glass chamber from May 15 to Nov. 1, 1935. All ingoing and outgoing air handled by the ventilating system was sampled and analyzed, to see what the tree was doing with it. The objective of the large-scale experiment was to study how fast the tree made and used plant food materials.

From the time the leaves first opened until the blossoms had spent their days in the sun and shed their petals, the tree was living on its accumulated assets of food, stored from previous seasons. In the plant physiologist's terms, its respiration exceeded its photosynthesis. From that time on, however, there was a gradual increase in apparent photosynthesis; that is, the tree was making and storing food faster than it was using it up in its own life processes. After the first heavy frost, and especially when many of the leaves began to drop in late October, the tree was unable to manufacture food rapidly, and the season's decline set in.

There were wide variations in the tree's food-making rate from day to day, and at different hours within a given day, determined largely by the duration and intensity of the sunlight and by the percentage of carbon dioxide present in the air. Carbon dioxide, though existing as only a fraction of a per cent., is the basic raw material which all green plants take in from the atmosphere to combine with water in the formation of primary food substances.

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Vitamin A is not effective in preventing colds, medical authorities report.