SCIENCE NEWS

Science Service, Washington, D. C.

THE DEATH RATE

A HINT that the shortage of doctors is already affecting the national health picture may be found in the death rate for eighty-eight large cities. For the week ending December 5, the latest on which figures are available, this took a big jump, to 13.5 per 1,000, although there are no signs of epidemics.

The increase was largely due to the mortality from the Boston night club fire, but correcting for this gives a death rate for the large cities of 12.8 per 1,000. The rate for the corresponding week in 1941 was 11.9 per 1,000, and the three-year average for the first week in December is also 11.9 per 1,000.

The death rate of 13.5 per 1,000 for the 88 large cities comes from the Census Bureau, and is based on total number of deaths without regard to cause, age or other factors. The U. S. Public Health Service, however, gets weekly reports from 88 large cities on pneumonia and influenza deaths. These are not all the same cities as covered by the Census Bureau weekly report. Different cities are included in order to get a better geographic picture of the influenza-pneumonia situation. The death rate for influenza and pneumonia based on the reports from these cities is also running higher than the average for the past three years at this season.

Influenza cases reported by state health officers to the U. S. Public Health Service increased somewhat during the week ending December 5, but neither the increase nor the total number of cases is large enough to indicate an epidemic.

With no epidemic and no reports so far of a more virulent type of pneumonia or influenza, the only suggested explanation for the increased death rate is lack of medical care resulting from the shortage of physicians.

ALIEN-OWNED PATENTS

MANY applications have already been received by the Office of the Alien Property Custodian at Washington for licenses to manufacture devices and materials covered by alien-owned patents, under the policy announced by the President. Something over 27,000 such patents are now tabulated; they comprise all categories as classified by the U. S. Patent Office.

Of especial interest to American manufacturers, as judged by the numbers of applications, are patents in the fields of chemistry and metallurgy. The largest single class is organic chemicals, particularly drugs. Dyestuffs are also the objects of numerous inquiries; though probably the interest here is not quite so keen as it was in World War I days, when this country found itself "caught short" by the shutting off of the German aniline products on which we had become too dependent. That situation has been remedied during the past couple of decades.

Metallurgical patents of greatest interest to American industrialists seem to be divided principally between steel and the light metals, aluminum and magnesium. Steel makers want to try out electrical methods of smelting, and they also want to make certain types of alloy steels covered by German patents now vested in the Alien Property Custodian.

There are some applications for licenses in the field of fuels, especially gases, such as the manufacture of acetylene out of natural gas. This of course is of special importance in welding.

Among the mechanical patents available for American use under the new ruling are many on aircraft and their accessories, that were taken out by such noted German firms as Focke-Wulf and Dornier. Very recently issued, for example, is the U. S. patent on the Dornier "umbrella-tailed" dive bomber that has already been seen in action and photographed by British observers. German and Italian experimental rocket-propulsion motors for planes are also covered by patents held in custody here, which are now available for American experimentation if desired.

German physical laboratories have been the scene of great activity in the development of electron microscopes, if patents taken out in this country are a good criterion. These designs can now be taken over under license and their best features adapted to our own use, should they seem suitable for incorporation in American instruments.

THE SUPPLY OF BELLADONNA

FIELDS of belladonna, the drug called deadly nightshade, have been harvested by American farmers for the first time to replace former imports from central Europe. That yields are good and quality satisfactory is reported by the U. S. Department of Agriculture. The average content of active constituents is almost twice the U. S. Pharmacopoeia standard.

Medicines are prepared from belladonna leaves, roots, or the potent white crystals extracted from them. Physicians often prescribe them for such uses as relaxing asthmatic spasms, drying and dilating the bronchial tubes and to relieve pain. Belladonna liniment or plaster has long been used for relief of neuralgic or rheumatic pain and in the form of suppositories for painful hemorrhoids. Eye specialists use it extensively to facilitate examinations because it paralyzes the adjustment mechanism of the eye and dilates the pupil. The name, bella donna, itself means "beautiful lady," referring to its use by the women of old Italy to dilate the eye pupils, giving them a more alluring luster.

Although some of the drug has been grown in this country for many years, the main source has been central Europe. But in 1940 the Bureau of Plant Industry anticipated a shortage and planted the drug for seed. It has since bought seed from other sources. This was distributed last spring to growers and between 400 and 500 acres were harvested this fall in Wisconsin, Pennsylvania, Virginia, Tennessee, Ohio and other states.

The Agricultural Research Administration of the Department of Agriculture estimates that supplies are ade-

quate at present to meet military and civilian needs. Only a small acreage is needed to supply the nation.

DEHYDRATED FOODS

MANY vitamins are found in dehydrated foods if they are properly treated, was reported by Dr. Agnes Fay Morgan, head of the Home Economics Department of the University of California, to the representatives of the dehydration industry at the Western Regional Laboratory, summing up results on vitamin retention brought out by the past several years of research at the university.

Fruits dehydrated under the new factory processes retain more vitamins than those preserved by sun drying. While prunes, peaches and apricots are good sources of vitamin C, only those treated with sulfur dioxide retain this vitamin. On the other hand, the sulfur treatment destroys two thirds of the vitamin B_1, as the thiamin molecule is split by sulfur dioxide. Since peaches and apricots are not rich in B_1, sulfuring is probably desirable in their dehydration. Vitamin A is stable and is retained in both dehydrated and sun-dried fruits, but riboflavin is quickly destroyed by light so that sun-dried fruit has lost most of its vitamin B_2, while dehydrated fruit shielded from light, retains it.

In the past two or three years, Dr. Morgan and her staff have been interested in the retention of vitamins in dehydrated vegetables. Several of the dehydrated vegetables have better vitamin retention than the same ones canned. Spinach, for instance, lost 75 per cent. of its B_1 when canned, as compared to the fresh spinach, but in dehydrated spinach the B_1 was preserved almost 100 per cent.; canned peas lost 73 per cent. of B_1 as compared to a loss of 10 to 20 per cent. in the dehydrated. Concentrated tomato juice, tomato paste, and dehydrated broccoli are good sources of vitamin C.

In summing up the value of the dehydrated vegetables, Dr. Morgan stated that the vitamin C loss was from 20 per cent. for broccoli to 80 per cent. for string beans. For B_1, the loss in several vegetables ran from 14 per cent. to 33 per cent.; B_2, 25 per cent. to 50 per cent., with an exception in dehydrated carrots which had a loss of only 12 per cent. In all the vegetables tested the carotene destruction was small, while $\frac{1}{3}$ to $\frac{1}{2}$ of the nicotinic acid was lost, probably due to leaching.

Studies on meat showed that there was less loss of vitamins B_1, B_2, and nicotinic acid in dehydrated than in canned meat. The cooked dehydrated meat compared favorably with the cooked fresh meat, since there is always some loss in preparation for the table.

Vitamin assays up to three to four years ago were solely a matter of feeding animals. These take at least two months and are only reproducible within 15 to 20 per cent. Chemists have attempted to shorten the process by the use of chemical and micro-biological methods. "There is no consistency between the various tests," Dr. Morgan stated. "In each case it is necessary to check the short methods against tests on rats."

ITEMS

A REQUEST from the USSR was received by the U. S. Department of Agriculture as early as last April, for seed "to sow land plowed by German tanks." Tons of seed are now on the way, to grow up as next year's crops. Seed shipments are the most effective kind of lend-lease aid that it is possible to send. Mere ounces of cargo weight grow into hundreds of pounds of food. Moreover, seed symbolizes the will and ability of peoples in the war-pressed lands to help themselves. In becoming a seed-growing and seed-exporting nation, the United States is reversing the pre-war set-up, when we were heavy importers of seed from Europe, especially from Denmark, the Netherlands and France.

THE lowest pneumonia and influenza death rate on record among its industrial life insurance policy holders was achieved in the last annual cycle, September, 1941, to August, 1942, the Metropolitan Life Insurance Company announces. During that period the average pneumonia-influenza death rate was equivalent to 32 deaths per 100,000 persons. This is 21 per cent. less than the previous low record made the year before and 63 per cent. less than the rate five years before. Most striking is the change in the picture during the winter months when pneumonia and influenza deaths reach their maximum. During the winter of 1936–1937, considered an average winter at that time, pneumonia and influenza deaths reached an extremely sharp peak in February with a rate of more than 175 deaths per 100,000 persons on an annual basis. At the end of February, 1942, the peak was just over 50 deaths per 100,000 persons on the annual basis. The death rate for the winter months was 70 per cent. less than in the winter of 1936–1937, and the seasonal mortality curve has flattened out so as to be "almost beyond recognition."

MOTHERS to-day are younger, but the burden of maintaining our birth rate near its present level under war conditions will fall on the women over 30 years of age, according to statisticians of the Metropolitan Life Insurance Company. In 1920, they report, women under 20 were contributing 8.6 per cent. of the total births for the year but by 1940 women of this age group contributed 11 per cent. Women of 20 to 24 years also contributed an increasing percentage of children to the nation, from 28.1 per cent. in 1920 to 31.3 per cent. in 1940. During the same two decades, women of ages 30 to 34 contributed fewer children to the nation, the percentages dropping from 19 to 17.7 per cent. The percentage of younger women in the population, however, has decreased and that of older women has increased during the same two decades. This trend will probably increase. At the same time the war has interrupted family life most for the younger women who will consequently contribute fewer children. This places the burden of maintaining the birth rate on the women of thirty years or over, which means the average size of existing families must be increased. The unfavorable effect of the war on the birth rate of the immediate future may be moderated, because most married women of 30 years or more already have children so that their husbands are for the most part still out of the classes called for military service. In addition, many thousands of these families are now in better economic position than ever to rear more children.