SCIENCE NEWS

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THE DEATH RATE

THE death rate is rising and the pneumonia situation is particularly serious, it appears from the *Statistical Bulletin* of the Metropolitan Life Insurance Company.

A 5.5 per cent. increase in mortality among the company's industrial policy holders was recorded for the first quarter of this year as compared with last year's figure. For the country as a whole, an even greater rise in mortality has probably occurred. In the 90 major cities of the United States there were 9.2 per cent. more deaths reported for the first 13 weeks of 1943 than for the corresponding weeks of 1942. In New York City the death rate so far this year is about 8.5 per cent. higher than for the same period last year.

The war can not be blamed directly for the increase in mortality, it appears. Among the company's industrial policy holders, the rate for deaths from enemy action for the first quarter of 1943 was more than twice that for the first quarter of 1942, but this, it is said, "does not account for the unfavorable turn in mortality for 1943. Most of the rise in rate this year has resulted from other causes."

Pneumonia seems to be the chief factor here. The death rate for the first quarter of 1943 is low compared with rates prior to 1941, but is 21 per cent. higher than last year's rate for the first quarter. Virus pneumonia, also called "atypical pneumonia of unknown etiology," has made up a large proportion of pneumonia cases during the past season, and this type of pneumonia is not affected by sulfa drug treatment.

Seeking to allay the fear that the rise in the pneumonia death rate presages another world-wide flu-pneumonia epidemic, the Metropolitan Life Insurance Company health authorities point out that virus pneumonia is different from both influenza and the pneumonia which accompanied influenza in 1918.

"Nevertheless, the situation needs careful watching. The war effort would be seriously hampered by an increase in pneumonia mortality or even by a continuation of the recent level."

Meningitis mortality also increased sharply in 1943. Disquieting also is the increase in deaths from cancer, diabetes, cerebral hemorrhage, diseases of the coronary arteries and angina pectoris and the chronic heart diseases. With the exception of diabetes, the 1943 death rates for all of these are the highest on record.

Fatal accidents in the home have increased, in spite of the fact that there is very little unemployment and less time is spent in the home now than before the war.

Only cheerful spots on the current health picture are the marked decline in maternal mortality, especially noteworthy in view of the increased birthrate, and the continued decline in the tuberculosis death rate which was 6.8 per cent. less in the first quarter of 1943 than in the same period last year.

INTERIOR HEATING IN METAL WORK

HIGH-FREQUENCY electric field heating in the interior of materials is now used in case-hardening metal machine parts, in the manufacture of plywood and in many other industrial operations. Developed only within the past few years, it is a process similar to the one used by physicians in electro-therapy, in which heat is applied internally to parts of the body. "Penetrating heat" it has sometimes been called by them, to distinguish it from surface heat.

The manufacturing of plywood illustrates how the high-frequency electric field is used. A metal sheet, connected to one terminal of a high-frequency transformer, is placed in the center of a stack of glue-coated veneer sheets two or more feet high. The other terminal is connected to the upper and lower plates of the plywood press itself. Pressure is applied, and at the same time electric energy sent from the middle metal sheet to the plates of the press. The heat sets the glue. Two heavy slabs of plywood may be formed, or many separated plywood boards may result, depending upon the glue application.

In this interior heating, a high-frequency electronic oscillatory system is generally used. It is basically similar to a radio transmitter but usually more powerful. The oscillator is operated on direct current, and gives an alternating current of frequencies from a few cycles to many millions per second, depending upon the setup. In passing from one terminal to the other, much of the electric energy is turned into heat. Case-hardening of small machine parts such as gears and bearings is now being done by a similar electric heating process. In case-hardening only the surface wearing area is hardened. Tinplate, applied to other metals by the electrolytic method, requires polishing. This also is now done by a similar high-frequency electric field process.

Other uses include the heat treatment of tobacco without removing it from the hogshead, and the killing of insects in grains and cereals. Other industrial uses are made of the process, and many additional ones are promised for the near future.

THE 1943 PRODUCTION OF BEET SUGAR

SUGAR-MAKING, which ought to be the sweetest job in the world, is always running into something sour. This year it's the unwillingness of the beet-raising farmers to put in more than two-thirds of the million acres they had expected to plant. Since about a third of our national sugar supply comes from domestically raised beets, this means a reduction of roughly 10 per cent. in the sugar we'll have next year—unless the shipping situation improves to the point where more cane sugar can be brought in from the tropics.

Labor shortage is primarily to blame for the situation. There is a great deal of "stoop labor" involved in raising beets, and since high-wage war-industry plants have

sprung up in practically every beet-raising area in the country, beet-field hands simply aren't to be hired.

Officials of the Department of Agriculture are less worried than the sugar manufacturers. They point out that the acres that will not raise beets this year will raise other crops, all of them needed by the armed forces and by workers on the home front. Indicated replacement crops are mainly potatoes, beans and alfalfa—the latter, of course, to become meat and milk, *via* the farmyard feed rack.

This labor shortage trouble crops up just as the beet-sugar industry had been helped out of another bad fix—a threatened shortage of seed. Thanks to the plant breeders of the Department of Agriculture and state experiment stations, we have become independent of European beet-seed growers, as we are becoming independnt of foreign garden-seed growers.

The story of American sugar-beet seed development is told by Dr. G. H. Coons, of the U. S. Department of Agriculture. Prior to the first World War, although we had something over two thirds of a million acres in sugar-beet production, we relied entirely on European growers for seed. They had the experience, also cheaper labor, so that seemed the best thing to do. There had to be long and anxious negotiations, to get even a trickle of seed through from blockaded Germany. We even had to put up a bond to make a return shipment of the empty gunny-sacks!

At the same time, American sugar-beet fields were under a destructive dual attack here at home. In the West, beets were literally curling up and quitting, under the scourge of a virus disease called curly-top, which crippled their leaves and made them unable to manufacture sugar in the normal way. In the East, there was an almost equally destructive disease called leaf-spot, caused by a fungus.

To meet these and other threats to the Great American Sugar-Bowl, investigators of the Department of Agriculture and the agricultural experiment stations of sugar-beet producing states went to work to develop disease-resistant strains, and to introduce them into cultivation. They succeeded in producing the kinds of new sugar beets they were seeking. No one strain is good for the whole country, for the curly-top-resistant kind good for Western conditions is not immune to the leaf-spot prevalent in the East. Conversely, the leaf-spot-resistant variety can not stand up to curly-top in the West. There are also special strains fitted for local conditions of soil and climate, that are not good outside their particular areas.

In the West home production of seed was undertaken during the 1930's, so that the region as a whole was little disturbed by the cutting off of beet seed imports by the second World War. Growers in the East had let the job of seed production slip back into the hands of European growers, until the total beet seed imports had climbed to around 15,000,000 pounds in 1937, as compared with 13,000,000 pounds grown in the United States—principally in and for the Western fields.

Imports slumped heavily during the first part of the war, though substantial quantities still came in until 1941, since when practically no seed has been received from abroad. Domestically produced seed, however, after a slump from well over 13,000,000 pounds in 1938 and 1939 to not much more than half that in 1940, has now gone up to the hitherto unapproached peak of 18,000,000 pounds.—FRANK THONE.

ITEMS

THE comet discovered this spring by Miss L. Oterma, of Finland, is increasing in brightness. When first seen on April 8 at the Turku Observatory, the comet was recorded to be of the fifteenth magnitude. Recent observations agree that it is now of the ninth magnitude. The new data were relayed to Harvard College Observatory. Early reports showed the comet in the constellation of Virgo, and moving slowly westward. Dr. Otto Struve, director of the Yerkes Observatory, Williams Bay, Wis., reports that on April 30, at 10: 42 P.M., the comet's right ascension was 12 hours, 9 minutes, 58 seconds, and its declination plus 2 degrees, 25 minutes, 10 seconds. On May 2 at 10: 45 P.M., the comet's right ascension was 12 hours, 8 minutes, and 13 seconds, while its declination was plus 2 degrees, 28 minutes, 57 seconds.

THE discovery of new ore deposits of the rare metal tantalum in New Mexico, which promise high productivity, is welcome news to war manufacturers who use this metal and its compounds. Tantalum's first commercial use was in electric lamps, then it jumped into prominence by its use in radio tubes. Because of its power to resist corrosion, it is used in surgical and dental instruments, electrical contacts, pump and valve parts and temperature control apparatus. Carbides of tantalum are used in wire-drawing dies, steel-cutting tools, wear-resistant parts of machines, and in dies for cold-nosing artillery shells. Although tantalum ore has been mined in Wyoming, South Dakota and New Mexico, the principal source has been abroad. The new deposit, if it meets expectations, may supply the principal needs.

A METHOD for storing fragments of nerves for future use as grafts, somewhat as blood is now stored for future use, was announced by Dr. Paul Weiss, of Chicago, at the meeting of the American Neurological Association. The nerve fragments can be stored indefinitely without losing their effectiveness as grafts. They are frozen at 150 degrees below zero Centigrade, dehydrated in a high vacuum, sealed in and stored in the dry condition. They are rehydrated before use. "This treatment," Dr. Weiss said, "leaves the histological, biophysical and biochemical properties of the nerve essentially unharmed. When grafted, such nerves are readily and fully pervaded by regenerating nerve fibers, much as if they were living." Sleeves of fresh or frozen-dried arteries are another aid to the neurosurgeon. "With their aid, nerve stumps can be spliced without being sewed together and "practically ideal nerve regeneration has been obtained," Dr. Weiss reported.