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WORLD NITRATE SUPPLIES TO SELL AT LOWER PRICES

By Dr. F. G. Cottrell,
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Nitrates manufactured out of the air, which a decade ago were an intensely national concern of importance chiefly in the destructive business of war, are today an international concern of basic importance to agriculture, discussed by nations only a few years ago at war with each other. America, Belgium, France, Germany, Great Britain, Holland, Italy, Java, Norway and Sweden, at once the chief producers andlargest consumers of artificial nitrates, were represented at an international meeting by scientists and economists whose hope and ambition is mutual cooperation in the capture of more andmore of the vast, scarcely tapped mines of nitrogen in the air all about us, to be chemically fixed and eventually turned into food for the increasing millions of the earth's population.

Through improved methods in nitrogen fixation and a stabilization of marketing, continuing decreases in fertilizer costs to farmers are in plain prospect, it was declared.

Of perhaps even greater importance are the contributions of botanists interested in agriculture. Not contented with merely renewing the natural nitrate supplies in the soil, the agricultural scientists are undertaking programs of "forced feeding" of plants, comparable with the fattening-up processes used in preparing animals for market. Plant physiologists have recently learned that properly calculated overdoses of nitrates will induce plants to produce fruits or heads of grain earlier and in larger quantity than normal. Geneticists are at work in an endeavor to breed new strains that can take up even greater amounts of nitrates than the ordinary breeds of plants now under cultivation are able to use. Professors Erwin Baur and Herman Warmbold of Berlin, and the great Swedish plant breeder Hermann Nilsson-Ehle, declared that a program of several years' experiments could make such "nitrogen-greedy" plant varieties a distinct possibility; and Dr. Karl Bosch of Berlin and Ferdinand Speyer of London stated that the nitrogen industry is planning to spend millions on such research.

Agricultural education in the most advantageous methods of nitrate use has also come in for its share of attention. Especial stress was laid on the desirability of improved methods of distribution of concentrated nitrate fertilizers in regions where transportation facilities are poor, notably in the tropics and in India and China. Improvements in agricultural conditions made possible by the use of cheaper concentrates in regions now periodically threatened with famine are expected to go far to avert these calamities, which in the past have not only been a scourge to the afflicted populations but a cause of social and economic disturbances throughout the world.

FUNDAMENTAL DATA OF SCIENCE GATHERED IN NEW VOLUMES

The fundamental facts and figures upon which physical science is built have been brought together and issued for the use of the world in International Critical Tables, the first volume of which has just been issued by the National Research Council and the National Academy of Sciences.

Millions of experiments extending over years of time in the various laboratories of the world were necessary to produce the hundreds of pages of explanations and statistics that will be included in the five volumes of the completed work which are being compiled by the editors with the aidof specialists and experts here and abroad.

The first volume just off the press contains among other valuable information the accumulated data on no less than 9534 different chemical compounds, the new and old facts on radioactivity, and transmutation, astronomical and geodetic data and a comprehensive discussion of the most recent developments inthe field of atomic structure, favorite speculative playground of physicists of the present moment.

Along with the international metric system and a listing of the seventy-four countries in which it is now compulsory are the local systems of weights and measures in use in twenty-five still conservative countries. The measures used by the Pharoahs of Egypt and the ancient Chaldeans may likewise be found side by side with their modern equivalent in feet and meters, gallons and liters.

Thousands of dollars and many hours of time will be saved the research workers of the present and the future by the use of this collection of necessary and essential data on a wide variety of allied subjects in one set of volumes.

GOLD CHANGED TO MERCURY BY GERMAN PHYSICIST

A reversal of the dream of the ancient alchemists, the transmutation of gold into a less valuable metal, mercury, is claimed by Dr. A. Gaschler, an associate of Prof. A. Miethe, who in 1924 announced that he had succeeded in turning mercury into gold.

Dr. Gaschler's process consisted in sealing a gold electrode into a vacuum tube and bombarding it with a stream of positive hydrogen atoms, shot through the tube at high velocity. The resulting color display Dr. Gaschler watched through a spectroscope. At first thehonly light given off was of the color characteristic of glowing hydrogen, but at the end of thirty hours of bombardment the spectrum lines that