

Fluorine Unlocks Chemical Secrets

Chemistry

Fluorine, the gaseous chemical element heretofore isolated in only small quantities, has been produced electrolytically in thousand cubic feet quantities by Profs. Wilder D. Bancroft and Newton C. Jones of Cornell.

As a result of a new method of analyzing complex organic compounds will be developed. Determining just how some chemicals are put together has been difficult because dissociation with electric current, a fruitful method for some compounds, can not be used on solutions that do not react to electricity. Fluorine, however, reacts with almost any organic substance, whether electrolytically conducting or not, and it displaces that portion of the substance that would have appeared at the anode pole if

the substance had been electrolysed.

These findings and possibilities were reported to the American Electrochemical Society. Profs. Bancroft and Jones also discovered that fluorine when it reacts with benzene does so explosively although this was unexpected in the light of properties of the two gases hitherto known.

Large quantities of fluorine occur in different parts of the earth's crust but it is practically almost tightly locked in combination with other elements. One of the common minerals containing it is fluorspar. In school chemical laboratories, students know one of fluorine's compounds, hydrofluoric acid, because of its property of etching glass.

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Cod Liver Oil for TB

Therapeutics

A chilled beverage of cod liver oil floating on tomato juice was served as an after-meal liqueur to tuberculous patients with the result that intestinal symptoms of the disease were often completely relieved, Dr. M. McConkey of the New York State Hospital for Incipient Tuberculosis told members of the National Tuberculosis Association.

Tuberculosis of the lungs often spreads to the intestines, possibly through swallowing of infected sputum. Dr. McConkey believes absence of sufficient vitamins in the ordinary hospital or sanatorium diet contributes to the development of the intestinal tuberculosis as a complication of the pulmonary disease. The tomato juice-cod liver oil beverage supplied the necessary vitamins. Treatment with either the tomato juice-cod liver oil combination or with generalized ultraviolet radiation was successful.

Experiments with guinea pigs who were fed tuberculosis sputum proved the treatment to be scientifically sound, Dr. McConkey and Dr. David T. Smith of the same institution reported.

"These experiments show that intestinal tuberculosis may be produced in guinea pigs by feeding them sputum containing tubercle bacilli when the diet is partially deficient in vitamins A, C, and D," stated the investigators. "Our most recent experiments suggest that chronic partial deficiency of vitamin C is the most important factor in the production of the experimental disease."

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TB on Decline

Public Health

Four factors responsible for the gratifying decline in the tuberculosis death rate during the last thirty years are the elevated standard of living, improved sanitary control, more adequate hospital facilities, and public health education, stated Dr. Louis I. Dublin, statistician of the Metropolitan Life Insurance Company. Continuation of the public health and social service activities responsible for much of the decline will probably further decrease the tuberculosis death rate to a negligible point, was the encouraging prophecy he put forward.

"I firmly believe," he said, "that by continuing and strengthening the same activities which have been directed against tuberculosis in the past, we can still further reduce the incidence of this disease and ultimately eliminate it from the list of significant causes of death."

The lowest tuberculosis death rate on record was chalked up for the year 1928. The decline since 1900 has been steady and ever-accelerating. Thirty years ago tuberculosis brought death to nearly two and a half times as many persons per 100,000 as now.

"In a single year 140,000 persons will survive who would have died from tuberculosis, had the rates of 1900 prevailed. . . . There is no indication that this state of affairs will change or that forces beyond the control of men will cause the mortality curve to swing upwards," Dr. Dublin stated.

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Typhoid Declines

Hygiene

The typhoid fever death rate for 81 large cities of the United States continued to show a decline during 1928, a survey just completed by the American Medical Association shows. Of these 81 cities having a population of over 100,000, nine had no typhoid deaths during the year. These were Duluth, Elizabeth, Lowell, Lynn, New Haven, Springfield, Mass., Tacoma, Yonkers, and Youngstown.

Particularly notable was the achievement of Tacoma, which stood at the foot of the list of Mountain and Pacific cities in 1927, and which in 1928 had not only no typhoid deaths but also no diphtheria deaths, a record which none of the other cities has ever had.

Forty-five cities made the honor roll for rates below 2.0 deaths per 100,000. Included in this honor roll were all the cities of over one million population, Chicago, Cleveland, Detroit, Los Angeles, New York City, and Philadelphia. Nashville had the highest death rate of 15 per 100,000.

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Ant "Cowboys" Faithful

Entomology

That ants like humans have cattle is an old story, but the faithfulness with which they attend their little green "cows" has had a new light shed on it by the researches of Dr. Herman Eidmann, of the University of Munich. Charge over a given herd of aphids is not turned over to any chance ant out of a nest, but to certain designated individuals, and these return day after day to the same twig where their particular aphids are feeding. There they watch over them, drive off or kill strange ants, and protect their herds from other natural enemies.

Dr. Eidmann learned that the same ant returns to the same twig full of aphids regularly by the simple trick of putting dabs of colored paint on the ant herdsman, and corresponding paint spots on the twigs where he first saw them. So faithful were the six-legged cowboys that when the weather became warm enough they frequently remained on the twigs all night. And although the species under observation is one that ordinarily avoids the light, the members of the colony that had the job of aphid-herding assigned to them would patrol their twigs in the full glare of the midday summer sun.

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