BOTANY

Ergot Of Future May Be Raised In Drug Factories

Scientist Successfully Grows Important Fungus In Test Tube at University of Michigan Laboratory

ERGOT, one of the most important drugs used by physicians, may in the future be raised artificially in the laboratories of pharmaceutical factories, instead of being harvested in the natural state as at present. Preliminary experiments pointing to this possibility have been carried out by Miss Adelia McCrea in the botanical laboratories of the University of Michigan. Ergot is used to hasten labor and to check hemorrhage after childbirth.

The quality of ergot was the subject of a Senate committee hearing last June, as a result of charges that the federal food and drugs administration was allowing importation of impure and adulterated ergot. Miss McCrea's research raises the question of whether the growth of laboratory-raised ergot may not be so controlled as to insure a supply of the drug having a high degree of potency. It is too early, however, to consider practical applications of Miss McCrea's work, which is still in the realm of pure science.

Miss McCrea grew cultures of the fungus from which the drug is derived on a variety of media, including mashes and jellies made from various kinds of grain, and simpler jellies containing different sugars. She found malt sugar to be the best food for the fungus. To get ergot to grow in a flask or test tube at all is regarded as a considerable triumph, because under natural conditions it is a parasite, preying only on living plants. She found it to be fairly modest in its food requirements doing quite as well on a two or three per cent. concentration of malt sugar as it did on six or eight per cent., and failing to thrive at all at higher concentrations.

It was greedy for oxygen, however, growing much faster when a stream of pure oxygen was passed through its tube than when it was given only air. But on a mixture of half oxygen and half carbon dioxide its growth was considerably retarded. It grew best at temperatures between 68 and 77 degrees Fahrenheit.

Light had a powerful effect on it. Without the shorter-wave visible rays—the blue end of the spectrum—it did not develop the purple color that is its most marked characteristic. Ultraviolet light, however, had no stimulating effect, and in repeated doses even retarded development.

Miss McCrea made physiological tests of the ergot growths she raised, and found that they produce most of the effects characteristic of natural ergot, though somewhat less powerfully. The reactions averaged from 40 to 75 per cent. of those obtained with the same concentrations of natural ergot.

In making these tests, however, she had to use the whole vegetative growth of her cultures, for they did not produce the full-grown fruiting bodies which are the only source of commercial ergot at present.

Miss McCrea also made two attempts to infect growing grain with ergot. with the idea that its field cultivation might be undertaken. At present, commercial ergot is obtained solely by hand-gathering of wild growths on grain, especially rye, and wild grasses. Because of the great amount of hand work involved, and the high cost of labor in this country, American production of ergot is unprofitable. However, the field experiments did not yield particularly encouraging results, and Miss McCrea concludes that if it ever becomes desirable or necessary to raise ergot in this country the laboratory method is the more promising.

A full technical account of Miss McCrea's work is contained in the *American Journal of Botany.*

Science News Letter, March 28, 1931

Some kinds of cactus plants can stand cold as severe as 30 degrees below zero.

Soundproof telephone booths have been installed at one California airport.

PALEOBOTANY

Nature Ramblings

By FRANK THONE

A Fossil Flower

NOW have come the days when we wait impatiently for spring flowers. But let us reflect how long the world had to wait for the earliest flowers of all. Millions, possibly billions of years, while crustaceans, fish and seaweed filled the sea and strange fern-like growths dominated the land, there were no flowers whatever.

During the teeming Coal Age, the first crude flowers came. They were still growths that we should hardly recognize as flowers, and they grew on trees that were the uncouth distant relatives of the modern pines and tropical cycads. They did result in seeds, and therefore they were technically flowers; but as yet there was very little hint of the beauty of petals and stamens yet to come.

In a later age, and again on trees related to the modern cycads—possibly ancestral to them—grew flowers that we might recognize as real flowers. They had no sepals and no petals, but consisted wholly of whorls of what might be called much-branched stamens and carpels. At any rate, the male flowers were made up of things that looked like reduced copies of the palm-like green leaves of the plant, each bearing not two, but whole rows, of pollen sacs. The modern stamen, with its mere pair of pollen sacs, is a much more specialized but much less complicated affair than this primitive flower-member.

These cycad-like plants abounded in the warm forests that then grew as far north as the Dakotas and the plains provinces of Canada. Their fossil remains have been dug up abundantly in the Bad Lands.

Science News Letter, March 28, 1931