system at this age of the plant was apparently normal in expanse. Some plants died and appeared to be starved to death, but most of them reached maturity. Badly diseased plants never became more than one third or one quarter the size of a normal plant, having about the same number of culms but very small heads and shriveled grain. Plants which were completely yellow rarely showed any additional leaf or sheath symptoms as the season progressed. Those not completely yellow in the early stages, or which appeared normal up to the shooting stage but were slightly infected, characteristically showed yellow striping the entire length of the leaf, or mottled areas of yellow mosaic of short or long streaks. This sometimes occurred on only a few of the leaves. At times the writer discovered symptoms of green mosaic on the leaf and sheath, but this was exceedingly uncommon.

The rosette disease of wheat and the rosette of barley occur in Egypt. It is problematical how long these have been in Egypt, although members of the Ministry of Agriculture state they have been since 1925, but there is no published record to this effect. The writer found the rosette of wheat and barley in 1927 in many of the Egyptian provinces. He found barley affected also with what appeared to be a similar striping and yellow mosaic, and, from general appearances, indistinguishable from certain of the rosette mosaic symptoms occurring on wheat in the United States.

Data have been secured on varietal resistance to these diseases in wheat and barley, the effect of dates of planting, the effect of the "dry" and "wet methods" of sowing wheat, and the relation of soil temperatures and the occurrence of these mosaics. Also limited studies were made on artificial transmission of the disease by expressed juice and infested soils.

In light of the studies made on this wheat disease in Egypt, the writer regards it as one of the wheat mosaics and probably associated with the rosette disease. The reaction of certain varieties of spring wheat from the United States supplied by H. H. McKinney and grown in Egypt indicates that the viruses in Egypt and in the United States are dissimilar. This is substantiated by trials made of Egyptian varieties by McKinney[1] in the United States.

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THE FATAL BELGIAN FOG

ABOUT the week-end of December 7, an extremely heavy fog prevailed in Belgium and England, and the daily press reported that in the neighborhood of Liège more than forty persons and a considerable number of cattle died, exhibiting symptoms of asphyxiation. Autopsies performed on twelve cows indicated that they had died from pulmonary edema. Although final judgment on this phenomenon must await the results of the investigation which the Belgian government has undertaken, there are certain aspects of the situation which might be here referred to.

According to the New York *Times*, of November 30, 1930, a terrific sand-storm and hurricane blew over French Morocco on November 27. The following night, yellow sand was heavily deposited on the streets and on the foliage at Barcelona, Spain. On the morning of November 28, a "mud rain" fell in Paris and all over northern France as far west as Granville, on the southern Brittany coast and along the English Channel.

It seems probable that the more finely dispersed material carried by this storm reached considerable heights and settled down slowly over Belgium and England. These colloidal or semicolloidal dust particles served to reinforce the normally high atmospheric nucleation of the winter season; for, as Carl Barus has shown (Smithsonian publication 1309, published 1905) the products of combustion (burning coal, etc.) furnish highly efficient nuclei, and this atmospheric nucleation is especially marked in industrial neighborhoods and in the winter season. The tiny nuclei serve as centers about which, under suitable atmospheric conditions, moisture will deposit to form fog droplets. The extremely fine dust will continue to settle down for days and, given a sufficiently still and moisture-depositing atmosphere, prolonged and dense fogs would be expected.

This view is further confirmed by the fact that the *Evening Sun* of December 19, 1930, reported another terrific storm which swept over northern Algeria following a disastrous seven months' drought. Today's New York *Times* (December 22) carries a heading "Worst Fog in Years Paralyses London" (visibility only three feet at times).

The quantity of dust moved by storms of this character may be gauged from the fact that Hellman and Meimardus state that a cyclonic storm centered over Tunis about March 8 to 10, 1901, sucked up such a cloud of dust from the deserts that about one third of the 1,800,000 tons of dust that fell in Europe dropped north of the Alps. Apart from what fell into the Mediterranean Sea, they figured that about 150,000,000 tons were deposited on the African coast. Miller and Winchell estimated that the million or so tons of dust which fell with snow over an area of

[1] H. H. McKinney, "A Mosaic of Wheat Transmissible to All Cereal Species in the Tribe Hordeae," *Jour. Agr. Res.*, 40: 547–556, 1930.

about 100,000 square miles from Dubuque, Iowa, to Chelsea, Vermont, must have been carried over 1,000 miles at high altitudes from the arid southwest (Arizona and New Mexico) *before* it began to settle down.

It would seem probable, therefore, that the formation of fog in England and Belgium would easily be increased over a reasonable period of time following storms of the character recently reported.

The next point to consider is why, in certain localities, the fog was followed by fatalities. The following suggestion is offered as a possibility:

The newspaper reports indicate that the persons and animals were attacked suddenly with symptoms which, because of their abruptness and nature, lead one to suspect that they were in the nature of anaphylactic phenomena. The time of exposure prior to seizure was much too short to suggest the possibility of bacterial infection, and there seems to have been no ground whatever for the initial surmise that some hidden store of war poison-gas had suddenly escaped. It would seem possible that the heavy fog, in settling down, had accumulated in and on its droplets substances which precipitated the onset of anaphylactic shock in persons and animals previously sensitized. Thus, for example, it might be possible that castor bean cake containing the poisonous protein ricin had been used as a fertilizer in that neighborhood, and that some men and animals had become sensitized to it. The fog, in settling, might have accumulated and brought into the lungs of these sensitized beings sufficient ricin dust to occasion the onset of anaphylaxis. A few years ago, SCIENCE printed a note from a professor who had become sensitized to ricin and who had a violent attack of "hay fever" when someone in his laboratory merely opened a bottle of castor beans.

We do not, of course, know anything about the local situation, but it would be well if the possibility above suggested be kept in mind and search be made for conditions and substances which might be responsible for the onset of asthmatic or anaphylactic manifestations.

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SPECIAL CORRESPONDENCE

COMMITTEE ON DRUG ADDICTION OF THE NATIONAL RESEARCH COUNCIL

IN January, 1929, the Bureau of Social Hygiene, Inc., offered to the National Research Council a sum of money to be spent in the study of drug addiction. The council accepted the funds and appointed in its Division of Medical Sciences a Committee on Drug Addiction to draft a plan of research work. The members of this committee are: Wm. Charles White, Charles W. Edwards, Carl Voegtlin, Torald Sollmann, Reid Hunt, C. S. Hudson, F. B. LaForge, Walter L. Treadway, Ludvig Hektoen, and the chairman of the Division of Medical Sciences.

After numerous conferences with those best equipped to give advice, the committee concluded that there were two avenues of study that might bring some help in the problem of drug addiction and it adopted these avenues as the most likely to succeed.

The first avenue of approach would be an attempt to replace all the uses to which addiction drugs are put by drugs without addiction properties. The basis for this attempt was: (*a*) that morphine had a high addiction property while codeine had a comparatively low addiction property, and codeine can replace many uses of morphine if used in larger doses; (*b*) that since the replacement of practically all the uses of cocaine, except in the surface application for anesthesia, with drugs having little or no addiction properties the importation of coca leaves has declined. That the latter condition should occur held out hope that if all the uses made of addiction-producing drugs could be limited to legitimate use only and in many cases drugs not having addiction-producing properties could be substituted for those with addiction properties, the difficulty of controlling the production of addiction drugs and of handling the national and international problems attending them would be rendered easier.

The committee found, however, that in the United States few chemists were interested in the field of alkaloid chemistry nor had been, as evidenced in the literature, for over a period of twenty-five years. The committee was agreed that to find substitutes for addiction-producing drugs it would be necessary to set up a unit devoted to analytical and synthetic work in the field of alkaloid chemistry. It found that one man, Dr. L. F. Small, had just returned to the United States to the University of Virginia after having spent two years of research under Professor Wieland on alkaloid chemistry. The committee immediately entered into negotiations with President Alderman, of the University of Virginia, and Professor Benton, of the Department of Chemistry there, and, owing to their sympathetic cooperation, a laboratory for the study of alkaloid chemistry was organized at the University of Virginia with Dr. Small in charge. The committee hopes that this unit may develop into a permanent unit for the study of alkaloid chemistry in the United States.

This unit could be filled in two ways, either by