sible. The caprylates, which are the first in the series to show distinct hydrophilic properties, are good emulsifying agents, and, generally speaking, the value of these emulsifying agents increases steadily as we mount in the fatty acid series. An upper optimum is shown by those soaps which (like sodium stearate) are brittle and "dry" at ordinary temperatures. But the potassium soaps of these higher fatty acids are all good emulsifiers as are even the sodium soaps if the temperature is increased whereby the brittle, crystalline, colloid hydrates formed at lower temperatures are converted into more tenacious colloids which bear stretching into thin layers without rupture.

How important is the degree of hydration of the soap for thus stabilizing the emulsions is also well shown when the effects are studied of adding an alkaline salt in progressively higher concentrations to one of the more liquid soaps (like sodium oleate, sodium caprylate, sodium laurate or potassium palmitate, margarate, or stearate). As previously noted, the hydration capacity of the soaps is increased at first, decreased later and finally reduced to zero. Similarly the emulsifying power of the soap at first increases then decreases and finally becomes zero.

Martin H. Fischer,
Marian O. Hooker

Eichberg Laboratory of Physiology,
University of Cincinnati,
June 15, 1918

FIELD CONFERENCE OF CEREAL PATHOLOGISTS

The fourth Annual Conference of Cereal Pathologists was held at Purdue University, Lafayette, Ind., beginning June 19 and ending Friday afternoon, June 21. Forty names were signed to the register. A tentative program was presented as a guide for discussion, although no formal program had been prepared in advance. This fact helped to make the meetings more informal and all discussions were in the nature of round-table talks. Certain members were asked to lead in the discussion upon topics in which they were especially interested.

8:30 A.M., June 19—24 Present.

Professor H. P. Barss called the conference to order and after a few introductory remarks the program was taken up.

Barberry Eradication.—Dr. Stakman reported upon progress of the work of barberry eradication. Among other things he brought out the fact that barberries were much more numerous and more widely distributed than had been supposed, that they were quite universally rusted even on well-kept lawns, that in the northern United States, all cases of early infection of stem rust upon grains and grasses had been directly traceable to barberries and that the barberry campaign was succeeding in rapidly clearing the states from Ohio to Montana and from Missouri to Canada of this worthless shrub. He said that reports had come in indicating that 70 to 90 per cent. of the bushes were already out in North Dakota, South Dakota, Minnesota, Wisconsin, Iowa, Michigan, Nebraska and northern Illinois. The fact was also brought out that the common barberry has escaped from cultivation in some few places.

Dr. A. G. Johnson reported finding a hybrid of the common barberry which was infected. He emphasized three points: (1) Barberries spring up from the roots when dug up, if the work is not thoroughly done; (2) seedlings of barberries had been found badly infected; (3) barberries had been located in many obscure places. Mr. Dixon, of Wisconsin, reported on some work upon overwintering of uredinia. He found no overwintering of uredinia in 125 stations visited every two weeks during winter and spring. Dr. Stakman stated that this had also been the experience of various other field scouts both this year and last.

Dr. Coons reported good progress in Michigan and stated that the strong arm of the law was needed to complete the work. All barberries had been removed which could be removed by publicity work. He also stated that no stem rust had been observed until after infection had become common upon barberries.

Professor Selby reported good progress from Ohio. He stated that the attitude of the people in general was to wait for infection.

Professor Jackson stated that the scouting work in Indiana had been confined to the northern part of the state.

Dr. Stevens and Dr. Anderson were both present from Illinois. They stated that infection was abundant in Illinois in the northern part, and down the Mississippi River as far as Rock Island.

Stem Rust Studies.—Dr. Stakman reported very

briefly upon some recent work upon biologic forms of stem rust. He stated that a new strain of *Puccinia graminis* had been sent in from Oregon which had proven to be different than any previously described.

A general discussion followed concerning the general scope of the barberry campaign—the advisability of extending it into other states, etc.

7:45 P.M., June 19—28 Present.

Other Diseases of Wheat, Barley, Rye and Oats.—Dr. Johnson reported upon two distinct bacterial diseases of oats—one "halo blight" and the other striped bacterial disease.

Black chaff bacterial disease of wheat was reported as occurring this year in various states and causing some damage. Bacterial diseases of barley and rye, *Septoria* disease of wheat, *Rhynchosporium* disease of barley, anthracnose and *Helminthosporium* diseases were briefly discussed as to their distribution. This is not included here as such data are given by the Plant Disease Survey Reports.

Dr. A. G. Johnson reported upon some dry heat experiments which seemed to promise to control certain of these seed form diseases which are resistant to common methods of seed treatment.

9:30 A.M., June 20—32 Present.

Leaf Rusts of Cereals.—Leaf rust of wheat and rye was reported as being extremely heavy and extremely abundant in the south and as common in various sections.

Dr. Melhus from Iowa reported *Rhamnus lanceolata,* a native buckthorn, heavily infected in Iowa, and stated that the crown rust of oats goes to this species of *Rhamnus* according to greenhouse tests.

Some discussion followed regarding a method of determining losses by leaf rust.

A short report of recent researches upon stripe rust was given by Mr. Hungerford.

Species of Bunt and their Distribution.—After some general discussion, an effort was made to learn by reports from those present, something regarding the distribution of the two species of bunt. This did not result in any very satisfactory reports and Mr. Potter was finally appointed to look up the distribution of the two forms in various herbaria.

Loose Smut of Wheat.—This discussion brought out nothing which can not be learned from the Plant Disease Survey Reports.

2 P.M., June 20.

Field excursion to Wilson Farm (Experiment Station) in charge of Professors Jackson and Hoffer.

7 P.M. Dinner followed by round-table discussion —40 Present.

After the dinner, a rising vote of thanks was given to Dr. H. S. Jackson and Professor G. M. Hoffer for their hospitality and kindness in arranging for the cereal disease meeting.

At the business session Dr. G. H. Coons was chosen chairman and Dr. Robert Rands, secretary for the coming year.

A committee consisting of Dr. Stakman, Dr. Johnson, Dr. Melhus and Professor Barss was appointed to arrange for the time and place for the next meeting.

Dr. Selby invited the conference to meet in Ohio and Dr. Anderson extended such an invitation from Illinois.

Moved and carried that a committee upon resolutions be appointed—Anderson, Johnson, Stakman and Whetzel appointed.

Bacterial Diseases.—Bacterial diseases and corn rust were very briefly discussed. Professor Barre reported that *Physoderma* disease was one of the most troublesome and serious of all corn diseases. Distribution reported as practically over corn belt, although serious only farther south. A general discussion of corn smut followed.

9 A.M., June 21—36 Present.

Dr. Haskell submitted for criticism and suggestions, blanks prepared by Dr. Lutman for use in cereal disease estimates in Vermont and adopted by the Plant Disease Survey for general use. Several minor suggestions were made.

Smuts of Oats.—A general round-table discussion followed as to the distribution of loose and covered smuts of oats. Mr. Potter was instructed to include oat smuts in the survey work of herbaria in regard to species of bunt.

In the discussion which followed regarding barley smuts and stalk smut of rye, Dr. Coons urged that the treatment for rye smut be pushed, so as to prevent its spread. Dr. Johnson raised the question regarding possible introduction of flag smut of wheat on wheat from Australia. It was moved and carried that the committee upon resolutions prepare resolutions to the Federal Horticultural Board in regard to use of wheat from Australia for seed purposes.

Smut Eradication Campaign.—Report by Mr. Reddy of work in North and South Dakota indicated that the main value of work there was in securing treatment of barley and oats.

Professor Barss reported that a standard label for use of druggists in Oregon had been prepared and distributed and that the campaign in Oregon

had resulted in uniformity of methods of treatment.

Mr. Morgan stated that bluestone was commonly used in Alabama and Mississippi and farmers treat every other year. Results of treatment in South Carolina showed control of oat smuts.

Dr. Johnson stated that the campaign had resulted in general stimulation of seed treatment in Wisconsin.

Dr. Reed reported that there was practically no control practised in Louisiana, Arkansas and Missouri. The campaign this year is convincing the people that they have smut and a campaign for eradication can be pushed next year.

Seed Treatment Methods.—General discussion of seed treatment methods and cooperation experiments followed. At Dr. Stakman's suggestion, it was moved and carried that the conference go on record approving the cooperative plan of seed treatment experiments.

Haskell and Iowa Treatments.—Iowa method as described by Dr. Melhus: One pint formaldehyde to ten gallons of water on forty bushels of grain. Grain to be sacked at once.

Dr. Whetzel reported that a certain elevator company near Ithaca, N. Y., was using the concentrated formaldehyde method on a large scale.

It was suggested that the treatment described by Dr. Haskell be known as the concentrated formaldehyde treatment.

Report of Committee upon Resolutions.—The following resolutions were presented by the committee upon resolutions and voted upon in turn, each one passing by unanimous vote:

1. We, the Cereal Pathologists in conference assembled at Lafayette, Indiana, after summarizing the evidence accumulated against the barberry as a spreader of black stem rust,

Do heartily endorse the efforts now being made under the leadership of the Department of Agriculture for the eradication of the forms of barberry and Mahonia, susceptible to black stem rust as a war measure of special importance in the conservation of our cereal food supply.

And be it resolved that we urge upon the Department of Agriculture and the agricultural agencies of the various states that the work be extended as speedily and pushed as vigorously as possible in order to give maximum production.

2. Whereas, the control of cereal smuts is of paramount importance and whereas, it is essential to learn the effect of different treatments on seed germination and yield, as used upon various cereals in various regions, under different conditions and on various varieties and seed lots with a view to standardizing treatments insofar as possible. Be it therefore resolved, that we, Cereal Pathologists urge (1) The continuation of the present smut eradication campaign U. S. Department. (2) Endorse and support the efforts now being made under the auspices of the War Emergency Board to solve the problems in connection with cereal seed treatment.

3. Whereas, Dr. J. C. Arthur, with rare devotion to science and foresight into the problems of the future, has done a tremendous amount of work fundamental to the development of cereal pathology,

And whereas, recognizing the fine service he had rendered we wish to express our appreciation of and admiration for this self-sacrificing work.

Be it, therefore resolved that we, the Cereal Pathologists assembled at Lafayette, Ind., June 19–21, do hereby express a sincere vote of thanks to Dr. Arthur for the concrete results he has obtained and the inspiration he has furnished, and be it further resolved, that a copy of this resolution, be sent to Dr. Arthur and also be published in *Phytopathology*.

4. Whereas, a large quantity of wheat is being imported into the United States from Australia for food purposes, and

Whereas, some of the wheat so imported may be used for seed purposes, and

Whereas, certain wheat diseases prevalent in Australia and not now in this country, may thereby be introduced into your country,

Be it resolved, by the cereal pathologists in meeting assembled at Lafayette, Ind., June 19–21, that the Horticultural Board be requested to take immediate steps looking toward the prevention of the introduction of such diseases.

Chas. W. Hungerford,
Secretary

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