ture in an indifferent atmosphere—such as N_2—after having burned for a time, the reactivity increases strongly. By repeating this treatment the reactivity can be increased up to five times the initial one.

Papers and discussion remarks were given in English and French. P. Goldfinger (Brussels, Belgium) acted as interpreter; his summaries in the language not used by the speaker were in themselves a valuable contribution to the discussion.

All contributions and the full discussion will be published shortly in *Journal de Physique et de Chimie,* Paris.

The organization of the meeting (by M. Letort, Nancy) was an impressive example of French hospitality. Receptions by the mayor of Nancy and the director of University of Nancy in the respective historic buildings, a night visit to the ancient Ducal Palace, visits to the modern foundry at Pont à Mousson (at whose ancient university Pere Marquette was professor before coming as an explorer to this country) and the salt mine at St. Nichlas gave excellent opportunities to get acquainted with different aspects of life in France. One was convinced that the heroic efforts of France, not only to repair the material damage of the war, but also to keep alive her great cultural tradition, have been amazingly successful.

Symposium on Brucellosis, September 22–23, 1949[1]

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A SYMPOSIUM ON BRUCELLOSIS was held at the National Institutes of Health, Bethesda, Maryland, September 22–23, 1949, under the auspices of the National Institutes of Health, the Bureau of Animal Industry, and the National Research Council. The meeting was organized by C. L. Larson, National Institutes of Health, and C. K. Mingle, Bureau of Animal Industry. Dr. Larson served as chairman at all sessions.

In the opening paper, Alice C. Evans (Bethesda, Maryland) described the early history of brucellosis and the studies which led up to the recognition, in 1918, of the relationship between the *Brucella melitensis* and *Br. abortus* organisms. Dr. Evans advised that the term *undulant fever* be dropped from medical literature because of its erroneous implications. The remainder of the first session was devoted to a discussion of brucellosis in farm animals and its control in the animal population. C. A. Manthei (Bureau of Animal Industry) reported that the artificial immunization of cattle with Strain 19 of *Br. abortus* reduced the duration and severity of the infection following exposure to virulent organisms. Aureomycin had not proved effective in the treatment of cattle infections. L. M. Hutchings (Purdue University), from study of the porcine infection with *Br. suis,* concluded that no satisfactory method of vaccination was yet available, and that the results obtained thus far with aureomycin, streptomycin, and the sulfonamides in therapy of the disease in swine have not justified field trial of these agents. W. L. Boyd (University of Minnesota) pointed out that brucellosis may occur in such farm animals as goats, sheep, horses, dogs, cats, and poultry, although only in the goat and horse, among those species just named, is the infection significant in either human or veterinary medicine in the United States. In closing the morning session, H. L. Gilman (Cornell University) emphasized the importance of the slaughter of infected animals, particularly sporadic reactors, as a method of controlling the spread of brucellosis.

In the afternoon session of the first day B. T. Simms (Bureau of Animal Industry) brought out the fact that as long as the present mobility of the livestock population is permitted, contagious diseases such as brucellosis cannot be stopped at state boundaries. The federal government must work with state livestock sanitary authorities in developing uniform methods of attack on the disease, and aid in preventing reinfection of areas where herds have been accredited. Jacob Traum (University of California) discussed *Br. abortus* Strain 19 vaccine, as used in extensive field trials in California. Robert Pennell (Sharpe and Dohme, Inc.) summarized the research on the fractionation of the *Brucellae* into constituent antigens. As yet, it is not possible to differentiate the species of *Brucella* by chemical means. Protein-nucleates of moderate serological activity and other complexes of high activity have been isolated from

(Continued on page 485.)

[1] The papers presented are to be published in monograph form by the American Association for the Advancement of Science.

(*Continued from page 469.*)

Brucella organisms. Werner Braun (Camp Detrick) reported on the variation of *Brucella* and on a selective factor present in the serum of normal *Brucella*-susceptible species which is able to suppress the establishment of avirulent variants. This factor is absent from the serum of relatively insusceptible species, as well as from the serum of infected or vaccinated individuals of susceptible species. It is hoped to develop a new method of therapy based on the inactivation of this "SS" factor *in vivo*. In his discussion of the physiology of *Brucella,* B. H. Hoyer (National Institutes of Health) reported that the urease activity of *Br. abortus* strains is much lower than that of *Br. melitensis* or *Br. suis* strains, and that the urease test, used quantitatively, represents an additional aid in differentiating *Brucella* cultures. Sanford Elberg (University of California) discussed the relatively low resistance of large and small animals to reinfection with *Brucella* organisms, particularly in respect to tissue response, and the dissemination of the organisms in the internal organs of immune animals as compared with susceptible animals.

The evening session of the first day was devoted to a discussion of clinical problems and an evaluation of available chemotherapeutic materials. W. W. Spink (University of Minnesota) reported on his experience over a period of 12 years with over 250 culturally proved cases of brucellosis. He emphasized that an unequivocal diagnosis of brucellosis is established only when *Brucella* organisms are cultured from the tissues or body fluids. Positive agglutination tests are helpful in diagnosing the disease, although skin tests and opsonocytophagic tests are of only doubtful value. In his evaluation of the effectiveness of currently available chemotherapeutic agents, Wesley Eisele (University of Chicago) took the point of view that no satisfactory drug was yet available for the treatment of brucellosis and that many of the reported successes in therapy represented spontaneous recoveries. Dr. Eisele admitted that streptomycin plus sulfadiazine, aureomycin, and some other agents often, or usually, suppressed the disease, but considered that relapse of the infection could be anticipated with great frequency after treatment with such agents.

In opening the morning session of the second day, M. R. Irwin (University of Wisconsin) reported on the presence of bactericidins, particularly for *Br. abortus,* in the blood of experimentally infected or vaccinated cattle, as well as in some normal animals, these antibodies being distinct from agglutinins. A. I. Braude (University of Minnesota), in discussing the pathology of brucellosis, pointed out that the disease in experimental animals is characterized by the formation of granulomas in the tissues, by the development of hypersensitivity, and by the appearance of the *Brucella* organisms within the macrophages. The limitations and interpretations of the common laboratory tests used in diagnosing brucellosis were described by N. B. McCullough (University of Chicago and National Institutes of Health). The use of the guinea pig for chemotherapeutic tests was reported on by B. N. Carle (National Institutes of Health). F. M. Anderson (Federalsburg, Maryland) reviewed an outbreak of brucellosis in the small town of Federalsburg, Maryland, in closing the morning session.

The afternoon session of the second day was devoted to the epidemiology of brucellosis. C. F. Jordan (Tarrant County, Texas, Health Department) reported that, for the seven-year period 1940–1946, the average yearly aggregate of reported cases of brucellosis in the United States was at the rate of 3.11 per 100,000 population. *Br. abortus* infections predominate in areas devoted to dairying or cattle-raising, whereas *Br. suis* infections are most common in the meat-packing industry and in hog-raising areas. S. R. Damon (Indiana State Health Department) presented the results of studies on the epidemiology of brucellosis in Indiana, a much lower incidence of the infection being encountered than was considered probable when the study was initiated. P. Morales Otero (Santurce, Puerto Rico) reported that brucellosis was first discovered in 1921 in Puerto Rico, and that, in the years since, the infection had become disseminated in cattle throughout the island. The incidence of the infection in man has increased correspondingly and is currently five times that reported in the island in 1930. During 1948, the Insular Government inaugurated a brucellosis eradication program in Puerto Rico. The incidence of brucellosis in Canada varies greatly among different provinces, according to R. Gwatkin (Canadian Department of Health). Steps are being taken by the Canadian Government to aid in the control of the disease among cattle and swine. R. Newton (Swift and Company) briefly outlined the problems which the meat-packing industry faces in brucellosis. In closing the meeting, C. M. Carpenter (University of California at Los Angeles) summarized his experiences in studying brucellosis over approximately twenty-five years, particularly in respect to the use and interpretation of skin test responses to *Brucella* antigen.