

Proposed public buildings are documented to Congress at the initiation of the project and are redocumented every 2 years. Last February, Public Buildings Service redocumented the proposed CDC building and raised the amount originally requested from \$10,000,000 to \$12,600,000 to provide for current increase in building costs and so that the warehouse and shops might be included.

Much interest was exhibited by Congressmen and members of the Budget Committee in the Public Health Service's request for inclusion of funds for the building in the 1952 fiscal year appropriations and in press releases relative to the building. Special hearings were held and many favorable comments were made. Although the House of Representatives Appropriations Sub-Committee did not recommend the appropriation this year, its comment in Report No. 322 of the House of Representatives should be helpful to subsequent efforts. The comment is as follows:

"This program provides for laboratory and field investigations, control operations, and training

facilities to supplement and support activities of state and local health departments in the control of a host of communicable diseases. These activities are essential as normal peacetime measures. Some of them also provide the foundation for special operations which would be necessary in case of a national emergency such as, for example, biological warfare. The communicable disease center [sic] is now conducting research in this general area although it is seriously handicapped by lack of laboratory facilities for this specialized kind of work. Inquiry was made as to steps being taken to provide suitable physical facilities to permit this important work to go forward. Funds have heretofore been appropriated for plans and specifications and the committee is informed that the General Services Administration is now preparing those plans. The committee believes that this is an important piece of work and suggests that the urgency of the times requires that this project be given high priority of attention by appropriate officials of the Government."

## WHO Progress in Brucellosis

MARTIN M. KAPLAN, Veterinary Officer\*

The World Health Organization, in its program for communicable disease control, gives special attention to brucellosis because of the effects of the disease upon the health of large numbers of agricultural workers and other exposed groups in many countries, and the huge economic and nutritional losses resulting from the decline in milk production and breeding efficiency of affected livestock.

The masked nature of the disease in humans and the difficulty of its diagnosis cause doubt as to the acceptability of the reported statistics regarding incidence. Therefore, in spite of the 4,000 to 6,000 cases per year officially reported for the United States during the past several years, reliable estimates place the number of cases annually at 10,000 to 40,000, and perhaps as high as 100,000 (1-3). As another example, France reported approximately 1,400 cases for 1949,

whereas there were probably over 9,000 cases that year (4). Other countries having relatively large numbers of cases are Mexico, Argentina, Peru, and other Latin American countries; Italy, Malta, Spain, and other Mediterranean countries.

The disease in animals is known to exist in nearly all parts of the world where there are susceptible livestock, and the existence of widespread infection in the cattle, sheep, and goats of the Mediterranean countries and Latin America is well established. In the United Kingdom and in northern and central Europe, except for the Scandinavian countries, between 15 and 50 percent of the cattle herds are infected with brucellosis (5). For the United States, the figure is approximately 16 percent (6). As far as is known from the meager information available, the disease apparently is of little importance among animals in the economically undeveloped countries of Asia and Africa except in areas where European breeds of livestock have been introduced. It should

\*Division of Epidemiological Services, WHO, Geneva.



be pointed out, however, that where careful local studies have been pursued in some of these countries as, for example, in certain parts of India (7), indigenous infection has been shown to be surprisingly prevalent (10 to 50 percent).

It is not the purpose of this paper to deal with the technical aspects of the disease. For this information, the reader is referred to a recent article by the author (8). However, it would be helpful to summarize briefly the major problems and needs in the field of brucellosis. These are as follows:

1. Surveys in various countries on the prevalence of the disease in man and animals; the improved reporting of statistics.
2. Epidemiological studies concerning the transmission of brucellosis by the different animal reservoirs.
3. The international standardization of the sero-agglutination test; the improvement and standardization of intradermic agents and other diagnostic procedures for man and animals.
4. Uniform and simplified bacteriological techniques for the culture and typing of *Brucella*.
5. Critical studies on antibiotic-sulfonamide and vaccine therapy in human brucellosis.
6. The application of known effective measures for the control of brucellosis in animals and the prevention of its spread to man.

In order to meet these problems effectively, close collaboration was established last year between national and international medical and veterinary authorities, particularly WHO, FAO (Food and Agriculture Organization), International Office of Epizootics, and Inter-American Congresses on Brucellosis. Probably the two most important steps taken were the formation and convening of a joint FAO/WHO Expert Panel on Brucellosis, and the designation of 12 FAO/WHO brucellosis centers in different countries of the world. In November 1950, 26 members of the panel met in Washington during and after the Third Inter-American Congress on Brucellosis. A published report of this first session contains specific recommendations concerning the problems listed previously (9). Following are the opinions of the panel on some of these questions:

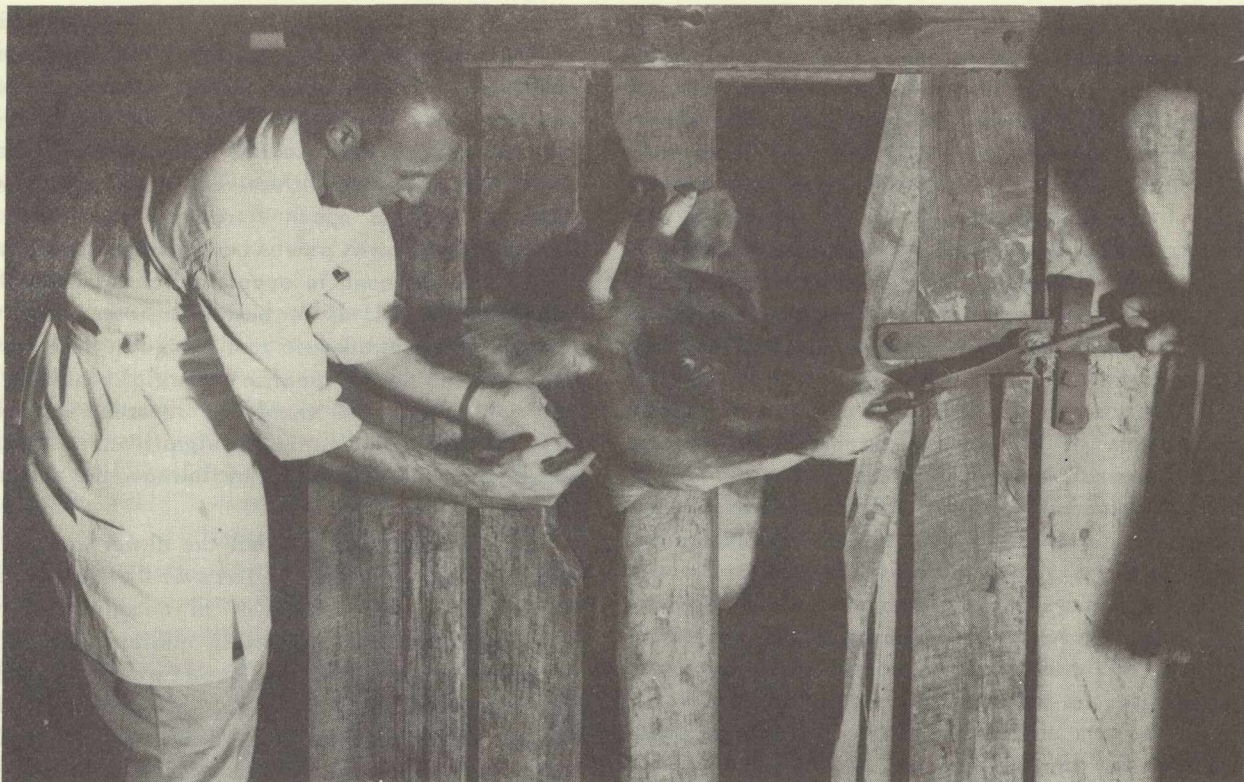
Laboratory diagnostic criteria for determining human infection receive detailed consideration in the report, including improved methods of culture of *Brucella*. Next to culture of the organism, the sero-agglutination test is considered to

be the most reliable means of diagnosis. In view of the wide variation of antigens and procedures used in different laboratories, recommendations are made for the standardization of this test so that results reported in one laboratory will have bases of references elsewhere. The complement fixation and the opsonocytophagic tests are not believed to have practical value in routine diagnosis, although in special circumstances they might be useful. It is believed further that the results of an intradermic test should be interpreted as determining a specific allergic condition of the individual, and should be regarded as being free from other diagnostic significance. Further study and standardization of intradermic antigens are urged.

The panel recognizes that the newer antibiotics such as aureomycin, chloramphenicol, and terramycin, used singly or in combination with streptomycin and a suitable sulfonamide, mark a great advance in the treatment of human brucellosis. It is pointed out, however, that they do not furnish a complete solution to the problem, since relapses have been observed following the use of each antibiotic singly or in combination. Careful clinical and laboratory studies are urged for evaluating properly the various chemotherapeutic agents. Vaccine therapy is placed subordinate to chemotherapy, and careful studies in vaccine therapy are recommended in order that their places in the therapeutic armamentarium may be more clearly defined.

It is further noted that since brucellosis is not generally transmitted from person to person, the prevention of human infection is dependent upon the control and elimination of this disease in animals. The report points out that cross-infections of cattle, sheep, goats, and swine, as well as human infection, can occur with any of the three species of *Brucella* (*Br. abortus*, *Br. suis*, and *Br. melitensis*). Economic losses are caused in affected livestock by abortion or premature birth, decreased milk flow, and temporary or permanent infertility. As an example of the huge savings which can be effected by a successful campaign against brucellosis, it is estimated that in the United States a reduction of incidence of bovine brucellosis by one-half has resulted in a \$50,000,000 annual saving to the livestock industry. In Norway, where brucellosis of cattle has been almost completely eradicated, the cost of the entire program was less than the estimated





Testing for brucellosis.

annual loss formerly caused by this disease. Therefore, a large part of the report is devoted to the problem of control of brucellosis in livestock, and detailed recommendations are made in this connection.

Chemotherapy is ineffective in animal brucellosis. The bases of control, therefore, lie in sanitary procedures, diagnostic tests and elimination of infected animals, vaccination, and a combination of the latter two procedures. Each of these control measures is covered separately, and procedures are recommended which can be adapted both to economically advanced and to lesser developed countries. The report stresses the desirability of uniformity in laboratory diagnostic procedures and their interpretation, and of the production and use of biological products, particularly strain 19 vaccine for cattle, employed in this disease.

Finally, the panel urges expanded activities on the part of WHO and FAO in brucellosis research, in the distribution of stock cultures and standard serums, and in the provision of technical advice to requesting countries.

WHO and FAO have already taken action on many of these recommendations. During 1950 and early 1951, FAO/WHO brucellosis centers were

designated in Argentina, Australia, Denmark, England, France, Greece, Italy, Mexico, Turkey, Union of South Africa, the United States, and Yugoslavia. It is planned to establish one additional center in Latin America and two more in the Far East. The center in the United States is located at the medical and veterinary schools of the University of Minnesota, under the direction of Dr. Wesley W. Spink.

Apart from their usual routine duties, these centers function for local and international purposes in brucellosis. They are used primarily as diagnostic centers for the preparation and testing of standard antigens, vaccines, and other biological products, and as teaching and information centers for their own and nearby countries.

Information documents on brucellosis are prepared by WHO and distributed periodically to the centers. Thus, through exchanges of information and correspondence between the panel members and between the centers, the latest advances in research are rapidly communicated to leading brucellosis workers throughout the world.

In order to enable some laboratories to undertake the necessary activities, WHO made monetary grants in 1950 to certain of these centers, particularly to those in France, Italy, Turkey, Mexico,



and Argentina. The United Nations International Childrens Emergency Fund (UNICEF) assisted in the establishment of the centers in Yugoslavia and Italy by purchasing laboratory equipment and chemotherapeutic products. In 1951, WHO will purchase standard media, dyes, and antigens for distribution and use in all the centers.

Several members of the FAO/WHO Expert Panel on Brucellosis, while not attached directly to any of the centers, are collaborating in their own laboratories and clinics with the work of the centers.

Of great importance among the gratifying results already achieved by these centers has been the progress in the adoption of unified laboratory procedures, especially in the diagnosis of brucellosis. This approach is being extended to include the production of vaccines and other biological products. In addition, overlapping and duplication of research work have been avoided, each of the various centers now being engaged in needed work on different aspects of the disease. Where difficulties or divergent results have been experienced by one center, it has been possible to enlist the aid of a second center for checking purposes. Advanced and well-equipped centers are thus used to assist other centers which cannot cope with a particular problem.

Besides the general functions and individual research problems, the following specific projects and studies, many of them suggested and initiated by WHO, are now under way in the various centers:

1. The exchange of strains of *Brucella*, their comparative testing according to procedures recommended by the brucellosis panel, and the selection of the three type species of *Brucella*. The strains agreed upon as representing the three type species will be freeze-dried and distributed to all the centers as reference strains.
2. Antibiotic-sulfonamide and vaccine therapy in human brucellosis.
3. Hemoculture in human beings, and other diagnostic procedures apart from the sero-agglutination test.
4. The sero-agglutination test in man and animals.
5. The standardization of antigens used in the milk-ring test, and application of the ring test in cattle.

6. Simplified production of strain 19 vaccine for cattle.

7. Improved diagnostic and vaccine procedures in sheep and goats (intradermic and milk-ring tests).

8. Local and regional surveys on the prevalence of brucellosis.

The wholehearted cooperation given to WHO and FAO by the brucellosis centers exemplifies the willing spirit of national health administrations and scientific workers for international collaboration under UN leadership. The great source of facilities provided by these centers, pooled by coordination of their efforts by WHO, is an invaluable asset in the advancement of knowledge in this field. The results and benefits thus obtained become available for rapid world-wide distribution and are contributing greatly to the conquest of brucellosis in many countries.

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