PRESIDENTIAL ADDRESS

JOHN M. SWAN

Rochester, New York

In calling this, the seventeenth, annual meeting of the American Society of Tropical Medicine to order, I wish to express the pleasure that I feel, in common with all of our members, in holding the meeting conjointly with the annual gathering of the Southern Medical Association. Those whom you have chosen to manage the affairs of the Society have for several years had this intinite relationship in mind and, indeed, the two societies would have met together in 1918 had it not been for the pandemic of influenza which made such demands on the medical profession that it was thought wise to abandon the meeting altogether. I wish, with the consent of the Council, to invite the members of the Southern Medical Association to attend our sessions and to take part in our discussions.

The problems that have interested us since the foundation of the Society are the problems that interest you as practitioners in the southern portion of the United States. Your land is not situated within the tropics; but the entire United States south of the thirty-ninth parallel of latitude has a subtropical climate and is exposed, and will be more and more exposed as commerce increases, to all the tropical epidemic diseases. Indeed Baltimore, Philadelphia and New York have had epidemics of yellow fever and are open to plague, or would be were it not for that efficiently watchful sentinel, the United States Public Health Service. The problems which these diseases present, however, are spasmodic, and even in cities as far south as New Orleans and Galveston, not urgent. Malaria, on the other hand, is a con-

1 Delivered at the seventeenth annual meeting of the American Society of Tropical Medicine, held at Hot Springs, Arkansas, November 14 and 15, 1921.
stant menace, not only in the tropics but also in all subtropical climates and in many communities within the temperate zone.

It is impossible to estimate the economic loss due to malaria; but it is appallingly large. In the Anderson-Cottonwood Irrigation district in Shasta County, California, Gray found that approximately one-half the population had malaria in 1918; the total cost to the district was estimated at $10,400 or $31.70 per family, $14.05 per sick person, or $7.66 per person. The estimate did not take into account the deaths, the labor loss among casual workers, losses due to inability to handle crops at the proper time, losses due to vacant property or losses due to depreciation of property. Large as it is, it might be accepted and the progress of the communities in which it is present would continue, thanks to the ability of the human will to overcome obstacles. The loss is, however, preventable. Since the discovery of the plasmodium by Laveran, in 1880, the researches of the host of malaria students, among whom four former presidents of this Society, Gorgas, Thayer, Craig and Bass, occupy illustrious positions, have made the facts of the etiology, pathology, clinical course, diagnosis, treatment and prophylaxis of malaria matters of common knowledge. Malaria is a disease the course of which is known and is easy of detection; the treatment of which is, in the great majority of cases, simple; the prevention of which has been repeatedly demonstrated to be possible, and the eradication of which has been repeatedly successfully attempted. Therefore, the control of this infection is a goal eminently worth striving for. There are four factors in the campaign for malaria control that will occupy the attention of those engaged in the work: (1) the reporting of cases in the acute stage of the disease to the health authorities; (2) the treatment of patients in the acute stages of the infection; (3) the detection and treatment of carriers; (4) the destruction of anopheles mosquitoes, not only as adult insects, but also by abolishing their breeding places.

The first essential in the reporting of acute cases of malaria is to have an accurate diagnosis. To this end every physician who practices in a malarial country should be able to stain a
specimen of blood for the plasmodium and to recognize the organism in the stained specimen. It will no longer suffice for a diagnosis to be made merely because the patient has fever. A recent writer in the Journal of Tropical Medicine and Hygiene says: "Fever is such a commonplace of tropical practice that it does not always receive the attention that it deserves. Malaria is considered a safe diagnosis for any fever which is not acute and the origin of which is uncertain;" and Leathers has said that at least 25 per cent of the diagnoses of infectious diseases is incorrect.

It has been said, and it undoubtedly will be said that it will be impossible to have cases of malaria in the acute stage of the disease reported and that it will be impossible to get an accurate report of carriers. Such statements have been made about every disease that is now reported as a matter of course, including gonorrhea and syphilis. It is not impossible to obtain reports, and accurate reports, of any disease once the attempt is made in earnest.

The treatment of the acute attack of malaria is comparatively simple. It is known that quinine in solution in the blood serum will kill the plasmodium in its sporulating stage, on account of its property as a protoplastic poison. The difficulty in the treatment arises from the fact that the plasmodium reproduces by two methods: the asexual and the sexual. It is the sexual form of the organism, the gametocyte, that escapes destruction by quinine. It is this form of the parasite that is retained in the capillary blood spaces of the bone marrow and the spleen, perhaps of the liver, and possibly of the other viscera, which later assumes the asexual method of reproduction and produces the clinical relapses.

It is for the destruction of these forms; these gametocytes, that the treatment has been too frequently prematurely discontinued. The standard treatment of malaria developed by Bass and his coworkers is to be recommended as the method for destroying the plasmodium in its human host, sporocyte and gametocyte, and so relieving the community of its carriers.
In relation to the problem of the carrier it must be remembered that children are subject to malaria, as are adults, and that the disease occurs also in infants: Two cases of tertian malaria in infants under six months of age were reported by Bloom in 1918. A parallel may be drawn between this disease and yellow fever, which is propagated in its endemic foci by cases in children; in whom its manifestations are usually irregular.

A great deal has been written about the destruction of anopheline mosquitoes. It can be done; it has been done. In 1915 I referred in a paper read at the meeting of this society held in San Francisco, to the work of Ross, in Mauritius. Ross estimated that for an expenditure of 0.36 rupee or about 11.6 cents per head of population per annum a place like Mauritius should expect to have its malaria morbidity and mortality very much reduced. In the last six years the cost of everything has increased. Recent work in the southern States has been done at a cost of 80 to 85 cents per capita. This cost includes the original outlay for drainage which will not reappear in the continuation of the work for subsequent years and which might be charged to general agricultural improvements. Gray, in the paper already referred to, estimates that in the district in which his study was made a charge of $31,000.00 might be expected for the various control measures for a 3 year period; but he adds that $12,000.00 of this should be deducted for agricultural drainage and should not be charged against malarial prophylaxis. Then he adds: “These figures show and the experience of other districts proves that it is economically cheaper to control malaria than to suffer from it.” So that for three years an outlay of $19,000.00 for malarial prophylaxis with an annual expenditure of $3,800.00 after that would almost rid of malaria an area of 32,000 acres with a population of 1300.

The United States Public Health Service, the International Health Board and the Health authorities of ten southern states are at present engaged in an attack on the malaria problem which I have no doubt, will eventually result in the reduction of malaria to its very lowest point, if it does not abolish it. The organization within the United States Public Health Service is known as
the Malaria Field Investigations with headquarters at Memphis, Tennessee, directed by Surgeon L. D. Fricks, assisted by Dr. M. A. Barber and senior sanitary engineer J. A. LePrince. The following problems are now engaging the attention of this organization: The longevity of anopheles mosquitoes; The viability of malaria parasites in mosquitoes; The blood picture of malaria; The relation of domestic animals to the transmission of malaria; Observations on the dispersion of anopheline mosquitoes; Winter activities of anopheline mosquitoes; Observations relative to early seasonal transmission of malaria; Observations on seasonal prevalence of different anopheles species; Larvicide experiments; Rice field investigations.

In 1920 a total area of 192 square miles was under control with a population of almost 200,000. This year malaria surveys have been made in 118 urban communities in ten different states and from these surveys 25 towns have been selected for new malaria control demonstrations; an area of 75 square miles with a population of 70,000. Furthermore, investigations are being made as to the possibilities of malaria control in rural districts in Virginia, North Carolina, Georgia and Alabama, the county being used as the unit in which to work.

The medical departments of the Army and the Navy are engaged in the same work in the more restricted fields furnished by their individual responsibilities. It seems to me that we may look forward to the time when malaria in the continental United States will be under control.

South of the United States, between the Tropic of Cancer and the Tropic of Capricorn there lie the countries of Central America, of South America and of the West Indies. The sanitary problems in these countries must be solved before the commercial, agricultural, engineering and mining enterprises can succeed. It seems to me that this is the field for the future endeavor of our country; not in the sense of exploitation; but in the sense of constructive cooperation. It appears to me that there is urgent need for the establishment in the United States of a clearing house for the problems of the tropics. An institute, if you please, in which physicians and nurses may be instructed in the problems
that they will meet in the tropics and from which they may be supplied to the administrative areas in which they are needed. In which physicians returning from the field, where they have had time only for the application of information already at their disposal, may learn of new facts and new methods for the application of old facts. In which the questions arising in the field may be sorted out and distributed for solution to various cooperating organizations: pathological and bacteriological laboratories; botanical and zoological laboratories; parasitological laboratories both for plants and animals, entomological laboratories and other scientific workshops. From which information may be sent to the field: In short a regulating center for the entire range of tropical questions. Such an Institute ought to interest the 29,000 physicians in the southern states, and all those who have interest in the tropics, as well as the physicians, scientists and business men of the tropical portion of the western hemisphere.

Within the next few years we may expect to see the inauguration of the Gorgas Memorial Institute, which will serve as a stimulus to the study of the problems of Tropical Medicine in this hemisphere. The Republic of Panama, through its President, Dr. Porras, has contributed the site for the Institute and proposes to contribute a large sum of money for construction and equipment. The Institute will be erected on the Bay near the new Santo Tomas Hospital. Articles of incorporation have been approved by the President of Panama, and a charter, which will be registered in Panama, has been granted under the Laws of the State of Delaware. It is proposed to secure an endowment fund of $5,000,000. Among the Trustees of the Institute are The Surgeon General of the Army, The Surgeon General of the Navy, The Surgeon General of the Public Health Service, Rear Admiral Braisted, M. C., U. S. Navy, Retired, Mr. John Bassett Moore, The President of the Republic of Panama, The Minister of Public Health of the Republic of Panama, Dr. Franklin Martin, and Dr. Leo S. Rowe.

It is interesting to know that the Trustees of the Boston City Hospital have recently authorized the organization of a service
for the diagnosis and treatment of cases of tropical disease including certain parasitic and infectious diseases rarely seen in Boston and more common in foreign countries. This service is to be directed by Dr. George Cheever Shattuck, who will assume the duties of Assistant Professor of Tropical Medicine at the Harvard Medical School. The Broad Street Hospital, in New York City, has also organized a service with instruction for ship physicians.

Another way in which the problem of instruction might be handled is for three or four of the smaller medical schools to combine forces and employ a man who would spend a portion of the time of each college year in the instruction of the senior class in each of the colleges of the group. Two months in each of four schools with a daily lecture, demonstration, or ward visit ought to be productive of good results.

Gentlemen: I have been a member of the American Society of Tropical Medicine since its organization in 1903: its Assistant Secretary from its organization until I was elected Secretary in 1907, and its secretary from that date until 1917. It is a matter of deep regret to me that I was obliged to miss the meetings of 1917 and 1919. In electing me to the office of President you have conferred upon me the highest honor in your power: an honor that I shall always remember with grateful appreciation.

REFERENCES

SWAN: Amer. Jour. Tropical Diseases and Preventive Medicine, 3, 1915, 220.