

SOME IMPRESSIONS OF MEDICAL PRACTICE IN THE TROPICS¹
PRESIDENT'S ADDRESS, 1942, THE AMERICAN ACADEMY OF TROPICAL MEDICINE

HERBERT C. CLARK

Received for publication December 2, 1942

Early history indicates that the practice of medicine was relatively well developed in Egypt and India before it had reached even a primitive stage in the temperate zone. The primeval method of treating diseases was, however, that known as empiricism. A certain drug or method would be used in a certain disease because it had seemed to do good in similar cases. Nearly all advances made in diagnostic methods seem to have been followed very soon by a corresponding advance in therapeutics. A great stimulus to the study of tropical medicine was the discovery of land in the tropics of the western hemisphere. This was followed by the migrations of many adventurous, courageous peoples who settled in the wide-spread primitive regions of the hot countries. Many European colonies were established and the people began to report their experiences. Cinchona was made known in 1640 as a treatment for malaria yet the parasite of this disease was not established as a fact until 1880 by Laveran. The generally accepted start of records in tropical medicine is given as 1764. It is credited to the organization of the Indian Medical Service. In the year 1768 James Lind was credited with publishing the first book on the diseases of the warm countries and this probably represents the beginning of important printed records.

Perhaps the very greatest single event that favored progress in tropical studies was the discovery and development of the microscope. The Assyrian lens (?) of 721-705 B.C. seems to be open to discussion as to whether it was used for magnifying purposes. Most authorities look upon it as an article for personal adornment or at most as a means for ignition. The first practical use of the lens appears to have been in the form of spectacles about 1285 A.D. and the hand reading lens in the period 1513 to 1520. According to Carpenter it is quite impossible to fix the date of the first microscope but general opinion favors 1590-1609. Janssen was among the early men to build such an instrument. In rapid succession others were developed by various people: Lieberkühn, 1738; Quekett, 1780; Ross, 1831; Powell, 1841 and Ross-Zentmayer, 1878. It was about this period of time (1880) that Laveran, using a high dry lens, discovered the parasite of malaria. Golgi, in 1886, established the parasites of quartan and tertian malaria. Marchiafava and Bignami, in 1891, made known the parasite of malignant tertian malaria.

The microscope armed the medical profession with an instrument of inestimable value and stimulated the development of stains, fixing solutions and other laboratory requirements. Until this period of time, the physician had to

¹ Delivered at the Ninth Annual Meeting of the American Academy of Tropical Medicine Richmond, Va., November 11, 1942.

depend for his diagnostic assistance on the history of illness and on what he could learn by sight, palpation, percussion, auscultation and the gross pathology in the autopsy room. Diagnostic laboratories soon made their appearance in the leading medical centers and great progress was made in the biological sciences which led to an accurate knowledge concerning the causation, modes of spread and measures effective for the prevention or restriction of some of the diseases. The microscope, together with colonial expansion as a further stimulus, prepared the stage for the activities of men like Sir Patrick Manson who is considered the real prime mover in tropical medicine. Ross soon discovered that a mosquito was the vector of malaria (1898). Bignami, Bastianelli, Grossi, Marchiafava and Celli rapidly added further knowledge on this subject.

Reed and his co-workers in 1901 confirmed Finlay's opinion (1891) that a mosquito was the vector of yellow fever. The work of Ross, Reed and Carter prepared Gorgas for his work in preventive medicine in Cuba and Panama where yellow fever and plague soon disappeared and malaria was brought under good practical business control. By this time medicine was placed on a better scientific basis. It was now possible to blend clinical knowledge with laboratory findings and the field of medicine suddenly extended to include bacteriology, protozoology, helminthology, mycology, entomology, climatology, dietetics and even zoology. The terms *tropical medicine* and *tropical diseases* have long been used to include those diseases under professional care in the tropics that have a higher incidence in the hot countries than in the temperate climates. These terms have grown less distinctive in modern times because the period of slavery, various wars conducted in the tropics and the development of all forms of transportation have succeeded in spreading some of these diseases to places outside the tropics. Some have not been able to secure and maintain a foothold while others have been able to do so. Nevertheless, the physician of the temperate zone must be able to diagnose and treat such diseases and be prepared for any relapse that may occur. Stitt informs us that when we consider a knowledge of malaria, blackwater fever, amoebic dysentery, amoebic liver abscess, pellagra and hookworm disease is just as important for the medical man in the Southern United States as for the physician in the tropical colonial possessions, it will be realized that there is more of a practical side to tropical medicine than is usually admitted. This present world war brings vividly to our minds the fact that the source of many things that we need in great quantity is in some part of the tropical world. The war is being fought this time, very largely in tropical countries. For years after our military personnel returns and scatters throughout the various home states it will be necessary for the medical profession to keep in mind the various parasites of the blood stream and the intestinal tract and the diseases due to them.

Dr. Vincent realized long ago that the commercial development of the tropics would be urgently demanded and that such development would enforce protection against the diseases common to such countries. The medical profession must play a very prominent part in this expansion. The same authority warns that there is a temptation, perhaps unduly, to exult over what has already been

accomplished in tropical medicine. A vast amount still remains to be done before dense populations can be protected and this is particularly true of a foreign white race. The conquest will call for sound administration and abundant funds. Vincent looks upon this period as an international adventure for the young men entering the medical profession. In recent years a great deal of study has been given diet and climate and some promising results have been published. Invasion of large business organizations into the tropics will need such advice even more than in the temperate zone as the *weather vanes* engaged in these studies now point out. Practice in the tropics demands more thought about the probabilities of associated diseases. A patient with a well defined primary reason for admission to a hospital due to a disease or accident must also be studied for the possibility of one or more associated parasitic diseases.

Probably no other section of medicine has shown so many advances in diagnosis and treatment as has tropical medicine during the past fifty years. Schools and institutes for research in tropical medicine are increasing in number and in geographical spread until, now, nearly all countries have some center or centers showing progress and promise for the future. Garrison claims that the 19th century marked the beginning of the organized advancement of science and the 20th century the real start of organized preventive medicine. Tropical medicine can form a natural avenue for us to promote better international relations. Some of the diseases formerly common in the temperate zones have almost been excluded and are now to be found only in the tropics where their incidence is also being lowered as social and sanitary conditions improve. Preventive medicine has been making advances that can now be measured with some degree of accuracy. Life insurance companies are able to show a gradual increase in the average length of life. A few hundred years ago leprosy was a common disease in most all parts of the world, scurvy was very common in past times, many of the fevers have given away to drainage, sewage systems, vaccines and protective sera and to campaigns against vectors such as the mosquito, fly, tick, louse, flea, etc. If the same effort is used in the tropics that has been primarily required in the temperate zone, even tropical records will show similar improvement. However, more funds will be needed and it is doubtful if our race, under the best of tropical conditions, can perpetuate itself as well as in a temperate climate.

Medical advances in general have been very encouraging yet regardless of the work of Laveran, Manson, Ross, Gorgas and others, malaria is still the most important disease we have to face in the tropics. There is also much to be learned about the management of the mycotic diseases, allergic conditions, diet and some of the unsolved virus diseases of man and domestic animals as well as the effects of climate on a permanently established white race in the tropics. Hippocrates noticed that "those who live in low meadowy and hot districts tend to be neither tall or well-built, but stout, fleshy, dark-haired, dark colored, bilious and wanting in courage and endurance"! Supan also tells us that a little less than half of the earth's surface is within the tropics and that the "culture zone" may be considered as that lying between north latitude 25° to 50°. This

statement is being forced to give way as advances are made in medicine and machines. It did not take Gorgas and his staff very long to stamp out plague and yellow fever on the isthmus of Panama during the building of the Canal yet malaria continued to play an important rôle all through the construction period and even, now, in the period of maintenance and operation it demands a continuous application of antimalarial measures to keep it in what we may call good business control. In the selected well sanitized areas very good control is maintained but outside of these areas and in the Canal Zone contact regions malaria still exists as of old.

The disease, its parasite and vector fails to lend itself so easily to a fight for eradication because of the *human seed bed*. The average layman and perhaps some of our profession look upon sanitation and the use of our present anti-malarial drugs as absolute eradication and protection. Our present methods of *control* where funds are available are effective and our drugs, quinine and atabrine are excellent for the *clinical cure* of malaria fever attacks yet with all methods in use we still have malaria with us and if all such methods were held in abeyance we soon would have a very serious malarial problem. The present war will find malaria a worthy foe for troops actively engaged in the tropics and subtropics. It will be found fighting on both sides and in all civilian reserve areas. Even though our own troops will be provided with prophylactic measures, at the close of hostilities it will be scattered everywhere that returning military personnel happens to live. Many will return to regions where no vector exists for the spread of the disease but it will be necessary for some years to watch for relapse and treat it without delay. There is such a thing as individual and even family susceptibility to malaria. Our Chagres River experience after 12 years of observation shows that most of our malaria in 6 villages occurs in certain families regardless of six courses of treatment a year and regardless of whether the home is on the bank of the river, in the rear of the town or located in its center. One or two such families are in all the villages and two of the families are of as pure negro race as can be found.

Whitmore (1927) found in his study of blackwater fever in Cuba that there was a distinct family and individual susceptibility to that disease.

Unless an antimalarial campaign can be indefinitely maintained, well financed and supported by legal authority, it is sure to fall within the category of the Malaria Commission's statement which is as follows: "The history of special antimalaria campaigns is chiefly a record of exaggerated expectation followed sooner or later by disappointment and, in many instances, abandonment of the work." The proverbial saying that "prevention of disease is much more economical than its cure" is probably true of malaria but how many realize what the *cost item* means in the control of malaria! Vincent argues that money spent in preventive medicine is an investment from which we expect dividends. How true that is in theory but commercial organizations in the tropics use a different yardstick for measuring the return in dividends. For every dollar spent in preventive medicine they want very early returns in labor efficiency that a non-medical labor supervisor can plainly see. We, as a profession, are looking at it

on the terms of a long investment. None of our diseases seem to demand more of the future medical student and allied scientific students than does malaria. Ross says that, "he who undertakes the work of malaria control must remember that he is a soldier in one of the greatest of crusades, which has for its object the conquest of the tropics for humanity."

As wonderful as quinine and atabrine are for the cure of an attack of malaria we still lack a drug that will, in all cases, eradicate all parasites and prevent relapse. A true gametocide has not yet been found that will prevent transmission of the disease by its vector.

Osler, in referring to the development of the modern group study of a patient, tells us that the anatomist, the physiologist, the pathologist, the X-ray laboratory, the clinician and the surgeon are all necessary in the study and removal of a brain tumor. So it is with malaria. We need the co-ordination of the clinician, the pathologist, the protozoologist, the entomologist, the pharmacologist and the field sanitary engineer in the control of malaria.

The International Health Division of The Rockefeller Foundation carries out Vincent's idea that the best method of attacking this or any other research problem is to collect investigators with special capacities, equip them, place them in contact with a problem and then leave them alone.

For the attention of the young men entering our profession Osler's advice still holds true, "The young physician should not be disturbed by the thought that it requires superability to rise superior to one's environment. It is the average man with a set determination to equip himself who is more likely to succeed than any other."

With the proper approach and good professional associates the young medical man of today can find in tropical medicine a true field for international adventure. May we ardently hope that in his day research in chemotherapy will provide us with a true gametocide, another drug that will manage the cyst carrier of amoeba and another that will eradicate trypanosomal infections. Chemotherapy has made outstanding advances in the past few years, enough to warrant this wishful thinking. Even where so much still remains obscure "life's spectacles" are becoming better and better adjusted to help us see more clearly the right pathway toward the solution of our problems.

REFERENCES

- BOYD, MARK F.: *An Introduction to Malariology*, 1930.
CARPENTER, W. B.: *The Microscope and Its Revelations*, 8th Edition, 1901.
CASTELLANI, A., AND CHALMERS, A. J.: *Manual of Tropical Medicine*, 3rd Edition, 1920.
GARRISON, F. H.: *History of Medicine*, 4th Edition, 1929.
HACKETT, L. W.: *Malaria in Europe*, 1937.
MANSON-BAHR, P. H.: *Manson's Tropical Diseases*, 9th Edition, 1929.
MCKINLEY, EARL B.: *The Development of Tropical Medicine in the United States*, 1935, and *A Geography of Disease*, 1935.