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WORLD HEALTH

Dr. Leroy E. Burney

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Reviewed by: Colonel J. H. M. Smith, USAF

Date: 1 December 1960

INDUSTRIAL COLLEGE OF THE ARMED FORCES
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WORLD HEALTH

4 November 1960

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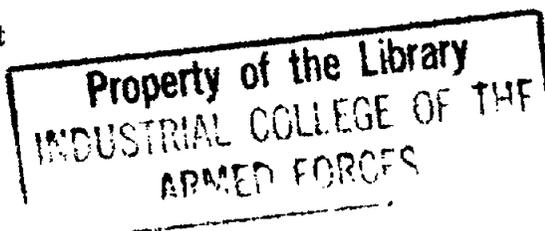
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Reviewed By: C. J. H. M. Smith, USAF Date 1 Dec 1960

Reporter: Ralph W. Bennett



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ADM. PATRICK: General Mundy, Gentlemen: A significant aspect of world human resources is most certainly world health. The interest of the United States in assisting in raising the health levels generally throughout the world is well known to all of us. No nation can rise to the task of being economically viable unless their people have the physical capability to meet the requirements.

Our country has been a leader in assisting the backward lands of the world in reaching a sound health condition. Our speaker this morning is Admiral Leroy E. Burney, the Surgeon General of the U. S. Public Health Service in the Department of Health, Education, and Welfare. Dr. Burney's wealth of information is derived from his many challenging assignments both here in the United States and overseas.

Dr. Burney, we are privileged to have you with us today, and I am very happy and honored to introduce you to the Industrial College Class of 1961. Dr. Burney.

DR. BURNEY: Admiral Patrick, General Mundy, Members of the Class of 1961: This is the second occasion when I have had the privilege of speaking to classes such as yours. I missed last year's because I was on my way to India at the time. I think the Deputy Surgeon General, Dr. Porterfield, talked to you.

I am particularly pleased to have the assignment of this subject

to discuss with you--"Health as a World Resource"--because as Surgeon General I have been very much interested in our international health activities, and have had the opportunity to visit a number of countries throughout the world which we call developing countries, to see what the tremendous needs are in these countries in manpower and resources and facilities, and to see also what has been accomplished in many of these countries as the result of various economic and health and educational interests working together, as contrasted with taking an isolated circumstance view of this.

I see one of the former officers, the former Director of the National Institutes of Health, Dr. Guy, sitting back there. I feel a little presumptuous in discussing a subject like this with him here also.

Paul Hoffman, in an excellent economic study entitled "One Hundred Countries and One and One Quarter Billion People" opens with the provocative statement: "Everyone knows an underdeveloped country when he sees one." He then lists about twenty clinical symptoms of underdevelopment--beggars in the cities, bare subsistence in agricultural areas, inadequate supplies of power and light, few factories, insufficient roads and railroads, illiteracy, an unfavorable export-import balance, and, of course, several others.

A physician with some experience in world health could begin a study with the same sentence: "Everyone knows an underdeveloped country when he sees one"; and compile an equally imposing list of symptoms without departing from his own field of specialization--low life expectancy, high

infant mortality, unprotected water supplies, lack of rudimentary sanitation, woefully inadequate supplies of health manpower with the existing supply concentrated wholly in a few cities, few hospitals, and the widespread prevalence of certain diseases which are the hallmark of underdevelopment.

The point I am seeking to make--and it is my central thesis this morning--is that health and economics are inseparable. To a great extent, each is a function of the other. And the corollary to this proposition is that planning for advancement in either economics or health must include the other factor. Economists neglect health at their peril; and it is equally essential that health planners consider the economic as well as the biological facts of life.

Lest I be accused of belaboring the obvious, I think there is abundant evidence that these precepts have been honored more in the breach than in the observance by economists and physicians alike in the past. Gunnar Myrdal, the celebrated Swedish economist and social scientist, took note of this occupational myopia in a brilliant paper presented to the World Health Assembly a few years ago on the subject, "Economic Aspects of Health," when he presented what he called "a general excuse on behalf of my own profession as to why, in the social sciences generally and economics particularly the economic value of health and the price of health have been given comparatively little thought."

Myrdal notes that economics has always had a strong materialistic bias, thinking of capital as material capital to the exclusion of personal capital.

Then, in my opinion, he hits the nail squarely on the head:

"The quantitative relations themselves in this field are so much more difficult to pin down and ascertain in an unequivocal manner than, say, market prices, rates of interest, wages, capital values, capital depreciation.... There is no easily determinable money value of a healthy human being, as there is of a house or a machine."

There's the real difficulty. On an assembly line in a large factory, it is possible to arrive at a fairly accurate estimate of the cost of absenteeism during an influenza epidemic. But what economic yardstick do you apply to a farmer who spends every day in his rice paddy, but whose strength is cut in half by disease? What profit and loss statement can be devised for his six sons, all of whom live long enough to consume rice and only two of whom survive long enough to help their father produce it? What price the beggars in the bazaars of Cairo, Karachi, and Calcutta who beg because they are blind, and whose blindness could have been prevented?

Moving away from economics into the closely related area of politics, to what extent is misery a predeterminant of totalitarianism? Is it possible or practicable for us to spread democracy--which, for the individual citizen, is the most strenuous and demanding form of government ever devised, as well as the most rewarding--to people who are so sick and so tired that they would much prefer to have others do their governing for them? To what extent does successful free enterprise depend upon people strong enough to be enterprising?

These are the questions before the house, and the "house" is the entire free world. Recently there have been heartening indications that economics and health are becoming as closely identified in our thinking as they are in fact. Men like Mr. Myrdal, and Mr. Hoffman himself, are among those who are showing the way.

Let us turn now to a few specifics, beginning with Mr. Hoffman's one hundred underdeveloped countries and their one and one quarter billion residents.

(SLIDE 1)

He has taken as his index of underdevelopment the annual per capita income during the period 1955-57. All of the 100 countries have per capita incomes lower than \$700. Those shown in black indicate average incomes lower than \$100; and these include about 838 million people. Those shown in the next darkest shade, with incomes between \$100 and \$200, include another 204 million. It should be noted that Mainland China, North Korea, and North VietNam are excluded for lack of statistics. Otherwise the total figures would be enormously higher and the proportion of the human race overwhelming.

You will note that the continents of South America and Africa are totally in shadow, with the sole exception of the Union of South Africa, as are the Middle East, Southeast Asia, and Melanesia. The "chosen few" living in the comparative luxury of development are confined to America north of the Rio Grande, Europe, the Soviet Union, Japan, Australia, and New Zealand.

Bearing in mind this economic navigation chart, let us examine briefly the distribution of a few of the world's major scourges. The cumulative coincidence is, I think, rather startling.

(Slide 2)

Probably the largest disease problem in our world, at least in numbers of persons affected and threatened, is malaria. It is estimated that at least 250 million people suffer clinical attacks of malaria every year. Perhaps 2 1/2 million die as a direct result of this disease. It is a direct cause of infant mortality and an indirect cause of death in all age groups through lowered resistance to other infections. But its greatest impact falls in the intangible realm of debilitation.

In Slide 2 you see the areas of the world particularly affected by this problem. It is prevalent in certain countries of the Western Hemisphere about 15 degrees to either side of the equator, in Asia south of 40 degrees north latitude, in Indonesia, in the Southwest Pacific, and in Africa. It is also endemic in Mexico, Central America, and the Caribbean area, in Portugal and Spain, in the Balkans, and in a large segment of Southeast Russia below the 60th parallel.

(Slide 3)

The second disease which I would like to mention is blinding filariasis. This disease, caused by a small worm, impairs the vision and may cause total blindness.

The disease, sometimes called "river blindness," is transmitted by a gnat which breeds in rapidly flowing streams. It affects nearly

20 million people in Africa, Central and South America; and in certain localities 80 to 100 percent of the total population of the area will be infected.

(Slide 4)

My third exhibit is African sleeping sickness, trypanosomiasis. It is prevalent in most of Africa south of the Sahara, except in the very southernmost part of the Union of South Africa. It is a particularly virulent disease, transmitted by the tsetse fly, which affects animals, particularly cattle, as well as humans. This results not only in direct injury to the population, but also in reduction of a most important element of the food supply. This disease is a great barrier to African economic progress.

(Slide 5)

The next disease, schistosomiasis, involves about 150 million people in the world, mostly in tropical and subtropical regions. Schistosomiasis is a debilitating disease, producing emaciation, weakness, and increased susceptibility to many other infections. Because it disables the worker, it is a serious economic problem. As the map indicates, it is most prevalent in tropical Africa and along the Mediterranean Coast. In Asia it infests the China Mainland, Japan, and certain of the Philippine islands. In the Western Hemisphere the disease is prevalent in Puerto Rico, Venezuela, and Brazil.

(Slide 6)

Leprosy, about which you know, occurs primarily in the warm and

humid climates. There are variable estimates as to the number of lepers in the world today. I remember Dr. Lees, in South Korea, saying that they had about 170,000 lepers in that small country. It has been estimated that there are around 15 to 20 million cases in Africa. But I mention this to indicate that we really don't know how many, but there certainly are millions and millions of cases of leprosy.

Leprosy is associated with overcrowding and poverty. However, many of the preeminent factors which affect the distribution of leprosy remain undetermined. Europeans and Mongolians are more susceptible to the severe form, whereas the darkly pigmented peoples develop only the mild form in most cases.

(Slide 7)

Trachoma is a virus disease which affects the eye. There are probably about 400 million people affected in the world, about 10 million of whom will become completely blind. This also is a disease associated with poverty, poor sanitation, and ignorance. It affects all age groups, but particularly children. In some sections of North Africa the entire population suffers from the disease, and the rate among children of pre-school age runs between 70 and 100 percent.

In India, prevalence rates in some localities have reached 78 percent. In Taiwan recently a survey showed 48 percent of the children infected. New areas of infection have been found recently in South Africa and in Western Australia. We have had this disease in our own American Indians for a number of years. But the disease is rapidly vanishing in

this country through improved sanitation and early therapy.

The diseases whose distribution we have seen are essentially tropical in nature, and they are only a few of the many whose presence is part of the anatomy of underdevelopment. Our catalog of woe should include typhoid fever and the various dysenteries, which accompany inadequately protected water supplies in every climate. It would not be complete without the constellation of diseases caused by various forms of malnutrition--some of them so prevalent in certain areas that they are locally considered the normal condition of man.

We have not considered tuberculosis, a problem so widespread that 77 percent of the population of Bombay under 15 years of age react positively to the tuberculin test, 73 percent in Tangiers, 66 percent in the cities of Taiwan. Tuberculin surveys in New York City today show about 9 percent positive in those under 15 years of age, but a century ago they might well have shown figures comparable to those of Taiwan. It has been truthfully said that the peoples of the world dwell side by side in space but not in time.

The list of diseases could be extended almost indefinitely. The moral is clear. Disease and poverty are inseparable companions. People are poor because they are sick, and sick because they are poor. As they become poorer, they get sicker; and this in turn leads to still greater poverty.

Dr. Abraham Horwitz, Director of the Pan American Health Organization, which is the operating arm of the World Health Organization in

the Americas, has developed a chart which presents graphically the economic cycle of disease.

(Slide 8)

Beginning at the top with low production, the chain of consequences leads through bare subsistence incomes to deficient nutrition, meager education and inadequate housing, and thence to disease. Disease in turn results in low human energy, which feeds back into low production; and so the wheel turns.

The inner circle on the chart furnishes an interesting commentary on the attempt of health services to break the cycle. Widespread disease leads the underdeveloped country, logically enough, to expend a high proportion of its limited health resources on medical care, on curative medicine. Consequently, however, the investment in preventive medicine and public health is extremely limited. Perhaps the most tragic commentary of all is the ultra-modern hospital in the capital city, its services available only to the thinnest upper stratum of society, standing as a solitary oasis in a desert of unmet needs.

Perhaps it would be useful as well as topical to narrow our focus, for a few minutes, to the specific health problems of a single country-- the new-born and deeply troubled Republic of the Congo. Although its recent transition from underdeveloped territory to underdeveloped independent nation has been marked by unusually severe birth trauma, what we know of its health problems and resources is both instructive and sobering.

May I inject here a little personal incident while we're talking about Africa. At the World Health Assembly last year at Geneva, the Russian delegates were extremely friendly with those from the African nations. At a reception one evening Dr. Gazarnov was talking with the delegates from about five African nations, and one of our doctors suggested that I go over and join the group, in order to have a little cross-fertilization. Well, I did; and just as I joined the group, Mr. Kamarja, the Minister of Health of India, also joined the group. And Dr. Gazarnov said: "I was just telling these gentlemen that when Senator Humphrey becomes President of the United States, I'm coming over there and become Surgeon General." Mr. Kamarja, from India, spoke up and said: "When you do, Dr. Gazarnov, then you can go where you please."

In capsule form, then, the Republic of the Congo lies in equatorial Africa, subject to the full onslaught of natural enemies with which nature plagues mankind in the tropics. Its area is roughly equal to that of the United States east of the Mississippi. Its population in 1958 was around 14 million, roughly one percent of whom were non-indigenous whites. Its overall population density of about 18 persons per square mile ranks it among the least densely populated countries of the world.

As with many of the emerging nations in Africa and elsewhere on the globe, it is not possible in the Congo to obtain comprehensive and reliable data on deaths and illnesses attributable to specific causes. Nevertheless, the available data do provide indications of the relative incidence and potentialities for spread of the principal endemic and

epidemic diseases.

Bearing in mind that the numbers of cases reported are probably considerably lower than the actual totals, the following figures convey an impression of the magnitude and diversity of the health problem in the Congo: among these 14 million people:

About 25,000 cases of smallpox were reported during a 6-year period. About 32,000 cases of tuberculosis were reported in 1957. Amebic dysentery--159,000 cases reported in five years; and undoubtedly that is extremely small. About 320,000 cases of hookworm are reported annually. Venereal diseases--245,000 cases reported in one year. About 170,000 cases annually of yaws. About 271,000 cases of leprosy reported in 1957. In schistosomiasis the prevalence was as high as 80 percent in parts of the Katanga province. In malaria 945,000 cases and 2,300 deaths were reported in 1958. All of this, as I say, occurred in a population of about 14 million.

In addition to these and many other infectious and parasitic diseases, many types of nutritional diseases are reported from all parts of the country. The native diet in large portions of the Congo, and along that whole coast, is extremely deficient in proteins, especially animal protein. The combined intake of all meat, fish, eggs, milk, and dairy products in the average diet adds up to less than two percent of the daily caloric intake. The basic diet consists of cassava, supplemented seasonally by a few grains and local fruits and nuts. Inevitably, the protein deficiency contributes to infant mortality between the ages of one and

four, and to greatly reduced productivity in the adult worker.

Against this overwhelming battery of diseases, the Congo under Belgian rule was able to muster about 8,400 trained health personnel on January 1, 1959. Of these, 703 were qualified European physicians. None were qualified Congolese physicians, although 22 Congolese students were enrolled in the newly established medical school at Leopoldville. The first three Congolese medical students are scheduled to receive their degrees next July.

Other health personnel in the Congo included about 1200 European nurses and 900 African male nurses, 82 European pharmacists, and 644 European auxiliary medical personnel. The largest single component consisted of 3,900 Africans who were certified as assistant male nurses. Not a single Congolese physician; and someone mentioned to me that there were only 14 people, I believe, in all of the Congo who had graduated from college.

In terms of medical care facilities, there were 558 governmental and non-governmental hospitals on January 1, 1959. Of these, 127-- almost one-fourth--were for the one percent of Europeans in the population. A total of about 65,000 hospital beds of various kinds were available for the Congolese.

In July of this year, as you know, these tragically inadequate resources were made even more inadequate. The World Health Organization responded swiftly to the emergency, and at least 200 international medical personnel are now operating in the Congo. When they arrived,

they found hospitals and other health services still running, but with greatly depleted staffs. In Luluabourg, 3 out of 14 physicians remained; in Kivu Province, 8 out of 23. In Oriental Province, exclusive of Stanleyville, no doctor remained at work out of 75 who had been there prior to independence.

The WHO-coordinated relief operation to the Congo is a highly dramatic demonstration of the world's response to a local crisis. Red Cross teams arrived within the first month from Norway, Denmark, the Netherlands, Finland, Yugoslavia, Greece, Czechoslovakia, Japan, Poland, Sweden, and Ireland, plus national teams from Ghana, Israel, and Tunisia. Red Cross teams from East and West Germany arrived separately in Leopoldville on the same day. They were promptly dispatched in the same plane to an emergency area, where they are working together effectively and without friction, according to the last report.

It should be noted that it had been agreed by the World Health Organization that there would be no teams of personnel from the big powers--an agreement which was held to for a while, but which was soon broken by ^{the} Russians sending an independent team into the country. Immediately the liaison of the World Health Organization, with the Minister of Health, was able to incorporate this team with the others, rather than the group going out and working on their own, which they had expected to do. As I recall, they brought a team of about twelve individuals from Russia, twelve professional people; and eight interpreters. So they had expected to work as an isolated unit.

On 2 September WHO was able to report that the overall health situation in the Congo remained satisfactory. And yet, as is clearly evident to everyone-- most clearly of all to WHO--this temporary regimen, and, indeed, the Belgian health regimen it supplanted, is the thinnest kind of cover over a gaping chasm of need. Where will the resources come from, the manpower and facilities, to make a genuine impact on the problem in the Congo and elsewhere in the underdeveloped world?

Even in the developed nations, health manpower is in short supply. You may recall that we had a study of the need for physicians in the United States just this last year; and the group came up with the statement that the 132 physicians per 100,000 population, which we have in the United States at the present time, is a minimum necessary to meet the needs of the people in the United States. And we will need to graduate about 3600 additional physicians per year by 1970 to meet even the growing population demand; and we are now graduating 7400. To do this, we will need to graduate about a thousand additional students from existing schools, of which there are 82, and to construct about 15 to 20 new schools.

Another interesting commentary, I think, in this is that we are licensing in the United States each year 1600 graduates of foreign schools. And if it were not for them supplying one out of every six of our new licensed physicians, we would be much worse off than we are at the present time. Certainly, there's no reason why we should not license graduates of foreign schools; but one questions whether the United States

should depend for one physician out of every six upon foreign schools. Rather, we should be more of an exporting nation. It is rather ironic that this country, with our high degree of medical care, actually imports graduates from foreign medical schools.

Actually, of course, we do export considerable quantities of medical manpower and other resources for health. As a nation, we do it through several channels--multilaterally through the specialized agencies of the United Nations,, bilaterally through our programs of international cooperation, and unilaterally through private foundations, missionary groups, and the like.

Now, the World Health Organization. This was established after World War II. It came into existence formally in 1948 and absorbed the previously existing organizations, such as the Office of Internationale d'Hygiene Publique, and the Health Organization of the League of Nations. Its program, as a truly international health organization, is far more comprehensive than those of its predecessors.

WHO supplies technical assistance to the member governments -- and there are one hundred nations now members of World Health Organization; there were, I think, eleven nations that came in the last time in Geneva, all from Africa--in disease-control programs in the way of provision of advice, educational material, professional help, and even funds. It also arranges for the training of national health workers outside of their own countries and at the same time to support the improvement of indigenous training facilities within countries.

Member nations contribute to the budget of the World Health Organization on a scale proportional to their ability to pay. The smallest states pay a minimum of around \$7,000 a year. The United States currently contributes about five million, which is about one-third of the budget. We are prohibited by law from paying more than a third of the total budget.

There are several other international governmental agencies in the field of health. The United Nations Children's Fund, UNICEF, participates with the World Health Organization in projects related to the health of children and their mothers. The ILO, the International Labor Organization, which promotes the voluntary cooperation of nations in improving labor conditions and in raising living standards, carries out important health work, particularly in the area of occupational diseases and occupational safety. The Food and Agriculture Organization, FAO, has as one of its objectives the raising of the nutritional level of the populations of the world, a matter of fundamental importance to world health. UNESCO, the United Nations Educational, Scientific, and Cultural Organization, has a number of programs in the areas of school health, health training for teachers, and teaching of basic sciences in the various countries.

The total financial contribution of the United States to international health programs, both multilateral and bilateral, has increased from slightly less than \$10 million in 1950 to about \$86 million in 1960. In addition to the health component of the International Cooperation Administration budget,

and the regular yearly contributions to the operating budgets of WHO and the health programs of other international agencies, these sums include certain special contributions. The ICA, of course, has sizeable health programs in about 24 countries.

I might say that there is a trend in some of these bilateral programs to withdraw from these countries; and one can expect that in some of the African nations, with the fear that as colonialism goes out, economic domination comes in, there may be some reluctance to accept programs in which there is some apparent or inapparent economic relationship.

Large foundations contribute generously to health in foreign lands. The Rockefeller Foundation, for example, made grants totaling more than \$3 million in 1959. The Kellogg Foundation granted medical scholarships in Latin America. A single church organization, the Seventh Day Adventists, reports the startling number of 251 physicians and 1,119 nurses in overseas missions.

Finally, I should touch briefly upon the expanding field of international medical research. The Public Health Service, through its National Institutes of Health, has been supporting research in overseas institutions on a relatively small scale for several years, although we have at the present time 143 research projects in a number of foreign countries, and we have fellowships given to scientists in 35 foreign countries.

With the passage this past summer of the International Health and Medical Research Act of 1960, this effort seems certain to expand rapidly.

Among other things, this act provides for extensive use of counterpart funds for health and medical research.

I might say that everywhere I have been on a recent trip to Yugoslavia, one is impressed with the tremendous respect that the scientists and academic people and practitioners in these countries have for American medicine and American research. Certainly our prestige is highest in the world in these medical fields. Many of these people, of course, have been to this country for research training, or training in clinical medicine. They look to us now as the acme of medical practice and medical research. The Latin Americans don't look to France any more. The Middle East does not look to Germany or to any other country. America is at the pinnacle as far as the scientists and the clinicians of other countries are concerned. And they would all like to have more opportunities to study in this country. And also they would like to have some of our people come over there and work in their medical schools and in their research laboratories.

For a group such as this, it would be gratuitous for me to dwell at any length on the benefits received by the United States in return for our investment in international health.

The most obvious of these benefits is self-preservation. In our contemporary world, health is indivisible. It is impossible, in the jet age, to maintain an island of health in a sea of disease. A couple of years ago there was a smallpox outbreak in Heidelberg, Germany, which was ultimately traced to a single airline passenger from Pakistan. Planes

land every day in fifty American cities from more than one hundred foreign lands.

Second, perhaps less obvious, is our tremendous gain in medical knowledge as a result of international collaboration. The honor roll of medical discovery in the past represents a roll call of the nations. In the present there are a number of vital questions which can only be answered through international research.

Third, there is the intangible but unmistakable good will toward our nation which seems to be invoked especially well by assistance in health. I have sensed the warmth of this human response--people to people, if you will--many times in my trips to other countries. This alone, I believe, would repay many times over our present investment in world health.

There is, and has been for many years, a school of thought strongly critical of international health efforts. One of its most extreme expressions was voiced by William Vogt in his controversial "Road to Survival" some years ago, when he wrote: "The modern medical profession continues to believe it has a duty to keep alive as many people as possible. Through medical care and improved sanitation, they are responsible for more millions living more years in increasing misery."

The island of Ceylon is the most frequently cited example of a population explosion resulting from the application of disease-control measures. Ceylon experienced a remarkable decline in its annual death rate in a single year--from 20.3 in 1946 to 14.3 in 1947. This drop coincided

in time with a widespread program of malaria control through residual spraying of insecticides. It has been assumed that there was a direct cause-and-effect relationship; by extension it has been assumed that malaria control equals population explosion.

However, in a study published this past month by one of our officers, Dr. Harald Frederiksen, serious doubts have been raised about the validity of this equation in Ceylon. Dr. Frederiksen points out, first, that the most dramatic reduction in deaths took place in the second half of 1946; whereas 1947 was the first year in which a substantial proportion of the population exposed to malaria was protected for a full year. He notes further that prior to the malaria control campaign, 62 percent of the people of the island lived in essentially non-malarious districts, and that there was relatively little difference between the rates of decline of mortality in the malarious and non-malarious areas. "This analysis of mortality in Ceylon," Dr. Fredericksen concludes, "should quiet unfounded fears that malaria control invites famine. The available evidence fails to establish malaria control as the sole or major cause of a population explosion in Ceylon."

Does this conclusion, while exonerating the malaria control program of the principal blame for population explosion, also minimize the significance of such public health efforts? I think not. Let us examine the case of Ceylon somewhat more closely.

Before the malaria control campaign, the population density of the relatively small non-malarious parts of the island was 17 times that of

the areas with hyperendemic malaria. And yet it was this hyperendemic area which had supported the highly developed ancient civilizations of Ceylon. Dr. Bandaranaike, recently Prime Minister and formerly Minister of Health of Ceylon, has said: "Although Ceylon is a small country which is primarily agricultural, nearly two-thirds of the island has been uncultivable chiefly owing to the dreaded disease, malaria. With the removal of malaria today, it will be possible to open up these vast tracts of land considerably to improve the living conditions of the people, the majority of whom hitherto have been living in poverty and misery."

Thus it may well be that the net demographic effect of malaria control in Ceylon will be very positive indeed--relieving population pressures by permitting full use of resources in an area which is underpopulated and underdeveloped.

We have only to look at the southeastern States in our own country to see the same situation. One of my first assignments when I came into the service in the early thirties was to take blood from malaria patients to determine the effect of malaria on syphilis. One could go up and down the highways and byways in South Carolina, for example, and find a clinical case of malaria in every house. You could find enlarged spleens without having to palpate them, just by looking at some of the youngsters. And industry was not going into those areas. Now we have no malaria in the United States, and you have noted the tremendous economic development of the southeastern States. One must not give malaria

eradication the entire credit, but certainly without it, it could not have been accomplished.

Most of the widespread diseases of underdeveloped countries are primarily debilitating rather than killing illnesses. Of the six whose distribution we saw on the slides, five--malaria, schistosomiasis, blinding trachoma, filariasis, and leprosy--are chiefly disabling diseases. When these are controlled, the first result is not the addition of many more mouths to feed, but rather the addition of many more hands to work.

Further, the control of these plagues tends to open new areas of productive land. Malaria has rendered countless millions of acres, many of them high in carrying capacity, uninhabitable. The tsetse fly has left 4,500,000 square miles of land in Africa in almost total idleness, as Dr. Jenney points out in his paper which you have read, "waiting to become the world's largest land reclamation project."

There are other specific examples of immediate gain which can be cited.

Dr. I. C. Fang, the regional director of the World Health Organization in the Western Pacific, has reported that rice production in the Philippines is sufficient for the needs of the islands for the first time in history. "This is certainly due to the fact," Dr. Fang said, "that the area of land available has been augmented by 20 percent thanks to the anti-malaria campaign."

In the province of Cham, Cambodia, the population has been doubled in five years, largely due to immigration from other overpopulated provinces.

Dr. Jenney has struck the note truly when he says: "The introduction of a well man into an economy does not create problems; it solves them." Even ignoring the humanitarian satisfaction gained and political good will engendered, I am convinced that a greatly increased emphasis on health as part of our economic program in the underdeveloped countries is not only justified, but absolutely essential.

Thus we return to our point of departure. Health and economics are inseparable. Planning for the development of physical resources is incomplete if it fails to take into account the development of human resources, just as planning for health is inadequate if it neglects the physical base upon which the population stands.

Frequently the only practicable approach to fundamental health problems involves close teamwork among many disciplines. In many parts of the world, for example, malnutrition due to protein deficiency can be combatted only through the introduction of soy beans or some similar crop. This requires a revolutionary change in farming methods which are centuries old, and such a change in turn requires a highly successful program of adult education. Thus agricultural specialists and educators are indispensable to the solution of what is essentially a health problem.

Among the many confusing and apparently contradictory phenomena observable throughout our rapidly changing world, one fact stands out clearly: The levels of expectation of peoples everywhere are rising. The underdeveloped nations are the developing nations, and their people

are no longer satisfied with things as they were, or as they are. This soaring aspiration is the hope of the future. It is also the challenge of the present for nations like ours.

Better health for its own sake is among the benefits desired and expected. It is also a resource which will permit the realization of other goals and aspirations. As we assist other nations in their efforts to fulfill their expectations of better health, we contribute also to the fulfillment of their expectations of us. Most important of all, we contribute to their capacity for self-fulfillment in the future.

CAPT. SMITH: Gentlemen, Dr. Burney is ready for your questions.

QUESTION: Dr. Burney, could you comment further on the shortage of physicians and nurses in this country? It seems like a question we've been faced with for many years and it's perhaps getting worse rather than better. We have heard a number of suggestions and comparisons from time to time about the training being on too high a level in some cases and things like that. Can you tell us why this is taking so long and what you foresee in the future?

DR. BURNEY: If I answered your question completely, it would take an hour's lecture. Briefly, though, first, medical education has changed, as education in other areas has, as scientific knowledge has increased. I graduated from medical school thirty years ago. I have a son in college, and the things that he is studying in biochemistry and pharmacology are so far beyond what we had, naturally, that one questions how they can get it all in even in four years at medical school.

There is also a difference of opinion as to the knowledge, wisdom, that a medical student should have in the social sciences as well as in the medical sciences. There is one group that feels that a doctor should have a little understanding of people as well as medical knowledge. So that accounts for four years of pre-medicine as well as four years of medicine.

Now, dental schools are experimenting with a shorter course. Hopkins and Western Reserve are trying to fit it all in six years; and I think we will have to come to some compromise in that area.

Also, medical students entering the class of 1960 will be ready to practice by 1970. It takes about ten years--four years in medicine, internship, an average of three to four years residency, and then perhaps two years of medical service.

This is discouraging to many young men, particularly when we are not getting the same quality of applicants at medical schools either. The physical sciences are much more attractive now than medicine, plus the fact that about 70 percent of all the graduates from the physical sciences can receive a fellowship, which will pay them anywhere from \$1500 to \$3600 a year. Only about 10 percent of medical students receive fellowships, and those amount to \$500 a year.

So all of these things are increasing the quality of students applying for medicine. And then medical education is extremely expensive. It costs 25 million dollars to build a medical school and a teaching hospital. And the average cost of maintenance and furnishing is about three to four

million dollars. So medical education is expensive. We're still going to have to expand existing ones and build new ones and find more efficient ways of using their professional skills and supplementing them much more with auxiliary personnel, which we have never done very well in the past.

QUESTION: We hear that there is ~~an~~ severe shortage of well-trained medical personnel in this country. We also know that in all of these underdeveloped countries there is ^{a great} need for medical help of all kinds. My question, sir, is directed to the training of some of these people in foreign countries, not to the extent of very high expertness, but to the extent of being able to do more practical things, like practical nursing. I understand, for instance, that in Communist China they have done quite a bit in this line of training so-called ^{technicians,} medical / who are not medical doctors, but they have a special field in which to practice what they learn. What lines of thought and activity have we done in this field?

DR. BURNEY: Of course, that is the answer in many of these countries. Some of them are doing it already. For example, India, which had 17 medical schools in 1948, when it got independence from Great Britain, now has 57 medical schools; and expects to develop 65--15 more--by 1965. This is turning out a great many more physicians. But the quality of those is much less than what it was. But it is providing physicians to carry on services which they never had before. And that is extremely important.

I think that's what we'll have to do in Africa. We'll have to help

them develop
^ their own medical schools. We'll have to help them staff those medical schools for a while, until they can train some of their own teachers.

But certainly in medicine and dentistry, anything is better than what they have had in the past.

But, again, you run into great nationalistic ties in these countries. They want a physician who is just as highly trained as one in the United States. They want a cancer hospital. They want a cancer institute. And I might say that the Russians are turning out tremendous numbers of physicians and other health personnel. They have a shorter course than we have. And many of these are what they call health teams, actually like a practical physician and a practical nurse. They are quite willing to send these to other countries. But up to the present time, in Indo-Viet nam, nesia, ^ Ceylon, some of those countries, they have not accepted these. The time may come when they will.

QUESTION: Doctor, we saw yesterday a film which depicted in a very striking way what one of the Christian denominations is doing in the way of medical missionary work in the Congo. Would you care to comment in a general way about these denominations that are helping in this field?

DR. BURNEY: Yes. They have a tremendous impact; much more so than has been recognized or for which they have received credit.

I remember in the Philippines going through one of the provinces there and having pointed out to me a small Presbyterian hospital, which was the only hospital, until the last year or two, the only center for

medical care, in that whole province. You can go in other countries and see these hospitals that have been established by Protestant churches. They have made a tremendous contribution to those areas, and actually have paved the way for some of the official relationships.

QUESTION: Along the lines of the first question, regarding the number of doctors in our own country, I have heard it criticized that in fact some areas regulate the number through the manner in which State boards license them. Would you care to comment on that?

DR. BURNEY: I would say that's an assumption and not necessarily a fact. Of course, each State has authority under State laws to regulate the licensing of any professional group--physicians, engineers, dentists, nurses, and so forth.

I have also heard it said in my own State of Indiana that doctors' sons had a much better chance of getting into medical schools than farmers' sons. But I also remember one year when seven sons of faculty members of our new medical school failed to get into the medical school, because they didn't qualify as well as someone else.

No; I don't think that is a factor at all. I think we have to be careful in this country that we do maintain quality as well as increase quantity. I don't think we want to do what India has done, because we do not have the same need as India. And if we want to maintain our leadership in the world in this clinical and research field in medicine, we have to maintain quality. That still doesn't mean that we can't try through experimentation to cut down somewhat on the training period for physicians.

QUESTION: Socialized medicine has been tried in some countries, such as England. Would you care to comment on what that means to the patients? Considering pressures of one degree or another for socialized medicine in this country, would you care to comment on its advantages and disadvantages both to the doctor and the patient?

DR. BURNEY: I have visited some of the hospitals and some of the communities, of course, in the United Kingdom, and also in the Scandinavian countries. They also have socialized medicine, if you want to call it that, in Yugoslavia.

I don't think there's any question but what, by and large, the people in Great Britain are receiving more medical care than they probably received before, and that the quality of that care is good. The British physician is certainly a qualified physician. The same thing is true in Denmark and some of the Scandinavian countries.

There isn't, of course, the personal relationship between the physician and the family. How important in this day and age is this physician-patient relationship? Or has it changed?

Also you find that the general practitioner is excluded from the hospital. He is becoming more of a stranger. A patient comes to him in the community; and then, if it's a very serious matter, he turns it over to the hospital people; and he loses his patient from then on.

So I think they get a good quality of medical care and probably more care than they had before. But they are spending all of their money on curative medicine and very little to prevent these conditions. I'm not

just talking about infectious diseases. We have very good preventive measures in some kinds of heart disease and cancer, diabetes, and glaucoma. I think it's true in Great Britain, just as it's true in this country to some extent, that we emphasize curative medicine and not enough the preventive medicine. They're spending too/money in Great Britain on the curative. They can't afford, or think they can't, to spend it on the other.

But we are seeing more hospital practice in this country, even though we still have the private practice of medicine. One in every ten physicians in the United States is in a hospital at the present time. He's an intern, a resident, or a full-time staff man. There are more out-patient offices in hospitals.

But I think the general practitioners are going down and down in the United States. They are becoming almost like a vanishing Indian. I don't think we should allow it. I think there's a very real place for a general practitioner.

QUESTION: Dr. Burney, in our study of manpower resources demography and we have gone into the world population explosion; and one of our speakers told us that in three centuries our population has multiplied three-fold, and that from 1950 to 2000 it will multiply almost three-fold again; and by a pure arithmetic exercise you soon arrive at a point where in two hundred years we won't have enough space for everyone. And that is largely caused by interfering with natural laws, or maybe increasing the life span, decreasing infant mortality, and so forth. This would seem

to pose a real problem for several generations to come. Would you care to address yourself to this part of the problem?

DR. BURNEY: You gentlemen are asking some questions upon which a total lecture might be given to you.

I believe that health has been credited erroneously with being a major part of some of these population problems. There is no question that improving the infant mortality situation does increase the number of individuals. When you eradicate malaria in parts of India, you naturally increase the number of individuals who are there in that part of the world. But you also free millions of acres of land that can be cultivated.

Also, it has been our experience in this country, and I think somewhat in Puerto Rico now, that as the economic growth of the country develops, you also get a slightly decreasing birth rate. In Japan, of course, they cut their birth rate from about 34 down to 17 per thousand. Of course, they did that by legalized abortion. They stopped that now, but they still maintain about a 17 to 18 per thousand birth rate in that country.

India, of course, is trying this; but they are limited by funds. Also they are finding no religious scruples against birth control, but it's a matter of education of both husband and wife.

I am sure that there will be some even more serious problems in some of these developing countries than there^{are} at the present time. But I can't tell you what the answer is going to be--whether it will be family management problems in some of these countries, as India and Yugoslavia are trying at the present time; how much effect economic

development will have on lowering the birth rate; or how much effect further improvement of the hospitals will have. But let me say that it's a very complex and also a very controversial area.

QUESTION: We know that our potential enemies have the capability of attacking our mainland or country now. This poses a problem of civil defense. With our importing one-sixth of our doctors, it is obvious, I think, that we are just getting by with the number of physicians that we have in this country now. What do we do about civil defense when, if we're going to obviously lose a large portion of our population are going to we/lose a large portion of our medical personnel?

DR. BURNEY: The Public Health Service has been delegated by OCDM the responsibility for planning and training in the whole field of health care--casualty as well as BW, CW, and some parts of radiation.

It's been very discouraging, because we've had our ups and downs. About the only people that maintain much interest in this area are those who are directly working in it, because there has not been a whole lot of public interest; and that in turn has not had much congressional support. I think we're just confirmed optimists in this country that nothing is going to happen.

But we are trying to develop in one region of the United States not only the resources and the equipment that would be necessary for both casualty care as well as community health--water and so forth-- but also to operate a hard core of medical and dental personnel, nurses, and veterinarians, and pharmacists, and engineers, around whom, when

a disaster struck, a concerted effort could be done, with the recognition that we're going to have to have a great deal of self-help.

This is one of the major parts--to try to train the population both in supplies as well as what they can do for themselves in this area. But I can tell you that it's a very discouraging program, and I'm glad that I don't have immediate charge of that activity.

I should say, on this 1600, that about 400 of those are Americans who have gone to foreign schools for training because they couldn't get in over here.

CAPT. SMITH: Dr. Burney, on behalf of the Commandant, the faculty, and the students, thank you very much for coming down here and giving us this very fine presentation.

DR. BURNEY: I enjoyed it very much.

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