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MCWA

In this issue
**DEVELOPMENT
OF THE
COMMUNICABLE
DISEASE CENTER**
by Justin M. Andrews

COMMUNICABLE DISEASE CENTER Atlanta Ga.

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COMMUNICABLE DISEASE CENTER
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Development of the **COMMUNICABLE DISEASE CENTER**

by

Justin M. Andrews
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The primary aim of MCWA was malaria prevention; the basic method used was vector control, principally by larviciding.

INTRODUCTION:

MALARIA CONTROL IN WAR AREAS

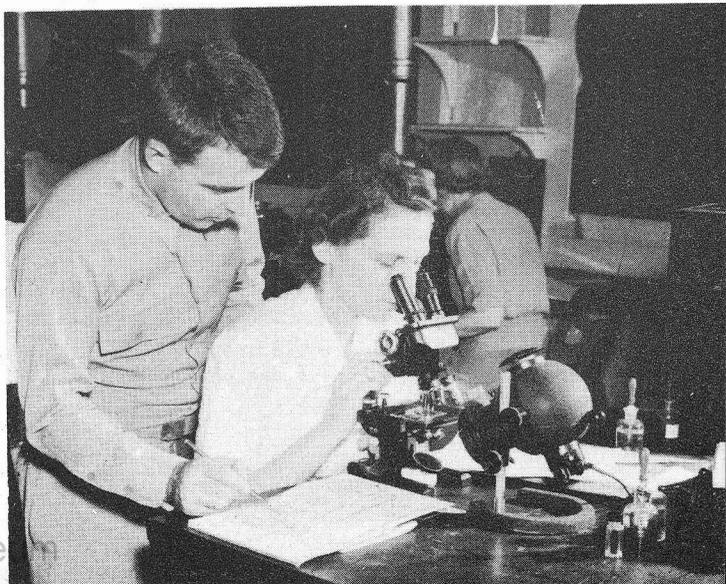
The office of Malaria Control in War Areas was established shortly after the Pearl Harbor episode as the result of negotiations between the War Department and the Federal Security Agency. Its program, developed initially under the direction of Dr. L. L. Williams, Jr., was a cooperative undertaking by the United States Public Health Service and various state health departments.

In 1942 and 1943, the war emphasis was on mobilization, training, and production of military necessities. This involved

mass migration of war workers and inductees, many of them to the South where the climate was favorable for year-round training but where malaria was or had been endemic. The introduction of large numbers of susceptibles into areas where occasional gametocyte carriers still could be found, where effective anophelism and temperatures favorable for anopheline infection existed, created a potential malaria problem of national significance.

The primary aim of MCWA during these two years was to prevent or reduce malaria transmission around Army, Navy, and essential war industry areas by extending the control operations carried on by military authorities within these reservations. This involved not only the utilization of appropriate anti-larval techniques, but the institution of community educational programs and the evaluation of control progress in terms of parasite prevalence and anopheline density. Environmental operations were com-

CDC will expand training in diagnosis, investigation, and control of communicable disease.



menced in 15 Southeastern States and Puerto Rico but were extended later to four more states, including some on the west coast, and the District of Columbia, the Territory of Hawaii, and British Jamaica. Specific insect control measures were aimed not only at anophelines but at the dengue-carrying *Aedes aegypti* and, in cooperation with the Bureau of Entomology and Plant Quarantine, at the vicious dog fly on Florida beaches.

PROBLEM OF RETURNED MALARIA CARRIERS.

In 1944, the numbers of overseas casualties and prisoners of war evacuated to the United States rose to new heights. Many of these individuals had contracted malaria in service. Hospitals and detention camps in which they were confined were scattered throughout the country, thus adding to malaria potentials in endemic areas and creating new ones in marginal sections where conditions for the existence of malaria were present but in which the disease had not been endemic for many years. The facilities of the MCWA extra-cantonment program were brought into play against this hazard in the endemic situations; in the marginal

ones, it was met by commissioning mobile malaria control units which covered circuits of military installations in Northern and Western States and effectively reduced adjacent anopheline breeding.

By 1945, service men were returning to the 48 states in ever increasing numbers. Upwards of half a million of them had contracted malaria overseas and the majority of these had been infected with *Plasmodium vivax*, a parasite species notable for its recurrent and treatment-resisting characteristics. While the armed forces would not release men known to be infected with *vivax* malaria, there was no way of ascertaining that parasites had disappeared completely save by long, continued observation, a procedure which was incompatible with the strong insistence of the American public for the speedy discharge of its veterans. The diffusion of these occasional carriers throughout the land added new possibilities to the national malaria problem. Its significance was admittedly indeterminate but it certainly could not be ignored by public health authorities. To meet this added threat, the so-called extended program of MCWA was activated,



MCWA instructed inexperienced and untrained personnel in the principles and practices of insect and rodent control.

based on the premise that imported malaria would be most likely to establish itself in areas where conditions for transmission were ideal, that is, where they are or have been recently operative. Thus, in important malarious foci, drainage and larviciding activities were intensified by MCWA and upon these reductive measures were superimposed that mighty instrument of insect destruction, residual DDT application on domestic premises. During the same year, 1945, endemic typhus control around areas of military importance was added to the MCWA program.

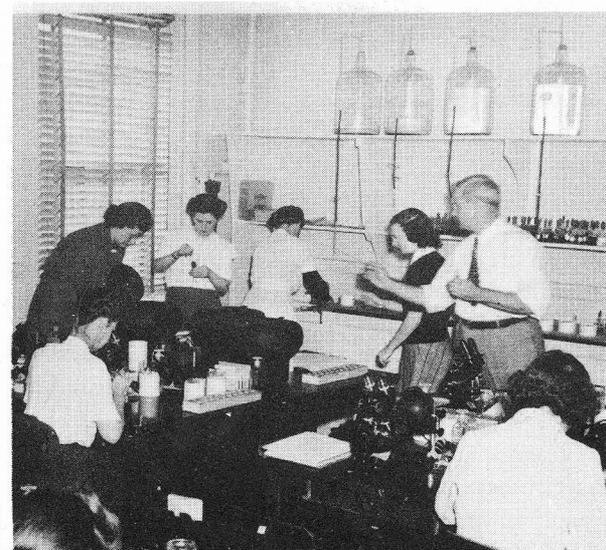
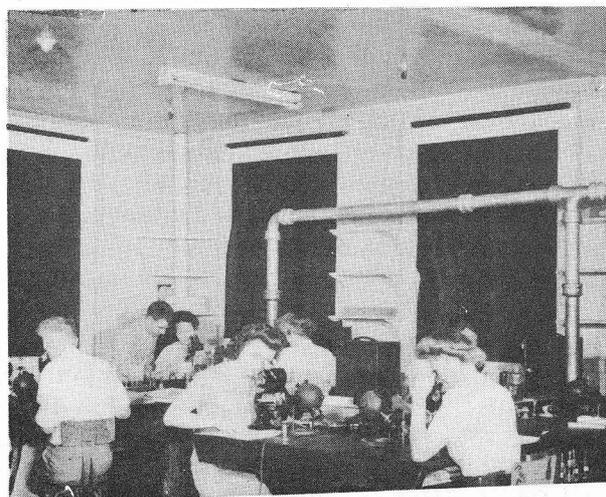
OTHER EXOTIC DISEASES INVOLVED.

The returning overseas veteran was a potential carrier not only of malaria but of numerous other infections, many of which are unknown in the United States. While service men and women benefit by every preventive technique and therapeutic measure known to science before they are discharged or separated from active service, it seemed possible that overt cases of malaria, filariasis, schistosomiasis, leishmaniasis, oriental hookworm infestation, and possibly other parasitoses acquired overseas, might present themselves to practitioners in any state in the union. Special facilities were established, therefore, to aid physicians and medical technicians in the diagnosis of tropical and parasitic diseases and in the recognition of their etiologic agents.

This incomplete works catalogue fails to portray a comprehensive picture of MCWA activities. To support the huge operational program, training, evaluation, and research were necessary.

TRAINING PROGRAM.

The bulk of expenditures — some 70 to 80 percent — has gone for personal services, i. e., labor. These workers numbered upwards of 4,000 at certain seasons of the war years. Together with their supervisors, they had to be recruited largely from personnel ineligible for military service. As the vast majority of technical and professional Americans customarily



CDC offers courses in Laboratory Diagnosis of Parasitic Diseases, where lectures and class supervision are supplemented by actual performance.

concerned with insect control and related activities had been absorbed by the Army and Navy, MCWA was forced to utilize inexperienced and untrained work supervisors and technical directors. To instruct these individuals in the principles and practices of insect and rodent control, a large in-service training program was instituted, and to do it quickly audio-visual teaching methods and materials were employed. Since the materials available were inadequate in scope and quality it was necessary to produce new ones. For the guidance and evaluation of MCWA operations, epidemiologic, entomologic, parasitologic, and technologic field and laboratory facilities of considerable magnitude were maintained. This involved the collection, staining, and examination of thousands of thick blood films, the regular searching for and counting of anophelines and aedines, adult and larval, from a wide range of resting and breeding places, and the development of improved methods and equipment for the application of insecticides and rodenticides.

INVESTIGATION PROGRAM.

Special investigations of operational significance have been or are being carried on in association with the National Institute of Health of the United States Public Health Service, the Health and Safety Division of the Tennessee Valley Authority, the Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture, and various university and state health departments. Research subjects include the determination of whether or not foreign strains of malaria parasites are readily transmitted by native vectors, epidemiologic and entomologic evaluation of DDT domestic spray applications as used by MCWA, reasons for occasional failures of DDT as a residual larvicide, the design and testing of hand and power spraying equipment, the insecticidal durability of DDT under various conditions and on various surfaces, improvement in aerosol methods of dispersing DDT, anopheline host-preference studies, the

effect of destruction of the rat-flea on human typhus prevalence, the significance of flies in the transmission of diarrheal diseases, and many others.

Termination of War Area Program

With the inactivation in 1945 and 1946 of numerous military establishments in this country and the rapid demobilization of the armed forces, the MCWA extracantonment program of malaria control is being rapidly liquidated. After 1946, it will remain only in such areas as have been specially requested by the Army and where state and local health resources are inadequate to supply the services required. The extended program will be continued for one or two more years.

Thus, the war-connected operations of MCWA are rapidly diminishing, as indeed they should. The basic organization, however, of physicians, engineers, and biologists skilled and experienced in the control of insect- and rodent-borne diseases remains and, in the opinion of many, should be continued (1) as a safeguard against a recurrence of that unfortunate state of affairs which prevailed in 1942, when this nation could not find enough competent malaria control teams to service the Army and Navy overseas and to protect the health of its

Collection and examination of thousands of blood films was an important part of the MCWA program in endemic communities.



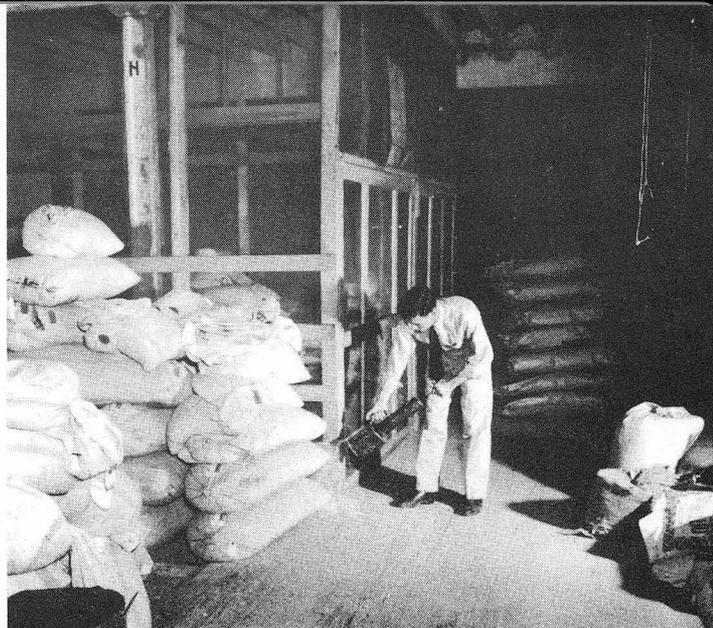
civilians at home; (2) as a prevention against the establishment of exotic infections introduced into this country by returning veterans, occupational troops, or as a result of constantly increasing global air traffic; and (3) to combat certain endemic infections, notably murine typhus, sylvatic plague, and insect-borne virus infections, which are progressively infiltrating and entrenching themselves in new sections of the United States.

COMMUNICABLE DISEASE CENTER

The Communicable Disease Center of the United States Public Health Service was inaugurated officially on July 1, 1946, for the field investigation and control of communicable diseases. The Center, located in Atlanta, Ga., will continue certain training and investigation functions of the Office of Malaria Control in War Areas, which it replaces, and in addition will deal with a special phase of communicable disease prevention not now provided as federal services.

While the majority of the infections to be encompassed by the Center for the present occur either exclusively or more intensively in the tropics or subtropics and are transmitted by insects, the feature truly common to the proposed

MCWA personnel assisted actively in *Aedes aegypti* control campaigns.



Typhus control, one of many "special" activities in which MCWA participated, will be continued under CDC.

group is that the etiologic agent, vector, or reservoir of infection is known or suspected to be zoological. This would include all diseases of protozoan and helminthic origin, the most prominent of which are malaria, amebiasis, the schistosomes, hookworm disease, filariasis, and similar diseases; and certain infections of bacterial or viral etiology, such as yellow fever, dengue, certain neurovirologic disorders, the various forms of typhus and plague, sandfly fever, diverse diarrheas and dysenteries, and possibly other diseases. While such a consolidation may be considered heterogeneous from clinical and nosologic points of view, it is eminently sound, sensible, and workable from the standpoints of laboratory diagnosis, epidemiologic investigation, and control operations.

The consequences of negligence and disregard in these matters reveal themselves in such episodes as the following:

In 1930, *Anopheles gambiae* was discovered to have invaded Brazil, presumably from West Africa. Before this vicious malaria vector had been exterminated in 1942, thousands of persons had died of malaria, hundreds of thousands had been incapacitated temporarily by it, and millions of dollars had been spent in its control—and all because of the importation of a foreign vector of the disease.



In 1933, this country was confronted suddenly with a nation-wide epidemic of amebic disease originating in Chicago. Physicians, laboratorians, and health engineers were totally unprepared to cope with it, and unnecessary losses of life and health resulted.

The onset of World War II found the United States Army virtually without personnel skilled in the diagnosis, management, and prevention of such diseases as malaria, dengue, schistosomiasis, filariases, Japanese B. encephalitis, and others. It was necessary to rob federal and state health services for cadres in these specialties — and these nuclei were pitifully small and all too few.

Insofar as such situations are preventable, they should not be allowed to develop. The best way to forestall them is to foster training, investigations, and control technology as continuing and permanent elements under federal auspices.

In meeting these problems, practicing physicians and local health departments will constitute the main line of defense. Upon them will fall the task of recognizing and treating tropical and related infections and of instituting local preventive and suppressive measures to preclude the spread of these diseases. But these hazards have certain extraterritorial

and interstate aspects which make them matters of federal concern as well. It is the responsibility of the United States Public Health Service to assist in the sensitization of local medical practitioners so that they will remain alert to alien disease hazards, and to provide for the states the specialized assistance not otherwise available for the control of these diseases. The Center will furnish these aids in addition to conducting essential research and developing new equipment, materials, and techniques.

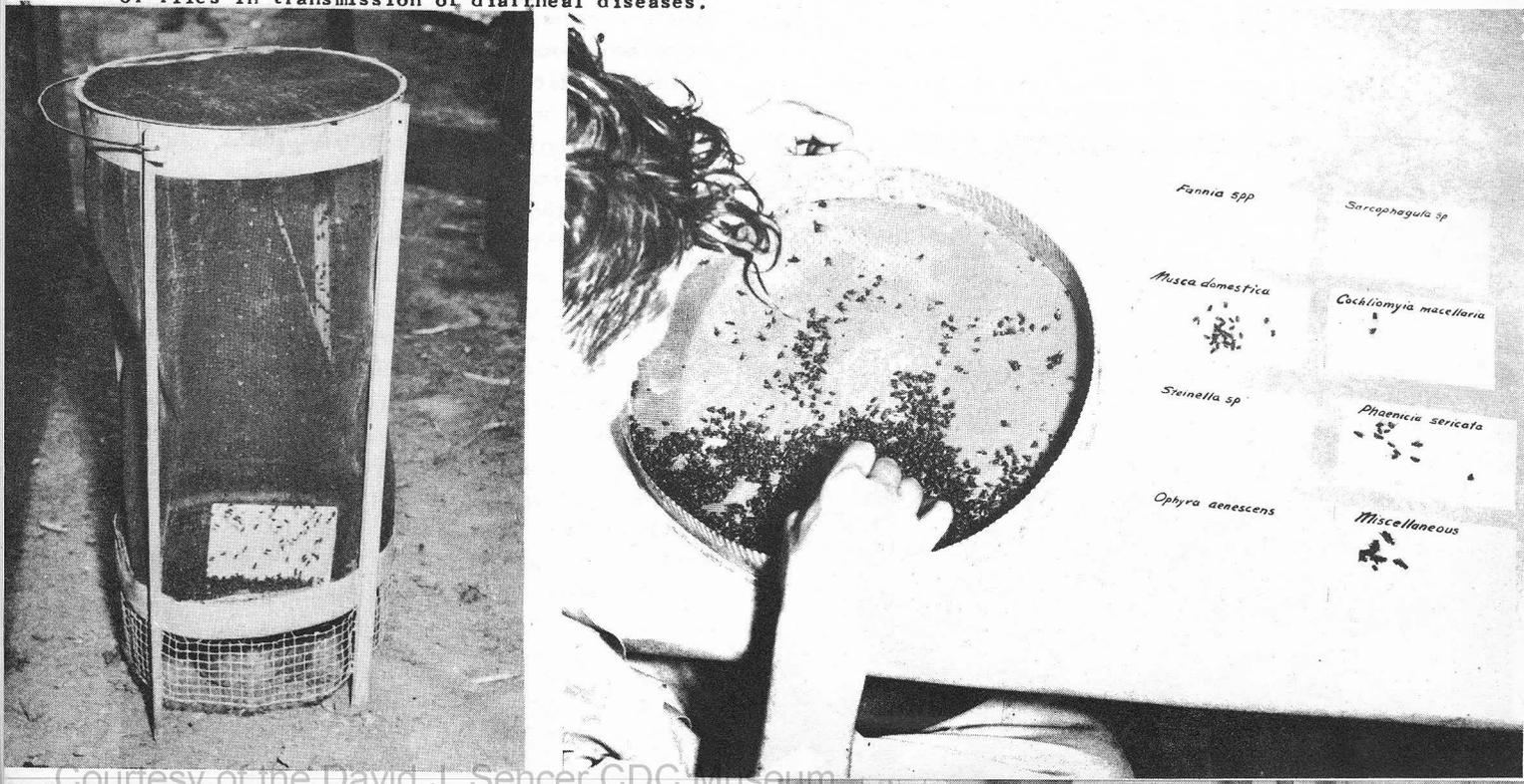
Aside from the administrative mechanism necessary for the existence of such an organization, its functional development can be summarized under three categories corresponding, respectively, to the types of services rendered. Many of these are already established under the auspices of MCWA.

Training and Training Aid Production

IN-SERVICE TRAINING.

Employees entering the Center, either as commissioned officers or as civil servants, will continue to receive orientation training in respect to the United States Public Health Service and the Communicable Disease Center. Specialized

(Left) Fly trap. (Right) Fly census. CDC's study of the significance of flies in transmission of diarrheal diseases.



technical instruction is given in the units to which trainees are detailed.

SPECIAL TRAINING COURSE.

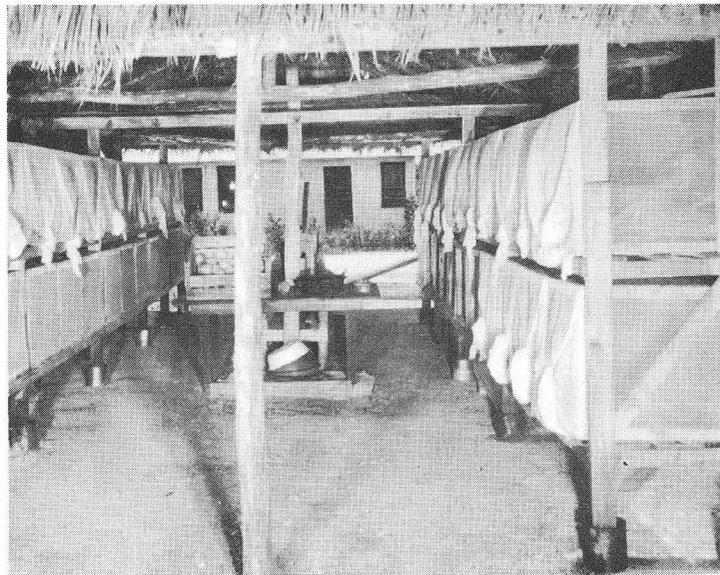
Training in effective control practices for special diseases, such as malaria, typhus, and plague, is being offered to representatives of state and local health departments and to those of other federal agencies concerned in the prevention of these diseases. Similarly, courses in the laboratory diagnosis of infections not now endemic in all parts of the country, but which may be introduced by returning overseas servicemen or as a result of global air transportation, are being given to technicians from public health and clinical laboratories.

VOCATIONAL HEALTH TRAINING.

CDC is to establish a pattern for vocational health training which, presumably, will be carried on in various regionalized centers throughout the country. This activity is already under way. It includes orientation in public health

viewpoints, definition of federal, state, and local public health relationships, basic field training in public health practices, observation of all types of local health department activities and actual work participation by trainees in the field of their own specialties under training supervisors.

It is not intended for this venture to infringe in any way upon the prerogatives or fields of endeavor of schools or teach-



(Right) Fly insectary maintained for studies in transmission of diarrheal diseases. (Below) The effectiveness of DDT in fly control being tested in cow pasture.





The CDC mobile laboratory provides rapid field diagnosis under epidemic conditions.



CDC facilities are available for performance of complement-fixation tests, which are highly specific for endemic typhus fever. (Above) Serologist extracts blood for test from rat by heart puncture.

DEMONSTRATION MATERIAL.

State and local health laboratories are being provided with various series of protozoologic, helminthic, bacteriologic, entomologic, and other specimens to assist in the training of technicians, as a reference museum, and for circulation to local clinical laboratories.

Operational Service

EMERGENCY EPIDEMIC CONTROL ASSISTANCE.

As the neurovirological diseases assume a constantly greater importance and as some of these have been shown to be transmitted by insects, it is likely that the United States Public Health Service may be called upon to provide emergency suppressive measures against these as well as other insect-borne diseases. It is proposed that the necessary equipment and materials for such purposes be stock-piled and that a cadre of trained

operatives, regularly employed on other operational details, be kept available for use in dealing with these situations.

ENDEMIC DISEASE CONTROL.

As a major and continuing activity of the operational organization of the Communicable Disease Center, it is planned that demonstrations of insect-borne endemic disease control be undertaken in strategic areas. A model is under way in the Center to demonstrate control of malaria, murine typhus, dengue, filariasis, schistosomiasis, or other control programs. Projects will be established in places where justification for such operations is based upon high disease rates and assurance that preventive measures will be carried on by local authorities after the demonstration phase has been concluded by the Center.

FIELD TESTING.

The facilities of the Communicable Disease Center provide excellent opportunity for the controlled field testing of new or improved materials and equipment designed for communicable disease control.

IMPOUNDED MALARIA CONTROL.

In the past, MCWA engineers have functioned to assist other federal agencies by making surveys and submitting reports, including recommendations, regarding impoundment construction and maintenance and for the purpose of minimizing malaria hazards. This service has been rendered in conjunction with the public health engineers of the states concerned.

Similarly, MCWA engineers have assisted certain state health departments in formulating impounded-water regulations and have thus been in position to set high standards for the design, construction, and maintenance of these structures as far as malaria control is concerned.

These advisory and service functions in connection with impounded water will be continued by the Center and to them will be added investigation activities necessary for the improvement of malaria control practice in impoundments.

EVALUATION OF VECTOR CONTROL.

The results of disease control efficiency are frequently attested more promptly by reduction in vector densities than in specific disease prevalence. Thus it is desirable for operational control groups to have quantitative methods available for the enumeration of vectoral populations as control activities proceed. Such investigations will be maintained in the Center.

EQUIPMENT DESIGN AND TESTING.

Control measures, especially against insect- and arthropod-borne diseases, tend to become more and more mechanized. The present activities of MCWA in designing new control equipment and in testing both new and old will be continued in the Center.

INSECTICIDE AND RODENTICIDE RESEARCH.

The advent of DDT wrote a new chapter in the history of insect control, yet the surface of this important subject is barely scratched. Already isomers of DDT are being subjected to laboratory and field testing, and other entirely new types of allegedly insecticidal compounds are available for investigation. Similarly, in rodent control the development of ANTU and sodium fluoroacetate offer new and unexplored horizons in the reduction of rodent populations. Laboratory and field studies will continue with the objectives of improving and defining the limits of current and new methods of poisoning vectors, and of lowering animal reservoirs of disease.

RELATED BIOLOGIC STUDIES.

The use of insecticides, larvicides, and rodenticides is attended by certain hazards to living creatures other than disease-transmitting insects and rodents. Extensive drainage interferes with the propagation of aquatic and semiaquatic forms of life that concern nature lovers and sportsmen. It behooves the professional sanitarian to keep himself well informed regarding these dangers and to take every precaution consistent with health objectives to avoid interference with wild-life and agricultural interests. Critical ecological studies have been initiated in MCWA to provide first-hand knowledge of the harmful effects of control practices on the biological associates of vectors and reservoirs of disease.

These are the functions to be undertaken by the Communicable Disease Center. Collectively, they exceed the resources and facilities of individual states. They are concerned to a large degree with interstate and extracontinental health hazards. They can be most economically and effectively administered by a single, coordinated agency, since the supporting activities necessary for the productive conduct of the operations indicated above utilize common and interchangeable personnel and equipment.

The scope and magnitude of this enterprise remain to be defined by future events. It is hoped earnestly that the peacetime Communicable Disease Center will merit and receive the same, or greater, support and cooperation from state health departments as did the war-related Office of Malaria Control in War Areas.

DIVISION NOTES

ENGINEERING DIVISION

EXTENDED MALARIA CONTROL PROGRAM.

The accompanying tables summarize residual house spraying activities for the period May 19 through June 30, 1946, and for the last two quarters of the fiscal year, 1946.

The total of 641,820 house spray applications made during the last half of the fiscal year 1946 represents slightly more than half the estimated house spray applications of the current season in all states. At the end of the fiscal year most states had completed or were nearing completion of the first application of spray for the mosquito season. Based on an estimated house size of 2,200 square feet of surface to be sprayed, the average rate of application was 156 mg. of DDT per square foot.

Mobile units are used on this program, and crews of U. S. Public Health Service personnel demonstrate the correct manner of applying DDT as a residual spray, and explain the operation of various pieces of equipment used against flies, roaches, and other building-infesting insects.

They also explain how DDT and equipment used for applying it may be obtained.

The following are typical of the demonstrations which have been carried on: dairy barn and cattle spraying; premise spraying; roach and fly control in kitchen and dining room of schools, head lice and roach control in hospitals, head lice control at dormitories, flea control in animals, and fly and bedbug control at community centers.

To date, demonstrations have been given on Indian Reservations in Colo-

SUMMARY OF RESIDUAL HOUSE SPRAYING OPERATIONS

MAY 19 THROUGH JUNE 30, 1946

CUMULATIVE SUMMARY, FEB. 23 THROUGH JUNE 30, 1946

STATE	No. Houses Sprayed	#DDT Used	Lbs. DDT Per House	Manhours Labor & Field Supervision	Man-Hours Per House	Man-Hour Per Lb. DDT	No. of Co's or Parts of Co. Under Control	No. Houses Sprayed	#DDT Used	Lbs. DDT Per House	Manhours Labor & Field Supervision	Man-Hours Per House	Man-Hour Per Lb. DDT
Alabama	24,445	19,770	0.81	26,946	1.10	1.36	18	45,711	36,772	0.80	52,654	1.15	1.43
Arkansas	49,124	33,753	0.69	50,422	1.03	1.49	32	135,327	88,453	0.65	142,508	1.05	1.61
Florida	14,846	13,168	0.89	16,792	1.13	1.28	23	27,516	23,701	0.86	32,405	1.18	1.37
Georgia	34,590	51,471	1.49	20,121	0.58	0.39	32	83,211	118,490	1.44	50,416	0.61	0.43
Kentucky	3,730	2,694	0.72	2,495	0.67	0.93	11	9,206	5,756	0.63	6,427	0.70	1.12
Louisiana	19,533	13,128	0.67	16,834	0.86	1.28	17	36,141	23,322	0.64	35,392	0.98	1.52
Mississippi	37,250	19,700	0.53	36,601	0.98	1.86	16	104,698	83,254	0.79	104,806	1.00	1.25
Missouri	15,028	10,648	0.71	10,275	0.68	0.96	8	39,001	30,006	0.77	30,454	0.78	1.01
N. Carolina	11,013	6,827	0.62	9,355	0.85	1.37	35	20,605	13,291	0.65	17,793	0.86	1.34
Oklahoma	7,650	7,317	0.95	7,517	0.98	1.02	5	17,060	14,911	0.87	14,554	0.85	0.98
S. Carolina	27,410	17,455	0.64	32,300	1.18	1.85	23	55,582	32,829	0.59	67,483	1.21	2.06
Tennessee	8,084	6,619	0.82	5,674	0.70	0.86	11	21,578	16,115	0.75	16,626	0.77	1.03
Texas	22,424	14,297	0.64	26,504	1.18	1.85	32	46,184	26,784	0.58	51,865	1.12	1.94
TOTALS	275,127	216,847	0.79	261,836	0.95	1.21	263	641,820	513,675	0.80	623,383	0.97	1.21

INDIAN RESERVATION SERVICE.

As requested through Medical Director, Ralph B. Snavely, Chief Medical Officer of the Indian Service, Chicago Office, the Communicable Disease Center has been cooperating with the District Officers in demonstrating the use of DDT in the general sanitation of Indian Reservations.

rado, Wyoming, Montana, Wisconsin, New Mexico, Texas, Oklahoma, and Iowa. This Service is to be carried on in the Indian Reservations throughout the entire United States.

RECTOR DELIVERS LECTURES.

Sr. Eng. (R) Nelson H. Rector, of the Impounded Water Branch, Engineering

Division, Headquarters, recently gave a series of lectures on Malaria Control at the Army-War College in Washington, D. C.

RODENT CONTROL ORDINANCE.

A "Rodent Control Ordinance," passed in St. Louis, Missouri, has an appropriation of \$132,000 for Rat Control, and a \$40,000 revolving fund for ratproofing and eradication activities. Charles Trigg, formerly of the U. S. Navy, is in charge of the ratproofing project. Four crews will be used in the work after the project is inaugurated.

The U. S. Public Health Service will provide consultative service for a short time, to assist in establishing essential procedures.

TYPHUS CONTROL OPERATION FOR FISCAL YEAR 1946, BY STATES.

The accompanying chart summarizes the various typhus control operations by participating states for the fiscal year 1946. Residual dusting is reported according to number of premise applications with pounds of DDT, and man-hours per application. The average of 2.5 lbs. per application is less than the recommended amount as most of the 331,912 premises are business places with a recommended average of five pounds.

On the rat poisoning program, an average of 0.65 lbs. of poisoned bait per premise application was used. Averages were lowest in states where community-wide poisoning programs predominated, and highest in states in which rat poisoning together with ratproofing programs predominated. No figures for "1080" or arsenic water are included in columns labelled "Rat poisoning."

Texas, North Carolina, and South Carolina led in number of establishments ratproofed during the year. An average of 30 to 40 man-hours per establishment treated is a very good figure for all types of buildings. Figures for individual cities probably will differ considerably.

According to reports received, 53.7 percent of the 742,360 man-hours worked was paid from state or local funds. Ratproofing projects rated highest percentage, as wages were charged to revolving funds.

It is recommended that by January 1, 1947, each state attempt to include funds for labor on typhus control projects in state and local budgets. It is further recommended that state and local funds provide at least 75 percent of the total cost.

QUARTERLY WORK PLAN ESTIMATES.

Quarterly work plan estimates to be submitted by each state, will cover all activities in which CDC is participating, and provide the Headquarters Office with essential information not available previously. Every effort should be made to indicate in the cost column the amount of state and local participation, including personnel cost, program cost, and manner of dividing costs between participating agencies.

STATE AND LOCAL PARTICIPATION.

To obtain maximum benefits from the residual spraying program, it has been the policy of the CDC Headquarters office to encourage expansion of control activities by supplementing federal funds with state and local funds. Thus, the greater the percentage of non-federal funds utilized on the program, the greater its chances of continuation as federal funds are reduced or discontinued. The goal for 1947 is 50% contribution to the residual spraying program from non-federal sources.

Actual working arrangements for incorporating state and local participation with U.S.P.H.S. funds to form an integrated over-all program, vary from state to state. In most cases CDC personnel furnish supervision, and non-federal funds are used for chemicals or labor and equipment, or for both.

The following general operation plans are now used in state programs:

1. All chemicals, a major part of automotive equipment, and supervisory personnel above the county supervisor level are furnished by U.S.P.H.S. The supervisor and all spraying labor are furnished by the county. Some counties cover this expenditure in general tax funds. Others levy special taxes for this purpose.

2. Funds are collected from individual householders by local organizations such as the Kiwanis Club or by the county tax collector. The money is transferred to the state treasurer who in turn authorizes expenditure by the state CDC director as needed by the program in the area involved. Collection is usually on a flat sum basis of one to three dollars per house, supplemented with federal funds sufficient to give a complete spraying program. The state CDC director usually has the entire area sprayed, not limiting it to homes of contributors. This system works satisfactorily only through careful local planning and good organization.

3. In one state the legislature appropriated a flat sum to the health

department for the residual spraying program, to be expended for supplies, equipment, or personal services.

4. The U.S.P.H.S. furnishes all personal services required, a major portion of the equipment and some of the chemicals. Local funds are used to buy DDT and related chemicals and the rest of the necessary equipment.

It is highly desirable that CDC personnel not be involved in the collection of funds, but for some interested local organization to take on the collection duties. Occasionally this may be done through the local health department.

SOIL CONSERVATION SERVICE MAKES REQUESTS.

Staff members of the Impounded Water Branch, together with representatives of the Engineering Division and Executive Office of the CDC, conferred with officials of the Soil Conservation Service from Washington, D.C., and Spartanburg, S. C. The Soil Conservation Service has requested the CDC to prepare a short bulletin setting forth the fund-

One of the mobile workshops used on insect and rodent control projects of the Typhus Program.



amentals of malaria control. Material taken from this bulletin will be incorporated in the plans and specifications for ponds to be constructed by that agency.

In addition, the SCS requested that training courses on malaria control procedures be held in each of their seven regional offices which cover the entire United States. These courses will be developed and presented by members of the staffs of the Impounded Water Branch and the Training Division. It is planned to present the first course this winter to members of the regional office at Spartanburg, S.C. The second training course will be held in Fort Worth, Texas.

MALARIA SURVEY REPORTS FOR THE ARMY ENGINEERS.

The Impounded Water Branch has completed 118 malaria survey reports on existing and proposed impoundages for the U. S. Corps of Engineers. These reports give detailed analyses of conditions which will create malaria hazards, and recommendations for the control of *Anopheles quadrimaculatus* mosquitoes.

MALARIA SURVEYS ALONG RIO GRANDE.

At the request of the International Boundary and Water Commission, El Paso, Texas, representatives of the Impounded Water Branch of the Engineering Div-

Checking results of DDT spraying for fly control.



ision, the Texas State Board of Health, and the International Boundary and Water Commission made surveys of the sites of the proposed impoundages on the Rio Grande River, to determine the potential malaria hazard which will result from the creation of these lakes. Malaria control recommendations for these proposed impoundages will be included in the survey report to be prepared by this office.

EPIDEMIOLOGICAL DIVISION

POLIO STUDIES AT FLORENCE, ALABAMA.

During the first quarter of this year attempts were made to perfect methods and equipment, and to train personnel in fly control work in order to determine the relationship of flies to poliomyelitis.

Florence, Alabama, was chosen as an area for field operations because there had been a number of polio cases there. This permitted testing of equipment and methods of control.

Space spraying with DDT was done in this area by using ground equipment with power sprayers, and by airplanes equipped with sprayers. Results were encouraging, crews getting about 95 percent reduction in fly populations.

Spraying operations continued from the middle of July to the end of September.

Next spring, control operations will start in two cities in which evidence of polio has been demonstrated. These cities will be announced later.

TYPHUS INVESTIGATIONS PROJECT.

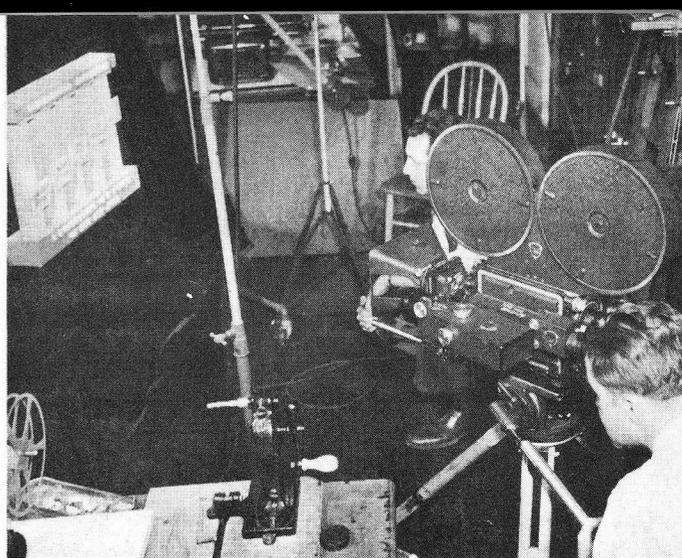
A report on investigations being made at Thomasville stated that people in rural areas are being interviewed where typhus fever, or cases of suspicious illness, are encountered. Case histories are written up of all such illnesses and blood samples are taken so that seriological tests may be performed. Careful checkups are made of suspicious cases or actual cases of typhus, and records on blood samples are kept.

TRAINING DIVISION

IN-SERVICE TRAINING.

The In-Service Training Branch has had thirty-five trainee visitors from seventeen foreign countries during the period from July 1 to September 30, 1946. The following list shows the number of trainees from each country and the sponsors:

COUNTRY	NO.	SPONSOR
Bolivia	2	Rockefeller Foundation
Brazil	2	Institute of Inter-American Affairs
Canada	1	W. K. Kellogg Foundation
China	1	U.N.R.R.A.
Colombia	3	Rockefeller Foundation Institute of Inter-American Affairs
Dominican Republic	3	Rockefeller Foundation Institute of Inter-American Affairs
Ecuador	1	Institute of Inter-American Affairs
Egypt	1	Rockefeller Foundation
Greece	6	Greek War Relief Association Rockefeller Foundation U.N.R.R.A.
Holland	1	Rockefeller Foundation
India	2	Rockefeller Foundation
Iran	1	State Department
Italy	2	U.N.R.R.A. State Department
Korea	1	Rockefeller Foundation
Mexico	2	Rockefeller Foundation
Poland	1	Rockefeller Foundation
Venezuela	5	Government of Venezuela



"Shooting" a scene for the film strip, "DDT as a Mosquito Larvicide."

These visitors usually arrived in groups of two or three and their stays varied from two days to two months. Special training schedules were arranged to meet individual needs. Whenever possible, they were given field training in groups of two and three. Most of these visitors were interested primarily in malaria control and typhus control. However, some were interested in basic sanitation, and field trips were arranged to include it along with malaria control field training.

A six-week course in typhus and rodent control started on September 11, 1946, with seven trainees in attendance.

VISUAL AID MATERIALS RELEASED.

Several films, film strips, and handbooks have been released during the past several months.

The category film strip "Mosquito Inspection and Control," consists of a series of color photographs showing various breeding areas of mosquitoes. It is designed to be used as a film strip with a lecture, or the individual pictures may be cut apart and mounted between slides so that the lecturer can arrange the subject matter to suit himself. Production No. CDC - TE - 5-076.

"DDT as a Mosquito Larvicide" is a black and white, sound film strip, showing the newest development and use

of DDT as a larvicide. It demonstrates latest types of equipment and the proper use of such equipment. It further points out that through the application of simple basic principles and a regular larviciding schedule, the cost of mosquito control can be materially lowered. Production No. CDC - TE - 5-074.

In addition to the English version, the narration for "DDT as a Mosquito Larvicide" is available in the Persian language.

"Filariasis" is a 35 mm., color sound film, designed especially for medical students and for physicians and others who may wish to review the subject. It consists primarily of a general introduction and summary of the current knowledge of Bancroftian filariasis with emphasis placed on the early manifestations of the disease. Running time is about 18 minutes. Production No. CDC - TE - 5-036.

"Laboratory Diagnosis of Schistosomiasis" is a color, sound film strip intended mainly for medical technicians and those interested in the field of technology. It describes methods for detecting and identifying schistosome ova in feces and urine of patients. Running time is approximately 18 min. Production No. CDC - TE - 5-041.

"Preparation and Staining of Blood Slides" is a 16 mm. film in color. It is one of the films in the Malaria Film Series. It is designed primarily for medical technicians and those being trained in clinical pathology. It demonstrates technics used in obtaining and preparing blood smears, staining by two different technics, and the handling of blood slides in bulk. Emphasis is placed on the actual technic of blood smear preparations. This is a 700 ft. film, running time about 16 minutes. Production No. CDC - TE - 4-007.



Story conference on malaria film strip to be released soon.

LABORATORY DIVISION

FOUR COURSES GIVEN IN LABORATORY DIAGNOSIS OF PARASITIC DISEASES.

Since October 1, 1945, four six-week courses in Laboratory Diagnosis of Parasitic Diseases have been given at the Diagnostic and Training Laboratory, Communicable Disease Center Headquarters, Atlanta.

These courses have been attended by 80 students representing the District of Columbia, Puerto Rico, Greece, and the following 30 states: Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Washington, and Wisconsin.

The fifth course in Laboratory Diagnosis of Parasitic Diseases started September 30th.

DIARRHEA OUTBREAK AT COLLINS, MISS.

The Communicable Disease Center was asked recently by the Mississippi State Board of Health to assist in determining the cause of the diarrhea outbreak at Collins, Mississippi. One unusual feature of the outbreak is that more than two dozen of the cases were chronic cases which had lasted for periods of more than six months. No etiological agent had been determined on any of the cases examined.

After consultation with a representative of the National Institute of Health regarding bacteriological procedures, the Epidemiology Division and the Laboratory Division outlined survey methods to be used in Collins.

A corps of trained personnel including an epidemiologist, a parasitologist, a bacteriologist, and their assistants, was sent on the project with two fully equipped field laboratory trucks. In addition, valuable assistance was rendered by personnel from

the Mississippi State Health Department. One truck was set up as a parasitology laboratory, and the other as a bacteriology laboratory. An attempt was made by the Epidemiologist to take a census of all who had had the disease during the past year. At the same time, people were asked to bring stool specimens to the Health Center to be used for parasitological examination. In addition, they were asked to submit two rectal swabs for examination in the bacteriological laboratory. In the case of some who had had diarrhea for some time, stool specimens were frozen and sent to Montgomery, Alabama, to the Neurotropic Virus Insect Laboratory, to be examined for viruses. Final results are not yet available.

The Collins project was the first survey performed by the Communicable Disease Center in which the mobile laboratory trucks were used. They were found to be highly efficient units. They are equipped with hot and cold running water, sink, refrigerator, centrifuge, incubator, microscopes, and electric outlets, and can be adapted to a variety of uses. This project, which was a cooperative effort of the Epidemiology Division and the Laboratory Services Division, is proof that almost on overnight notice it is possible to equip and send a mobile unit of trained personnel on any emergency call.

Spraying fly breeding place caused by unsanitary garbage disposal.



PERSONNEL SECTION - CIVIL SERVICE

CHANGE IN POLICY OF CIVIL SERVICE EXAMINATIONS.

The Civil Service Commission is being reorganized to the extent that it will hold only a few of the examinations for probational and permanent Civil Service appointments. These will include the positions which are common to all government agencies such as clerk-stenographer, clerk-typist, fiscal clerks, personnel clerks, etc.

Positions which are not common to all government agencies will be handled through examinations announced by Boards of Civil Service Examiners established with individual agencies.

According to present plans examinations for Communicable Disease Center activities will be announced from the Atlanta office. Applications will be mailed to Headquarters, Atlanta, rated by the Headquarters Board, and sheet registers will be sent out to the various states. They are to be of an unassembled type. Applications received by the states will be set up on the State Register and certified

on a sheet register to the Administrative Assistant handling the Communicable Disease Center activities in the State office.

The board of Examiners to review the examinations, will consist of four persons nominated by the Officer-in-Charge, and approved by the Civil Service Commission. One must be a medical officer, and one a personnel officer to act as secretary for the Board and supervise clerical work.

Subject to approval of the Commission, the Board may establish qualification standards for positions pursuant to delegated authority.

If the position in question is common to various bureaus of U. S. Public Health Service, qualifications will be reviewed in Washington, D. C. If it is one which applies only to the Communicable Disease Center, qualifications will be reviewed in Atlanta.

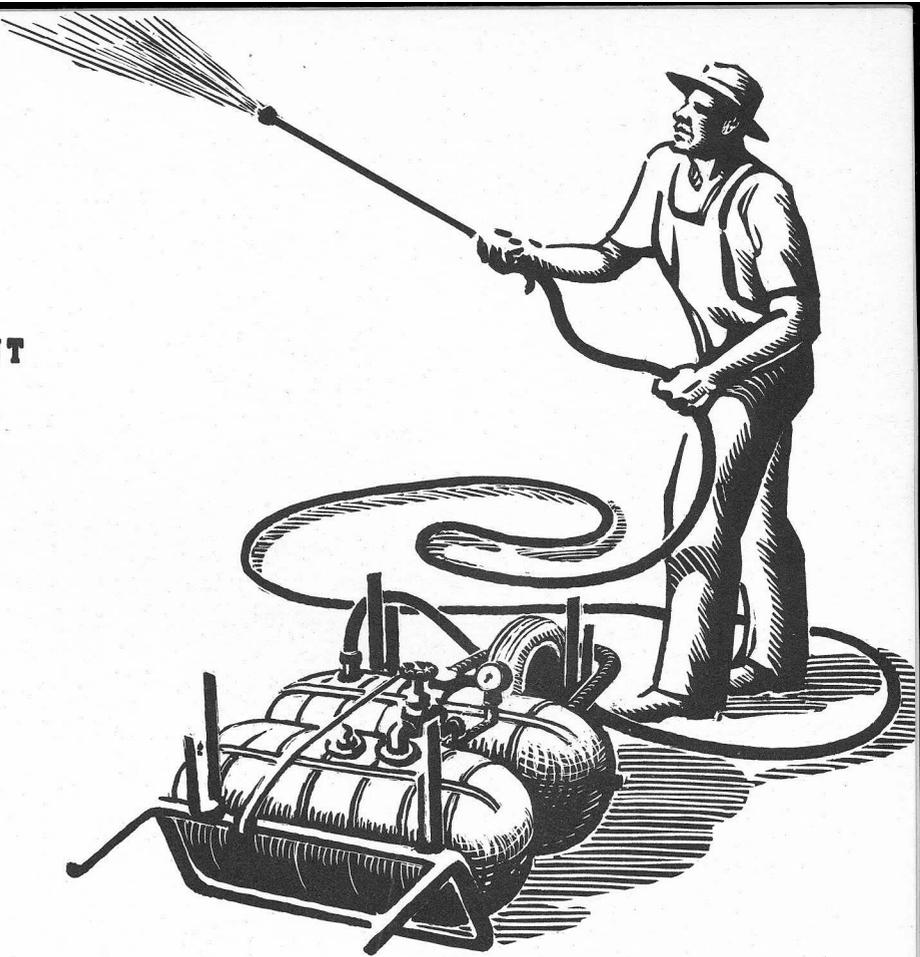
Once the Board of Examiners is established, applications for Civil Service examinations should be handled promptly, thus benefiting all CDC employees.

The new system will go into effect after all details for the reorganization of the Civil Service Commission have been completed.

Making inspection of garbage disposal in a community where diarrhea outbreaks have occurred.



TECHNICAL DEVELOPMENT DIVISION



WHEELBARROW-TYPE SPRAYER.

A wheelbarrow-type sprayer with compressed air tank to furnish pressure for spraying was constructed primarily for use in Texas on fly control projects. Two 9 gallon capacity surplus U. S. Army oxygen tanks were utilized, one for air and the other for the spray solution. An underslung alloyed steel tubing framework with pneumatic wheel supported the tanks, hose, and spray gun. Standard fittings were used throughout. A Schrader air valve was installed in the air tank to permit charging from a truck mounted compressor.

NEW LIGHTWEIGHT SPRAYER FOR HOUSEHOLD USE.

A model quart-size household sprayer for residual application of DDT provided a substantial reduction in weight without sacrifice of strength by the use of welded aluminum construction. The dry weight of the alum-

inum sprayer was 1 lb. 5- $\frac{1}{2}$ oz., as compared to 3 lb. 5 oz. for the modified Sure Shot sprayer. A one quart charge of liquid was sufficient for coverage of about 460 sq. ft. Although it was superior to the previous model, several changes appear desirable and an improved model will be constructed.

FLY CONTROL.

Field experiments of the Technical Development Division indicate that late fall applications of DDT to dairy barns retard the spring build-up of fly populations. DDT incorporated in white-wash and applied in dairy barns has shown satisfactory housefly control for at least five weeks. The insecticide "1080" has shown promise in residual control of houseflies.

MOSQUITO CONTROL.

Studies in simulated occupancy rooms show that residual effectiveness of a DDT application is proportional to the

amount of surface area treated. Spot treatment of undersurfaces of furniture, wall and ceiling corners, and other mosquito gathering places gave only 55 percent knockdown of released mosquitoes in two hours; regular treatment of walls and ceiling only, as recommended by the extended program, gave 79 percent knockdown in two hours; complete treatment of wall, ceiling, and furnishings gave 92 percent knockdown in the same time.

AMOUNT OF DDT PICKED UP BY RATS DETERMINED.

The amount of DDT recovered from rats that were trapped in establishments which had been dusted moderately with 10-percent DDT dust was determined chemically. Twenty rats were collected and the amount of DDT picked up by the rats varied from ½ milligram to 48 milligrams of DDT.

AIRPLANE SPRAYS VERSUS THERMAL AEROSOLS.

Field tests and chemical recoveries of DDT furnished a comparison between the deposits obtained by use of a spray from several Spraying System nozzles and those obtained by use of an exhaust venturi thermal aerosol. Twenty percent DDT in Velsicol NR-70 was used in both cases. The airplane was a Stearman PT-17. The average recovery from sprays (range from 13 percent to 86 percent) was roughly four times as great as that from the thermal aerosol (range from 1 percent to 25 percent), but the latter gave a more uniform distribution.

TECHNICAL DEVELOPMENT DIVISION EXPERIMENTS IN RECOVERY OF DDT FROM DUSTING POWDER.

A request was made by U. S. Public Health officers on duty with the Federal Public Housing Authority for information regarding the most practical means of recovering DDT in solution from 10-percent DDT in pyrophyllite dust mixtures. This information

was needed to assist local sanitary authorities in recovering DDT from delousing powder received from the surplus stocks of UNRRA, so that it might be used to best advantage in spraying activities.

The following report covers the experiments and final recommendations of the Technical Development Division for a field method of retrieving DDT from dusting powder:

To recover the DDT from a 10-percent DDT pyrophyllite dust and utilize the recovered DDT in a spray, the following methods were tried:

1. To 25 gram and 50 gram samples of the dust, 100 milliliters of each of the following solvents were added and the mixtures were shaken for 30 minutes. After standing for one hour, the DDT-oil layer was decanted. Although 100 milliliters of solvent were added, it was impossible to decant all of the solvent. The amount of solvent which could be recovered is recorded under the column "Recovery of DDT So-

TABLE I

SOLVENT	AMT. OF DUST	RECOVERY OF DDT SOLUTION	% DDT IN SOLUTION	TOTAL DDT RECOVERY
Toluene	25 gms	69%	2.4%	65%
Toluene	50 gms	30%	4.7%	28%
Xylene	25 gms	60%	1.6%	38%
Xylene	50 gms	26%	3.1%	16%
Kerosene	25 gms	42%	1.9%	32%
Kerosene	50 gms	25%	3.8%	19%
#2 Fuel Oil	25 gms	56%	1.9%	43%
#2 Fuel Oil	50 gms	20%	3.8%	15%

lution" as the percent of the original amount of solvent added. The efficiency of the solvent in dissolving DDT under these experimental conditions is shown by the percent DDT in solution. Thus, if 100 ml. of a sol-

vent extracted 100 percent of the DDT in a 25 gram sample of 10-percent DDT dust, the solution would contain 2.5 percent DDT, but if 100 ml. of the solvent extracted only 80 percent of the DDT in a 25 gram sample of 10-percent DDT dust, the solution would contain 2.0 percent DDT. The column labeled "Total DDT Recovery" is the total percent recovery of DDT from the amount of 10-percent DDT dust extracted. It is the product of the percent solvent recovery and the percent efficiency of the solvent to dissolve DDT. The results are tabulated in Table I.

It was noted that the more dust used, the less solution was recovered due to the larger amount of dust wet by the solvent.

2. By shaking the dust samples in an excess of water before adding the solvent, it was found that a higher recovery of the solution was obtained due to the fact that the water was utilized to wet the dust instead of the solvent. The method used was as follows:

The sample was shaken with 250 milliliters of water for 10 minutes; then 100 milliliters of the solvent were added, and the combination again shaken

be mixed with dust before adding solvent or a very poor separation occurred. Results are tabulated in Table II.

3. By adding salt, at the rate of 1 gram per 100 milliliters of water, to the water in the initial step in procedure #2, a better recovery of both solvent and DDT was obtained in all cases except with the fuel oil. The results are tabulated in Table III.

TABLE III

SOLVENT	AMT. OF DUST	RECOVERY OF DDT SOLUTION	% DDT IN SOLUTION	TOTAL DDT RECOVERY
Toluene	25 gms	80%	2.5%	80%
Toluene	50 gms	72%	5.0%	72%
Xylene	25 gms	75%	2.5%	75%
Xylene	50 gms	61%	4.8%	59%
Kerosene	25 gms	93%	2.2%	82%
Kerosene	50 gms	88%	4.7%	84%
#2 Fuel Oil	25 gms	76%	1.4%	42%
#2 Fuel Oil	50 gms	70%	2.4%	34%

TABLE II

SOLVENT	AMT. OF DUST	RECOVERY OF DDT SOLUTION	% DDT IN SOLUTION	TOTAL DDT RECOVERY
Toluene	25 gms	74%	2.2%	65%
Xylene	25 gms	68%	2.2%	59%
Kerosene	25 gms	86%	1.9%	66%
#2 Fuel Oil	25 gms	65%	1.9%	50%

for 30 minutes. A definite separation was obtained. The dust settled on the bottom with the water layer between the dust and the solvent layer. After one hour, the liquid layers were poured off and the DDT-oil solution decanted. It was noted that the water must

The best results were obtained by first wetting the dust with water and then adding the solvent. A one-percent salt water solution was found to give a much better separation and recovery of solvent. In the group of common solvents used, kerosene gave the best recovery and was the easiest of the solvents to separate from the mixture. It is also quite cheap and easily obtained.

Recommendations for Field Use. 1. Mix 21 pounds of 10-percent DDT pyrophyllite dust with 25 gallons of 1-percent salt water for 20 minutes. Add ten gallons of kerosene and mix thoroughly for 1 hour. Allow the dust in the mixture to settle for two hours. Pour off the water and oil layers, leaving the pyrophyllite on the bottom. Decant the DDT-oil layer from the water. This should yield approximately 9 gallons of 2-percent DDT solution.

2. A higher percentage of DDT in kerosene may be obtained by doubling the amount of ten-percent DDT pyrophyllite dust used above. Thus, using 42 pounds of ten-percent DDT dust, and using the same amounts of water and kerosene as above, should yield approximately nine gallons of 4-percent DDT solution.

3. Use of larger amounts of 10-percent DDT dust would be impractical because of decrease in solvent recovery and capacity of kerosene to dissolve DDT.

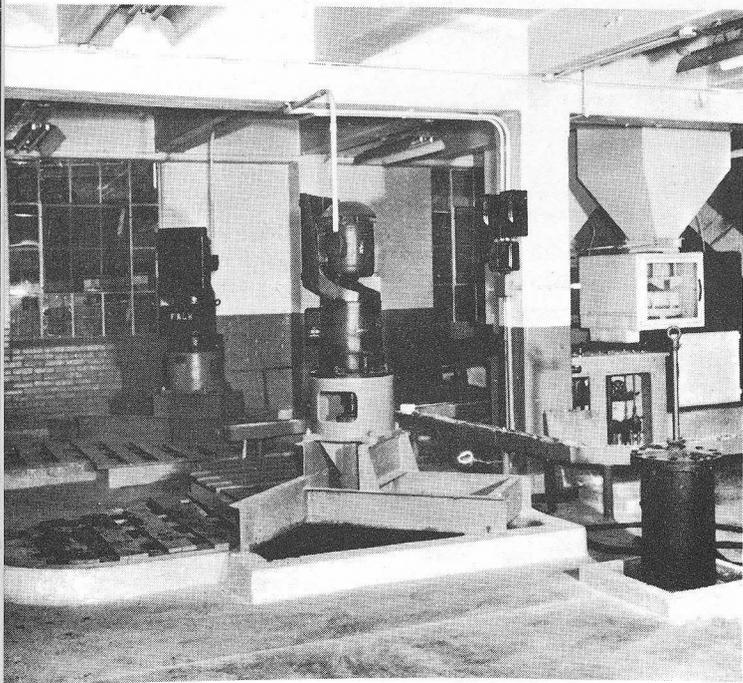
SERVICE DIVISION

SERVICE BRANCH REORGANIZED.

The Service Branch was reorganized July 1, to include Drafting, Reproduction, and Machine Records Sections.

Machine Records, under direction of R. M. McCutchen, is setting up statistics for personnel, budget and fiscal, *Anopheles* host preference studies, polio morbidity census for U. S., malaria morbidity for U. S., special malaria blood film surveys, prenatal studies, typhus morbidity, rodent examination, diarrhea and dysentery survey, and human typhus studies. Data are coded and tabulated in form readily available for practical use.

Students at the Columbus, Georgia, Training Center can study construction and operations at the city's modern water treatment plant. (Below) Exterior of plant and reservoir (Left) Interior of pump room.



HEADQUARTERS NOTES

ASSIGNMENTS, CHANGES, AND TRANSFERS.

Sr. Surgeon Alexander G. Gilliam, formerly Chief of the Epidemiology Division, was transferred August 1 to Ann Arbor, Michigan, to do research on poliomyelitis at the University of Michigan School of Public Health. Dr. Gilliam will be associated in the work with Sr. Surgeon Thomas Francis, also an expert in the field of poliomyelitis.

Surgeon V. B. Link has been appointed Chief of the Epidemiology Division.

Asst. Surgeon John W. Smillie, formerly with the Bureau of States Services, was assigned to the Epidemiology Division with Headquarters at Atlanta. Before coming to Atlanta, Dr. Smillie made a number of surveys in the various sections of the country to determine the nutritional status of the people in these areas.

Sr. Surgeon Hiram J. Bush was transferred from Headquarters to the Quarantine Station at Tampa, Florida, where he is in charge of the Quarantine Immigration and Relief Station.

Asst. San. (R) Jack Eskridge, formerly with the Typhus Investigations program at Thomasville, Georgia, was appointed for a one-year internship at Marine Hospital, Galveston, Texas.

Asst. San. (R) Jack P. Rice has resigned from the Thomasville project where he was in charge of the rat-poisoning campaign in Decatur County. He has been accepted at Marquette Medical School.

Asst. San. (R) Ed. Kohler, formerly assistant entomologist on the Thomasville project, was transferred to Montgomery, Alabama, to be State CDC Entomologist. He replaces Joe K. Neel, CDC State Entomologist who will enter the University of Michigan.

Harold R. Dodge, Entomologist, spent several days in the National Museum at Washington, D. C., checking up on species of flies, and on keys used in differentiating flies. Dr. Dodge is

stationed at Montgomery, Ala., in the Neurotropic Virus Insect Investigation Laboratory.

Asst. San. (R) John W. Zukel was released from duty at Emory Field Station. Dr. Zukel has accepted a position with the U. S. Rubber Company.

Asst. San. Eng. (R) Joell C. Beall, formerly typhus control field supervisor in Macon, Georgia, resigned to accept a position with the Macon-Bibb County Health Department. His duties were taken over by Asst. San. Eng. (R) Robert E. Smith.

Engineering Aide William H. Slaughter, District Typhus Control Supervisor from Monroe, Louisiana, was transferred to Macon, Georgia, to become field supervisor for the Georgia rat-proofing program.

Sanitarian (R) John J. Essex, formerly with the typhus control investigations program in Thomasville, Ga., has been assigned to the Texas State Board of Health to assist in organizing combined plague and typhus control measures in the vicinity of Lubbock, Texas.

Asst. Eng. (R) Marvin B. Scher was released from the typhus control program, Winston Salem, North Carolina, to enter private industry.

Asst. Eng. (R) Byron W. Candage was released from duty at Hammond, Louisiana, to accept a position with the local health department in his home state of Maine.

P. A. San. (R) Philip A. Hardin, has been transferred from Jackson, Mississippi, to Louisville, Kentucky. He replaced State Entomologist Frank W. Fiske who is returning to the University of Minnesota to finish work on his Ph.D. in entomology.

W. H. Gilmore, Asst. State Director of Typhus in Alabama, resigned to organize his own pest control company. He is replaced by Asst. San. Eng. G. R. Wright.

Asst. San. A. H. Neil is on special assignment participating in a malaria control orientation course being conducted by the Venezuelan Government in Maracay, Venezuela.

Asst. San. Eng. (R) Richard Lonergan, formerly Assistant State Director of Malaria Control Activities in California, is on temporary assignment demonstrating DDT work in cooperation with the U. S. Indian Service. Most demonstrations are made in New Mexico. After this assignment Mr. Lonergan will go to Headquarters in Atlanta to be placed in charge of the Equipment and Construction Branch of the Engineering Division.

P. A. San. (R) Gordon Ludwig resigned recently to join his two brothers, Russell and Harvey, in private engineering enterprises in Los Angeles County, California.

Asst. San. Eng. (R) Russell G. Ludwig was released from duty in the Technical Division at Carter Memorial Laboratory, Savannah, Georgia.

Eng. (R) F. A. Jacocks, formerly CDC representative of District No. 2, headquarters at Richmond, Virginia, resigned to accept a position as Sanitary Engineer with the city of Charlotte, North Carolina.

Eng. (R) Eli Abbott, Jr. CDC district representative in District No. 4, New Orleans, has resigned to return to the Federal Works Agency, in Fort Worth, Texas.

Sanitarian John McNair has been released from the armed forces and has been assigned to the Impounded Water Branch of the Engineering Division, with headquarters at Atlanta. Prior to his entrance into the Army, Mr. McNair was with MCWA in Virginia.

Sr. Asst. San. Eng. (R) James H. Crawford transferred from Louisville, Kentucky, to Chicago, Illinois, to be District No. 3 representative.

Asst. San. (R) Geoffrey M. Jeffery was transferred from the Laboratory Service of the CDC to the Tropical Disease Laboratory at San Juan, Puerto Rico. He replaces S. A. Sanitarian (R)

Paul Weinstein who has resumed his studies at Johns Hopkins School of Public Health and Hygiene.

Public Health Engineer Lloyd O. Leslie was transferred from malaria work at Isobel, Oklahoma, to Norman, Oklahoma.

Robert E. Thorne, Botanist, received an appointment as Technical Consultant in the Production Division in July. Mr. Thorne is working on training aids concerned with *Anopheles* ecology.

Robert M. McCutchen, supervisor of laboratory equipment operation, was transferred from the War Assets Administration to the Machine Records Section. Mr. McCutchen has had several years of experience in installation and supervision with International Business Machines Corporation.

P.A. San. (R) Gerald Dyksterhouse, formerly in charge of the Mosquito Control Branch, Engineering Division at CDC Headquarters, has been awarded a fellowship by the National Infantile Paralysis Foundation, for post graduate study at the University of Michigan.

Sr. Asst. Eng. (R) James L. Church, Jr., Asst. State Director of the CDC program in Tennessee, has received a fellowship in the National Infantile Paralysis Foundation, to continue graduate study in engineering at Harvard University.

Sr. Asst. Eng. (R) Joseph H. Coffey, Executive Officer of the Neurotropic Virus-Insect Control Project, Montgomery, Alabama, has been accepted for a fellowship from the National Infantile Paralysis Foundation to study at Harvard University.

Eng. (R) Hershel Engler, CDC District No. 3 representative, with headquarters in Chicago, was granted a fellowship from the National Infantile Paralysis Foundation to continue studies at the University of Minnesota.

S. A. San. Eng. Charles E. Spangler was transferred from San Francisco, California, to Columbus, Georgia, to direct activities of the training center for sanitary engineers and sanitarians.

San. Eng. (R) Earl H. Arnold, previously with the Technical Development Division, Carter Memorial Laboratory, Savannah, Georgia, resigned to return to a position with the North Dakota health department.

Asst. Eng. (R) Marshall B. Rainey, formerly with malaria control, stationed at San Juan, Puerto Rico, was released to accept a position with T.V.A. at Wilson Dam, Alabama.

Asst. San. (R) Stephen P. Hatchett, stationed at Galveston, Texas, resigned recently to accept an academic position at Clinton, South Carolina.

Jr. Asst. San. (R) Josephine M. Clapp resigned from the Development Division, Neurotropic Virus Laboratory, Montgomery.

San. Eng. (R) Russell W. Gies, formerly on duty in Philadelphia, Pennsylvania, was released on July 1st. He will be jointly employed by the State of Pennsylvania and the Delaware County Mosquito Control Commission on mosquito control work.

S. A. San. (R) Donald G. Denning, resigned from duty at the Quarantine Station, New Orleans, Louisiana, and accepted a position with the University of Wyoming.

S. A. Eng. (R) Jens A. Jensen resigned from the Goldsboro, North Carolina, malaria program to attend Harvard University.

Jr. Asst. San. (R) L. Everett Bishop, resigned recently from the Technical Development Division, Carter Memorial Laboratory at Savannah, Georgia.

P. A. San. (R) Frederick F. Ferguson, formerly with the Technical Development Division, Savannah, Georgia, was released from duty to attend the University of Michigan, Ann Arbor.

Asst. Eng. (R) John D. Parkhurst resigned from duty at the Technical Development Division, Savannah, Ga.

S. A. San. (R) Robert Samuels, on duty with the impounded water survey project in Nevada, Missouri, resigned recently.

Asst. Eng. (R) Frank R. Liguori, formerly on the malaria control pro-

gram in New Bern, N. C., resigned to attend school at Harvard University this fall.

S. A. San. (R) David D. Bonnet, on duty with the *Aedes aegypti* project in Honolulu, resigned recently. Dr. Bonnet has accepted a position as Medical Entomologist with the Territorial Board of Health.

Asst. San. (R) Harold L. Ansell, formerly with the typhus control project in Atlanta, Georgia, resigned from duty.

Jr. Asst. Eng. (R) Gordon H. Jaehnig resigned from duty with the malaria control project at Jackson, Mississippi, to attend the University of Wisconsin.

Dean P. Furman, Entomologist on duty at Bakersfield, California, resigned recently to accept a position with the University of California.

Maurice B. Gordon, Sanitarian at Perry, Florida, resigned from duty with the U. S. Public Health Service.

Loren P. Stephenson, Sanitarian, stationed at Moultrie, Georgia, resigned.

Lynn A. Wood, Sanitarian, was transferred from the program at Gulfport, Mississippi, to Hattiesburg, Mississippi.

Wilbur V. Henry, Public Health Educator, transferred from malaria activities in Jonesboro, Arkansas, to Little Rock, Arkansas.

Leroy Johnson, Airplane Pilot, was transferred from Savannah, Georgia, to Montgomery, Alabama, to aid on the polio project.

Walter Ray, Engineering Aide at McAllen, Texas, was transferred to malaria control activities in Paris, Texas.

William E. Akin, San. Eng. on duty with the malaria program in Victoria, Texas, was transferred to Galveston, Texas.

Perry R. Summerlin, Sanitarian, was transferred from headquarters in Atlanta to become typhus area supervisor in Statesboro, Georgia.

Harrell C. Havis, Engineering Sanitarian, on duty at Norman, Oklahoma transferred recently to Poteau, Oklahoma.

Hugo E. Kunhardt of the Dominican Republic, was appointed translator in the Planning Section of the Production Division, Headquarters, Atlanta. Mr. Kunhardt is translating into Spanish the narrations of the films and film strips produced by the Communicable Disease Center.

Elsie L. Cole, Entomologist, was appointed to the Technical Development Division, Carter Memorial Laboratory, Savannah, Georgia.

John F. Cheney, Jr., was appointed Hydraulic Engineer at Newton, Georgia.

Carlos M. Montandon, Public Health Educator, was assigned to duty in Oklahoma City, Oklahoma.

James L. Norman, Entomologist, was assigned to Oklahoma City, Oklahoma.

Frank J. Von Zuben, Malaria Control Specialist, was assigned to duty at Austin, Texas, after he returned from military furlough.

Samuel L. Resnick, Engineering Sanitarian, returned from military furlough, and was transferred to the Technical Development Division, Savannah, Georgia.

George W. Reid, training officer, resigned to accept a position as sanitary engineering instructor with Georgia School of Technology.

Phillip B. Nations, Placement Officer, was appointed to the Personnel Section, Administration Division, Headquarters, Atlanta.

V. Faustin Bazilauskas, M.D., was appointed project supervisor in the Planning Section of the Production Division, Headquarters, Atlanta. Dr. Bazilauskas was released recently from the Navy where he was stationed at Miami.

Edwin S. Gault was appointed consultant in the Production Division.

Joseph E. Borches, Sanitarian, was appointed CDC Representative of District No. 2, Richmond, Virginia.

RELEASED FROM SERVICE.

The 111 regular and reserve officers released from active duty with the U.S. Public Health Service, Communicable

Disease Center since Jan. 1, 1946, include 4 medical men, 54 engineers, 44 entomologists, and 9 others. Some remained with the Service on Civil Service status; others were replaced.

CONFERENCE ON INSECTICIDE AND RODENTICIDE LEGISLATION.

At a recent Washington Conference under the auspices of the Department of Justice, the preliminary draft of a proposed uniform state law regulating marketing of economic poisons and devices, was studied. The draft, prepared at the request of the Council of State Governments, followed closely in work and intent proposed federal legislation (H R Bill 5645) introduced in the last session of Congress. This model act is proposed as a guide to states wishing to consider legislation to protect the public against misbranded and adulterated insecticides and other economic poisons, and to support establishment of uniform state and federal requirements for marketing these materials. The revised draft was presented to the Drafting Committee of the Council of State Governments meeting in Chicago, October 4 and 5, 1946.

Represented at the conference were: Federal-State Relations Section, Department of Justice; Bureau of Entomology, Department of Agriculture; Fish and Wildlife Service, Department of the Interior; Food and Drug Administration; and the Public Health Service of the Federal Security Agency. Officials of a few State and Commercial agencies also were present. The Communicable Disease Center was represented by Senior Entomologist (R) G.H. Bradley.

MALARIOLOGY CONFERENCE AT CHAPEL HILL.

Three representatives from the CDC visited the summer session of the School of Public Health at the University of North Carolina, Chapel Hill, on August 22 and 23, to present papers on various phases of malaria control. The following papers were presented at the meet-

ings: "The Epidemiological Factors Affecting Transmission of Malaria," by Sr. Surgeon V. B. Link; "Malaria Survey Techniques," and "Larvicidal Control of Anopheline Mosquitoes," by Sr. Surgeon V. B. Link and Sr. Entomologist George H. Bradley; "Permanent Control Measures against Anopheline Larvae," and "Anti-Adult Control Techniques against Anopheline Adults," by Sr. Entomologist (R) George H. Bradley and S. A. San. Eng. (R) Ernest P. Dubuque.

In addition to the papers, several films, lantern slides, and graphic displays were shown to the group.

STATE AND TERRITORIAL LABORATORY DIRECTORS MEET.

At the request of State and Territorial Health Officers, Surgeon General Thomas A. Parran called a conference of laboratory directors to meet September 16, 17, and 18, in Washington, D. C. The purpose of the conference was threefold: (1) to acquaint laboratory directors with present activities of the U. S. Public Health Service, and with aids which they may obtain from the Service; (2) to obtain an expression from the laboratory directors of the additional services, aids, and other assistance which they desire from the U. S. Public Health Service; and (3) to present the latest available information regarding present laboratory problems of major interest to the group.

In connection with this last, an entire morning was devoted to a discussion of problems encountered by the various state blood banks. The afternoon was given over to the reading and discussion of technical papers on the processing, use, and hazards of whole blood, blood plasma, and blood derivatives.

PUBLIC HEARING ON WATER HYACINTH.

In connection with a survey of the water hyacinth problem in the Southeast, a public hearing was held in Mobile, Alabama, on July 18, to enable persons of that area to express their ideas on the desirability of eradication. P. A. San. (R) Roy F. Fritz attended the meeting as a representative of the CDC.

WATER HYACINTH OBSERVATIONS.

In some areas, water hyacinths may cause serious breeding of mosquitoes; while in others, such as an entire canal or stream clogged with plants, mosquito breeding is often negligible.

One problem to be considered in connection with the water hyacinths is the economic danger to water supplies. Ordinarily, water in relatively clear streams gradually rids itself of impurities which have been emptied into it in the form of sewage or other wastes. In areas covered with water hyacinths, this purifying action is greatly reduced and organic pollution must be removed chemically or the sewage load

Preliminary experiments indicate that 2,4-D used as an airplane spray may be effective and inexpensive in eradicating water hyacinth.



entering the stream must be reduced.

In some streams, water hyacinths cause damage to the pumping stations. Roots and decayed materials clog up the screens and condensers of the pumps, causing serious pumping difficulties.

Experiments in controlling hyacinth growths have included tests with 2, 4-D, a phenol derivative. These have been made by the U. S. Department of Agriculture in cooperation with the Florida Experimental Station at Belle Glade. When treated with 2, 4-D, plants begin to develop rapidly near the top, then bend over into the water, and shortly after die and decay. At present, 2, 4-D seems to be a promising and inexpensive way of getting rid of the water hyacinths. Cost per acre of spraying the areas by plane is from four to five dollars, as against fifty dollars per acre for removal by drag lines. However, before 2, 4-D can be used extensively in areas furnishing water supplies for cities and towns, certain investigations must be made. It is not yet known whether 2, 4-D affects the taste and odor of the water. This must be thoroughly investigated. Likewise, its toxicity to humans must be studied.

TECHNICAL DEVELOPMENT DIVISION MOVES.

The Technical Development Division formerly located in Carter Memorial Laboratory, Savannah, Georgia, is moving to new quarters on Oakland Island. The Internship Training Program will occupy Carter Memorial Laboratory.

DR. MILLER SPEAKS IN SAN FRANCISCO.

Surgeon Seward Miller, Director of Laboratory Services, gave a talk to the American Society of Medical Technologists in San Francisco in July. He explained the program set up by the Communicable Disease Center, and spoke especially of the six-week refresher course offered in Laboratory Diagnosis of Parasitic Diseases. Dr. Miller showed the group the film strip on *Laboratory Diagnosis of Schistosomiasis*, and gave out copies of the *Schistosomiasis* hand book. Both were well re-

ceived by the group.

While at San Francisco, Dr. Miller attended meetings of the American Society of Clinical Pathologists, and the American Medical Association.

FIRST MEXICAN MEDICAL CONGRESS MEETS.

The First Mexican Medical Congress at the General Hospital in Mexico City was held August 4 through 10. Sr. Assistant Scientist M. M. Brooke from the Laboratory Services, Headquarters, Atlanta, attended the conference, and presented the film strip, "Laboratory Diagnosis of Schistosomiasis." For this occasion the Training Division recorded a Spanish narration to accompany the film. He reported that it was received enthusiastically by the audience. Apparently it was the first time that this type of audio-visual material had been introduced to a group of this kind in Mexico.

The doctors concerned with the teaching activities of the General Hospital and the National School of Medicine considered the film an excellent teaching aid, and wanted to know about the availability of other films that have been produced in the Communicable Disease Center. At the end of his speech, Dr. Brooke presented a copy of the *Schistosomiasis* film strip to the President of the Congress, Dr. Abraham Agala Gonzalez.

RESERVE OFFICERS RECEIVE REGULAR CORPS COMMISSIONS.

Several reserve officers of the U.S. Public Health Service, CDC, received commissions to the regular corps recently. Included in this group are: Sr. Asst. Scientist M. M. Brooke and Sr. Asst. Scientist H. D. Pratt, both of the Division of Laboratory Services, Headquarters, Atlanta; S. A. San. Eng. Chris Hansen, Engineering Division, Headquarters, Atlanta; S. A. San. Eng. Richard J. Hammerstrom, in charge of the typhus-control program, In-Service Training Branch of the Training Division, Headquarters, Atlanta; and Asst. San. Eng. John T. Thoman, who is stationed in Cincinnati and is making a stream pollution survey of the Ohio River.

FIELD NOTES

1946 MALARIA CONTROL WORKSHOPS IN ARKANSAS.

The Arkansas Malaria Bulletin reported that ten malaria control workshops were conducted in eight eastern Arkansas colleges during their summer sessions. Courses were sponsored as activities of the education section in each college.

Purposes of the workshops were: (1) to instruct teachers in the basic facts of malaria and its control; (2) to stimulate teachers to teach these facts in their respective schools; and (3) to provide information relative to sources of materials, technics, and equipment about malaria and its control.

Of the 353 persons attending the workshops, 203 were teachers or school superintendents. A large part of the remaining students were training to become teachers.

sion, cause and effects of malaria were presented. The third session included a discussion of the malaria mosquito and methods of control. Lay education in malaria control was emphasized during the fourth meeting. The fifth session consisted of a field trip during which students observed living *Anopheles quadrimaculatus* larvae and adults under natural conditions, methods of larviciding, and DDT house spraying.

The accompanying table summarizes information concerning the malaria control workshops conducted in Arkansas colleges during the summer of 1946.

TRAINING PROGRAMS IN CHINA.

From a letter by Asst. San. Eng. (R) R. P. Burden, stationed with UNRRA in China, it was learned that Communicable Disease Center training films, film strips, booklets, and pamphlets,

COLLEGE	DATE	HOURS	ATTENDANCE		
			Teachers	Others	Total
Arkansas State Teachers	May 19 - June 1	5	23	21	44
Arkansas State College	June 3 - 7	10	33	34	67
Arkansas A and M	June 10 - 14	15	31	7	38
State A and M	June 10 - 14	16	12	18	30
Arkansas Polytechnic	June 17 - 21	5	5	6	11
Anderson State Teachers	June 24 - 28	10	24	6	30
Arkansas State College	July 8 - 12	10	6	3	9
Arkansas A and M	July 15 - 19	15	12	10	22
A M & N College (colored)	July 22 - 26	10	29	38	67
University of Arkansas	July 3	3	28	7	35
TOTAL		93	203	150	353

In general, the courses consisted of five sessions, each lasting from one to three hours. A discussion provided an introduction to the problem of malaria. Usually, in the second ses-

are being used to great advantage in sanitation and anti-epidemic programs in that country.

Mr. Burden stated that after eight years of occupancy by foreign troops,

there is a great need in China for educational materials which can be used on the large scale training program in progress.

TYPHUS CONTROL IN ST. THOMAS, VIRGIN ISLANDS.

A ratproofing and rat-eradication project was started during March in St. Thomas, and has continued to date. Extermination of the rodents has been accomplished in one area, and it is estimated that work on all business buildings will be completed in approximately two and one half years.

Sufficient interest and enthusiasm for the program has been aroused among residence owners to the extent that they are requesting ratproofing of their homes.

DDT SAVES BABIES.

According to the Missouri State Health Department publication, last year the U. S. Public Health Service sprayed 85,000 homes with DDT in the delta country of Mississippi. It was chiefly a malaria control project to kill mosquitoes. But so many flies died as a result of the spraying project that the infant death rate from fly-borne diseases such as dysentery, typhoid fever, diarrhea, and enteritis, was cut to less than one-third that of the year before.

This means that approximately 50 children in Mississippi who otherwise would have died as a result of these diseases are alive today.

In addition to killing the mosquitoes and flies, such house-infesting insects as cockroaches, ants, and bed bugs were destroyed. The average cost of spraying each home was only about two dollars.

"DEPTH CHARGE" USED IN MOSQUITO CONTROL.

The Missouri State Health Department publication "See-Mo. DDT News," describes the action of a non-explosive but effective kind of DDT depth

charge which has been developed by the Public Health Service as a weapon to be used against malaria mosquitoes.

The new development consists of pellets which are lowered on wires into streams where mosquitoes breed. They disintegrate slowly, thus permitting the DDT and other chemicals to act as a continual source of supply for killing the larvae.

Certain untreated areas of the stream were used as a basis for comparison with the treated areas. Although the investigators gave no specific figures on the results, they said that there was a marked reduction in *Anopheles* larvae during the entire season following the introduction of the pellets.

CALIFORNIA MOSQUITO CONTROL SECTION ESTABLISHED.

The publication "California's Health" stated that a Mosquito Control Section had been established in the Division of Environmental Sanitation with Headquarters at Berkeley, California.

Arve H. Dahl, formerly with U. S. Public Health Service, stationed on the Internship Training program at Savannah, Georgia, is chief of the Section.

Investigation on encephalitis will be carried on, and demonstrations will be made of methods of controlling mosquitoes.

MALARIA FEVER CASES IN ARKANSAS DURING 1946.

According to the Arkansas Malaria Bulletin, the morbidity records which have been compiled by the Division of Communicable Diseases, Arkansas State Board of Health, show a distinct drop in malaria during 1946 over 1945. Records for the thirty-fifth week, ending August 31st, show 849 cases of malaria reported for this year, as compared to 1182 cases for the same period last year.

OKLAHOMA CITY PASSES ORDINANCE.

Oklahoma City passed a rat control ordinance recently. Rodent control mea-

asures are being investigated under the direction of Herman Groseclose, Sanitary Engineer. Sanitarian Harry Essick of the U.S.P.H.S. is assisting in getting the project started.

TRAINING CENTER AT COLUMBUS, GEORGIA.

A training center for sanitary engineers and sanitarians has been set up in Columbus, Georgia, with S. A. San. Eng. Charles E. Spangler as director of activities. The first 12-week class started September 30th, with ten sanitary engineers from Georgia attending. In addition to the regular course, special training is being given the group in water and sewage treatment. The work in typhus control will be given at Headquarters in Atlanta.

ROCKY MOUNTAIN LAB. WANTS TICKS.

Members of the Rocky Mountain Laboratory, Hamilton, Montana, U.S.P.H.S. Division of Infection, would like to receive live specimens of ticks to be used in experiments in connection with Rocky Mountain Spotted Fever. Species in which they are interested include: (1) *Dermacentor variabilis*; (2) *Amblyomma americanum*, and *Amblyomma maculatum*. Such specimens may be forwarded to the Laboratory in Hamilton, Montana.

Before live ticks are shipped, permits should be obtained from the Bureau of Entomology and Plant Quarantine, Washington, D. C. Ticks should be placed in mailing tubes, addressed plainly to the Rocky Mountain Laboratory, Hamilton, Montana, U.S.P.H.S., Division of Infection. In addition a special mailing permit should be placed on each mailing tube.

HEALTH EXHIBITS IN TEXAS.

The Dallas, Texas Health Department in September prepared a number of health exhibits which will be on display at the Dallas Fair during the first two weeks in October.

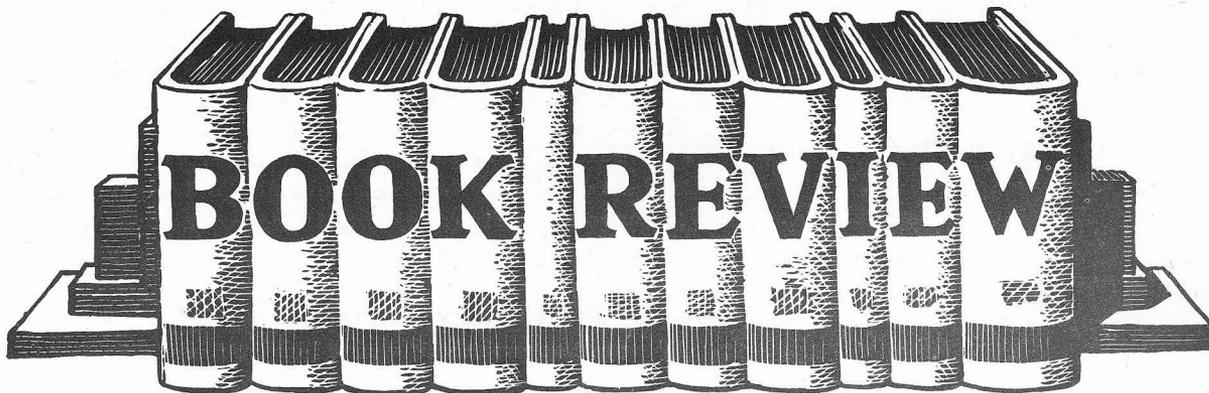
In addition, a visual education booth has been set up at the Fair which will show health films and film strips continuously. Emphasis will be placed on typhus, malaria, dengue, and other preventable, insect-borne diseases. Evaluation will be made through use of statistical sampling methods and special survey cards.

TEXAS REVISES RECORDINGS.

The Texas State Health Education Division during September revised recordings of the film strip "Typhus Fever in Texas," and plans are being formulated to revise recordings of film strips in other fields.

Preparing demonstration material for distribution to teaching laboratories.





MODERN MANAGEMENT IN CLINICAL MEDICINE by Frederick K. Albrecht, M.D., S. A. Surgeon, U. S. Public Health Service. Cloth. Price \$10.00. Pp 1238 with 237 Figures, 11 Color Plates and 66 Tables. Baltimore: Williams and Wilkins Company, 1946.

The present day practice of medicine is so complex that any effort to describe all of its ramifications in a single volume amounts to a Herculean task. Ordinarily, textbooks of medicine represent the results of years of clinical teaching. They may be the compilation of a Professor of Medicine's lectures, or a collection of several teachers' efforts along these lines.

The volume under review is unique in many respects. The author is a physician in the Public Health Service and does not fit into the usual classification of Professor of Medicine of a Medical School. He is furthermore credited with bearing the major burden of writing 18 out of the 21 chapters. This is evidence of a comprehensive understanding of many fields represented in clinical medicine. Three of the chapters more closely related to technical laboratory and pathology subjects were written by another Public Health Service Officer, Surgeon Seward E. Miller, now Chief, Laboratory Division of the Communicable Disease Center, Atlanta, Georgia.

Dr. Albrecht began with the premise that there were defects in the available textbooks of medicine and that far more should be included on details of procedure and techniques of therapy. He points out that there are no shortcuts in medicine and that he is not advocating standardized routine handling of patients. He does believe, however, that certain fundamentals of history-taking and physical examinations should be emphasized. To this end he has included over a dozen suggested record forms to remind the physician of the pertinent points to be remembered in taking the history and making the examination.

The volume is amply illustrated with 237 figures and 11 color plates. Since many of these figures represent several photographs, the actual total of illustrations probably exceeds 300. There are 66 tables which present data in a compact usable form.

The author is to be highly commended on his work in producing a book which will prove useful to the practicing physician in so many of the varied fields of the practice of medicine. It is apparent that not only has he achieved his purpose of departing from the usual type of treatment of textbooks of medicine, but that he has done so in a manner which has produced a very useful and worthwhile aid to student and practitioner alike.

Vernon B. Link

TABLE I
U. S. Public Health Service, Communicable Disease Center
Summary of Typhus Control Operations
FISCAL YEAR 1946

STATE	Areas in Operation	RESIDUAL DUSTING			RAT POISONING			RATPROOFING		MAN-HOUR SUMMARY		
		Number Premise Dustings	Pounds 10% DDT Dust Per Premise	Man-Hours L & LF* Per Premise	Number Premise Poisonings	Pounds Baits Per Premise	Man-Hours L & LF* Per Premise	Number Establishments Treated	Man-Hours L & LF* Per Establishment	USPHS Man Hours Worked	Other Man Hours Worked	Total Man Hours Worked
Alabama	10	33,747	4.3	0.86	24,936	1.19	0.43	120	22.5	56,549	37,100	93,649
Arkansas	1	---	---	---	408	13.10	7.1	189	29.2	400	12,617	13,017
Florida	6	29,408	1.7	0.56	321	0.56	4.4	411	20.4	21,658	13,930	38,588
Georgia	11	73,328	4.2	0.83	20,651	0.86	0.88	247	58.3	65,338	55,268	120,606
Louisiana	5	23,558	1.7	0.42	23,172	0.23	0.29	272	51.3	19,540	24,609	44,149
Mississippi	5	15,383	1.6	0.72	2,065	0.36	0.50	172	46.3	19,712	12,254	31,966
N. Carolina	9	36,176	1.5	0.60	2,079	0.36	1.20	601	53.3	33,239	46,424	79,663
S. Carolina	14	14,212	3.6	1.59	953	1.00	2.92	654	35.8	34,277	45,674	79,951
Tennessee	2	15,347	2.4	0.45	---	---	---	---	---	10,945	57	11,002
Texas	20	90,300	1.2	0.56	37,516	0.32	0.50	1,254	31.2	82,009	146,972	228,981
Virginia	1	453	13.2	1.06	---	---	---	---	---	628	160	788
Total	84	331,912	2.5	0.69	112,101	0.65	0.58	3,920	37.8	344,295	398,065	742,360

* Labor and Labor Foremen

TABLE II
U. S. Public Health Service, Communicable Disease Center
Summary of Typhus Control Operations
JULY 1 - 28, 1946

STATE	RESIDUAL DUSTING				RAT POISONING						RATPROOFING			MAN-HOUR SUMMARY			
	Counties Reporting	Premise Dustings	Pounds 10% DDT Dust Per Premise	Man-Hours L & LF* Per Premise	Counties Reporting	FOOD BAITS			1080 WATER			Projects Reporting	Estab-lishments Treated	Man-Hours L & LF* Per Estab.	USPHS Man-Hours Worked	Other Man-Hours Worked	Total Man-Hours Worked
						Premise Poisonings	Pounds Per Premise	Man-Hours L & LF* Per Prem.	Estab. Poisonings	Pints Per Estab.	Man-Hours L & LF* Per Estab.						
Alabama	10	3,840	5.1	0.90	5	2,345	1.2	0.4	---	---	---	---	---	---	6,584	3,464	10,048
Arkansas	---	---	---	---	1	16	0.3	22.9	171	7.7	2.3	2	60	18	364	3,028	3,392
Florida	5	3,436	2.8	0.46	4	32	0.8	2.4	33	1.4	3.5	3	36	31	1,944	3,235	5,179
Georgia	33	10,422	3.2	0.79	19	5,452	1.1	0.6	93	3.5	5.0	3	29	92	8,901	9,605	18,506
Louisiana	6	2,969	2.9	0.50	6	2,970	0.1	0.2	305	1.6	2.5	4	58	48	4,315	4,009	8,324
Mississippi	5	2,603	1.3	0.48	2	---	---	---	79	3.0	1.4	2	11	46	2,200	724	2,924
N. Carolina	5	4,825	1.4	0.37	---	---	---	---	---	---	---	---	---	---	1,488	264	1,752
S. Carolina	14	1,138	2.9	1.57	3	26	0.5	1.8	59	1.8	2.3	4	70	31	3,388	3,793	7,181
Tennessee	2	4,479	1.6	0.28	---	---	---	---	---	---	---	---	---	---	1,572	---	1,572
Texas	42	4,717	1.6	0.86	47	477	1.8	0.3	1,690	0.8	1.3	12	98	48	7,361	15,276	22,637
Virginia	1	618	7.8	0.74	---	---	---	---	---	---	---	---	---	---	448	304	752
TOTAL	123	39,047	2.7	0.65	87	11,318	1.0	4.9	2,430	1.6	1.7	30	362	42	38,565	43,702	82,267

* Labor and Labor Foremen

TABLE III
U. S. Public Health Service, Communicable Disease Center
Summary of Typhus Control Operations
JULY 29 - AUGUST 25, 1946

STATE	RESIDUAL DUSTING				RAT POISONING						RATPROOFING			MAN-HOUR SUMMARY			
	Counties Reporting	Premise Dustings	Pounds 10% DDT Dust Per Premise	Man-Hours L & LF* Per Premise	Counties Reporting	FOOD BAITS			1080 WATER			Projects Reporting	Estab-lishments Treated	Man-Hours L & LF* Per Estab.	USPHS Man-Hours Worked	Other Man-Hours Worked	Total Man-Hours Worked
						Premise Poisonings	Pounds Per Premise	Man-Hours L & LF* Per Prem.	Estab. Poisonings	Pints Per Estab.	Man-Hours L & LF* Per Estab.						
Alabama	10	3,994	4.3	0.80	5	2,117	1.2	0.4	---	---	---	---	---	---	6,315	3,194	9,509
Arkansas	---	---	---	---	1	34	0.2	10.8	154	1.3	2.4	2	61	25	360	2,974	3,334
Florida	5	4,211	2.8	0.79	3	---	---	---	31	0.9	3.1	4	59	21	2,252	3,438	5,690
Georgia	29	9,537	3.4	0.68	15	1,249	0.7	0.9	59	3.0	3.7	3	10	223	5,736	8,027	13,763
Louisiana	6	5,460	2.6	0.42	6	3,692	0.1	0.2	273	3.4	1.6	4	134	23	3,419	4,552	7,971
Mississippi	4	4,188	1.7	0.44	2	---	---	---	64	2.7	2.1	4	9	19	2,812	428	3,240
N. Carolina	4	4,401	1.0	0.41	1	434	0.9	0.2	---	---	---	---	---	---	456	1,420	1,876
S. Carolina	4	394	3.8	1.78	3	25	0.8	0.6	55	1.5	3.0	4	44	47	1,726	3,611	5,337
Tennessee	2	3,405	1.6	0.24	---	---	---	---	---	---	---	---	---	---	944	---	944
Texas	43	7,378	1.8	0.28	45	606	0.3	0.3	2,033	1.0	1.4	12	173	52	10,964	17,135	28,099
Virginia	1	693	4.8	0.69	---	---	---	---	---	---	---	---	---	---	480	320	800
TOTAL	108	43,661	2.3	0.53	81	8,157	0.6	0.4	2,669	1.3	1.6	33	490	39	35,464	45,099	80,563

* Labor and Labor Foremen

TABLE IV
MCWA Larvicide, Minor and Major Drainage Work
MAY 19 - JUNE 30, 1946

STATE	Areas in Operation	RESIDUAL SPRAYING		LARVICIDAL WORK				DRAINAGE OPERATIONS										Total Man Hours		
		Number Houses Sprayed	Pounds DDT Used	LARVICIDE USED		SURFACES TREATED ACRES		CLEARING			NEW DITCHING				Ditch Lining Lin. Ft.	Underground Drainage Lin. Ft.	Fill C.Y.		Water Surf. Eliminated Acres	
				Oil Gals.	Paris Green Lbs.	Oiled	Dusted	Aquatic Veg. Acres	Land Veg. Acres	Cleaning Lin. Ft.	Hand	Lin. Ft. Mach.	Dynamite	Total C. Y.						
Alabama	10	24,445	19,770	60	---	2	---	---	---	30,200	---	---	---	---	---	---	---	---	---	47,496
Arkansas	26	49,124	33,753	18,966	713	1,154	664	14	22	157,536	1,376	---	---	105	---	---	---	---	---	84,159
California	1	---	---	786	---	66	---	---	1	---	---	---	---	---	---	---	---	---	---	1,068
Florida	8	14,846	13,168	2,283	226	113	49	1	1	3,835	300	---	---	23	---	---	---	---	---	32,889
Georgia	21	34,590	51,471	---	134	---	133	1	1	4,120	565	---	---	41	---	---	---	---	---	32,513
Kentucky	3	3,730	2,694	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	5,852
Louisiana	9	19,553	13,128	20,621	---	807	---	2	4	45,200	650	---	---	97	---	---	---	---	---	40,270
Mississippi	18	37,250	19,700	1,975	---	91	---	1	1	8,600	---	---	---	---	---	---	---	---	---	53,772
Missouri	7	15,028	10,648	1,700	714	62	540	---	1	---	---	---	---	---	---	---	---	---	---	21,141
North Carolina	2	11,013	6,827	---	---	---	---	---	---	3,080	2,530	---	5,450	4,880	---	---	---	---	---	12,886
Oklahoma	5	7,650	7,317	816	16	28	11	---	---	---	800	---	---	90	---	---	---	---	2	7,002
Puerto Rico	6	---	---	1,151	2,267	114	1,682	4	---	64,923	700	---	---	75	---	---	---	---	80	17,277
South Carolina	25	27,410	17,455	1,050	---	48	---	10	8	104,058	160	---	---	50	---	---	---	---	---	55,238
Tennessee	4	8,084	6,619	5,632	18	227	14	---	1	1,538	300	---	---	34	39	---	---	---	---	17,529
Texas	11	22,424	11,297	2,603	---	190	---	11	1	3,900	---	---	---	---	---	---	---	---	---	64,562
Virginia	2	21	79	4,343	77	100	64	---	2	9,523	3,019	---	---	294	---	---	---	---	---	5,832
Total	158	275,148	216,926	61,986	4,165	3,002	3,157	44	43	436,513	10,400	---	5,450	5,689	39	---	---	---	82	499,486
Total 4/21 - 5/18	164	174,854	140,917	27,152	2,303	1,543	1,498	38	30	386,838	36,889	4,100	4,190	5,852	339	---	---	398	43	333,667

TABLE V
MCWA Payroll and Personnel Report
JUNE 1946

	COMMISSIONED		PROF. & SCI.		SUB-PROF. (1)		C. A. F.		CUSTODIAL AND PER HOUR		PER DIEM AND PER HOUR		TEMPORARY		TOTAL		PERCENT OF TOTAL		
	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	
Alabama	3	1,016	1	361	24	4,633	4	715	23	3,851	---	---	119	18,828	174	29,404	5.79	6.10	
Arkansas	9	2,438	8	2,158	53	9,622	28	5,290	27	3,677	---	---	317	40,423	442	63,608	14.70	13.20	
California	2	369	---	---	2	389	2	325	---	---	---	17	8	1,644	14	2,744	0.46	0.57	
District of Columbia	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Florida	5	1,669	5	1,276	42	7,396	9	1,357	18	2,326	---	---	105	13,394	184	27,418	6.12	5.69	
Georgia	8	2,578	10	2,384	26	4,816	7	1,217	7	919	---	---	49	8,668	107	20,582	3.56	4.27	
Kentucky	1	474	---	---	---	---	---	---	---	6	---	---	---	1	480	0.03	0.10		
Louisiana	6	1,833	5	1,258	52	7,671	9	1,580	21	3,008	---	---	113	14,862	206	30,212	6.85	6.27	
Mississippi	17	5,226	3	789	33	5,304	7	1,237	8	1,242	---	---	193	22,302	261	36,100	8.68	7.49	
Missouri	3	900	1	246	9	1,679	4	650	1	83	---	---	81	10,245	99	13,803	3.29	2.87	
North Carolina	6	1,783	3	950	6	1,672	4	812	6	1,129	---	---	42	5,568	67	11,914	2.23	2.47	
Oklahoma	3	1,066	1	246	15	2,596	5	931	2	296	---	---	17	2,135	43	7,270	1.43	1.51	
Oregon	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
South Carolina	5	1,578	5	1,402	43	8,538	7	1,189	12	2,046	---	---	163	20,853	235	35,606	7.81	7.39	
Tennessee	3	900	4	1,035	18	2,776	3	579	16	2,105	---	---	49	5,305	93	12,700	3.09	2.64	
Texas	5	1,685	9	2,486	23	4,370	8	1,434	22	3,701	---	---	197	23,385	264	37,061	8.78	7.69	
Virginia	1	342	1	348	5	999	1	178	18	2,485	---	---	4	504	30	4,856	1.00	1.01	
<i>Aedes aegypti</i>																			
Alabama	---	---	---	---	3	648	---	---	---	---	---	---	3	469	6	1,117	0.20	0.23	
Florida	---	---	---	---	8	1,676	---	---	---	---	---	---	7	949	15	2,625	0.50	0.55	
Louisiana	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
South Carolina	---	---	---	---	5	875	1	151	---	---	---	---	---	---	6	1,026	0.20	0.21	
Texas	---	---	---	---	12	2,373	1	146	---	---	---	---	1	212	14	2,731	0.47	0.57	
Hq. & Dist. (2)	83	31,573	28	7,214	59	10,114	214	37,634	43	6,918	3	617	172	24,453	602	118,523	20.02	24.60	
Honolulu, T. H.	2	707	---	---	23	8,844	1	183	1	500	---	---	---	---	27	10,234	0.90	2.12	
Puerto Rico	7	2,494	1	287	4	1,686	3	934	3	1,068	99	5,325	---	---	117	11,794	3.89	2.45	
Total	169	58,631	85	22,440	465	88,677	318	56,542	228	35,360	102	5,959	1,640	214,199	3,007	481,808	100.00	100.00	
Percent of Total	5.62	12.17	2.83	4.66	15.46	18.40	10.58	11.73	7.58	7.34	3.39	1.24	54.54	44.46	100.00	100.00			

(1) Includes Entomological Inspectors.
 (2) Includes Headquarters and District Offices, Mobile Units, Malaria Survey, Imported Malaria Control, Special Investigations, and employees temporarily attached to Headquarters pending assignment to states.
 NOTE: No. - Includes civilian personnel as of last pay period in the month. Includes commissioned officer personnel as of last day of month.
 Pay - Includes totals of all payrolls covering periods ending during the month; supplemental and final payrolls for previous months processed during the current month.

TABLE VI
MCWA Expenditures and Liquidations by Major Items
JUNE 1946

	CONTINENTAL U. S.	PERCENTAGE OF TOTAL	PUERTO RICO	PERCENTAGE OF TOTAL
01 Personal Services	\$470,014.00	71.13	\$11,794.00	88.05
02 Travel	32,363.85	4.90	80.92	0.60
03 Transportation of Things	38,608.52	5.84	---	---
04 Communication Services	542.58	0.08	21.92	0.16
05 Rent and Utility Services	3,375.86	0.51	---	---
06 Printing and Binding	1,156.43	0.17	---	---
07 Other Contractual Services	28,876.97	4.37	18.00	0.14
08 Supplies and Materials	88,313.97	13.37	1,480.42	11.05
09 Equipment	19,803.78	3.00	---	---
10 Lands and Buildings	11,232.36	1.70	---	---
11 Grants, Subsidies, and Contributions	10,000.00	1.51	---	---
Total	\$660,738.44	100.00	\$13,395.26	100.00
Expenditures Other Than Personal Services	\$190,724.44	28.87	1,601.26	11.95

TABLE VII
Typhus Expenditures and Liquidations by Major Items
JUNE 1946

	CONTINENTAL U. S.	PERCENTAGE OF TOTAL	PUERTO RICO	PERCENTAGE OF TOTAL
01 Personal Services	\$ 65,612.00	33.97	\$435.00	100.00
02 Travel	---	---	---	---
03 Transportation of Things	100.00	0.05	---	---
04 Communication Services	52.12	0.03	---	---
05 Rent and Utility Service	60.94	0.03	---	---
06 Printing and Binding	---	---	---	---
07 Other Contractual Services	1,990.07	1.03	---	---
08 Supplies and Materials	124,334.22	64.37	---	---
09 Equipment	1,014.44	0.52	---	---
10 Land and Buildings	---	---	---	---
Total	\$193,163.79	100.00	\$435.00	100.00
Expenditures Other Than Personal Services	\$127,551.79	66.03	---	---

TABLE VIII
Typhus Payroll and Personnel Report
JUNE 1946

AREA	COMMISSIONED		PROF. & SCI.		SUB-PROF.		C. A. F.		CUSTODIAL AND PER HOUR		PER DIEM AND PER HOUR		TEMPORARY		TOTAL		PERCENT OF TOTAL	
	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY	NO.	PAY
Alabama	---	---	1	115	7	648	---	---	15	848	---	---	22	1,513	45	3,124	10.30	4.73
Arkansas	---	---	1	288	1	156	---	---	18	2,412	---	---	2	459	22	3,315	5.03	5.02
Florida	---	---	1	331	11	1,778	---	---	1	121	---	---	7	899	20	3,129	4.58	4.74
Georgia	4	1,191	5	1,222	33	5,889	1	151	1	121	---	---	26	3,944	70	12,518	16.02	18.95
Louisiana	---	---	1	229	18	3,161	1	151	---	8	---	---	20	2,687	40	6,236	9.15	9.44
Mississippi	---	---	2	513	5	935	---	---	6	637	---	---	2	411	15	2,496	3.43	3.78
North Carolina	1	284	1	229	3	531	1	146	---	---	---	---	21	2,739	27	3,929	6.18	5.95
South Carolina	---	---	2	509	12	2,345	---	---	7	877	---	---	13	1,665	34	5,396	7.78	8.17
Texas	2	664	---	458	35	6,515	1	146	---	---	---	---	24	3,385	62	11,168	14.19	16.91
Tennessee	---	---	---	---	1	162	---	---	---	---	---	---	10	1,140	11	1,302	2.52	1.97
Virginia	---	---	---	---	---	---	---	---	---	---	---	---	2	262	2	262	0.46	0.40
Headquarters	8	2,638	3	1,107	28	3,396	3	762	1	363	---	---	41	3,415	84	11,681	19.22	17.68
Puerto Rico	---	---	1	435	---	---	---	---	---	---	---	---	---	---	1	435	0.23	0.66
Savannah Unit, Ga.	1	342	1	280	1	162	---	---	---	---	---	---	1	272	4	1,056	0.91	1.60
Total	16	5,119	19	5,716	155	25,678	7	1,356	49	5,387	---	---	191	22,791	437	66,047	100.00	100.00
Percent of Total	3.66	7.75	4.35	8.65	35.47	38.88	1.60	2.05	11.21	8.16	---	---	43.71	34.51	100.00	100.00		

NOTE: No. - Includes civilian personnel as of last pay period in the month. Includes commissioned officer personnel as of last day of month.
Pay - Includes totals of all payrolls covering periods ending during the month; supplemental and final payrolls for previous months processed during the current month.

TABLE IX
CDC Larvicide, Minor and Major Drainage Work

JULY 1 - JULY 26, 1946

STATE	Areas in Operation	LARVICIDAL WORK						DRAINAGE OPERATIONS									
		RESIDUAL SPRAYING		LARVICIDE USED			SURFACES TREATED ACRES			Clearing Acres	Cleaning Lin. Ft.	Hand	NEW DITCHING			Water Surf. Eliminated Acres	Total Man Hours
		Number Houses Sprayed	Pounds DDT Used	Oil Gals.	Paris Green Lbs.	Other Gals.	Oiled	Dusted	Other				Lin. Ft. Mach.	Dynamite	Total C. Y.		
Alabama	10	14,163	11,641	135	---	---	6	---	---	---	14,600	---	---	---	---	---	23,054
Arkansas	26	34,503	25,340	12,020	125	6,829	762	93	2,168	29	7,380	---	---	---	---	---	51,967
California	1	---	---	1,059	---	39	88	---	65	---	---	---	---	---	---	---	1,160
Florida	8	9,186	9,151	946	12	4	45	3	2	2	4,835	1,285	---	---	319	---	19,718
Georgia	21	24,682	38,262	---	87	---	---	87	---	2	---	---	---	---	---	---	12,124
Kentucky	3	2,005	1,389	---	---	27	---	---	30	---	---	---	---	---	---	---	3,907
Louisiana	9	7,821	7,017	12,900	---	24	542	---	3	4	11,600	---	---	---	---	---	17,550
Mississippi	18	25,877	23,114	---	---	---	---	---	---	---	---	---	---	---	---	---	32,322
Missouri	7	10,490	7,025	---	726	270	---	540	99	1	---	---	---	---	---	---	12,206
North Carolina	2	6,868	5,053	---	---	---	---	---	---	---	2,670	2,965	---	85	497	---	7,543
Oklahoma	5	2,047	2,230	711	16	---	29	12	---	---	---	---	---	---	---	---	2,321
Puerto Rico	6	---	---	802	2,030	54	73	1,521	29	5	61,539	---	---	---	---	---	18,117
South Carolina	25	18,496	13,375	109	---	---	7	---	---	15	37,802	---	---	---	---	---	28,228
Tennessee	4	5,556	5,091	526	---	1,143	22	---	650	---	---	---	---	---	---	---	11,113
Texas	11	16,585	11,282	720	13	2,138	34	13	65	5	---	---	---	---	---	---	35,047
Virginia	2	12	41	2,795	205	9	78	137	3	1	4,525	375	---	---	35	---	3,395
Total	158	178,291	160,011	32,723	3,214	10,537	1,686	2,406	3,114	64	144,951	4,625	---	85	851	---	279,772
Total 5/19 - 6/30	158	275,148	216,926	61,986	4,165	---	3,002	3,157	---	87	436,513	10,400	---	5,450	5,689	82	499,486

TABLE X
Personal Services Expenditures for CDC Activities

JULY 1946

ALLOCATION UNIT	LOCATION CODE	COMMISSIONED PERSONNEL	PROF. & SCIENTIFIC	SUB-PROFESSIONAL	C. A. F.	CUSTODIAL	TEMPORARY	TOTAL
Alabama	01	\$ 1,113.20	\$ 525.27	\$ 6,788.72	\$ 790.59	\$ 3,086.41	\$ 21,815.31	\$ 34,119.50
Arkansas	03	---	2,737.72	23,682.14	8,106.57	33,806.11	15.03	68,347.57
California	04	694.07	---	648.88	560.15	---	1,975.62	3,878.72
Florida	09	1,886.00	1,612.41	11,515.68	1,586.83	2,698.38	17,848.29	37,147.59
Georgia	10	4,153.75	3,337.40	11,082.91	1,502.23	1,096.93	12,905.90	34,079.12
Kentucky	16	363.40	900.14	661.13	412.94	---	3,452.57	5,790.18
Louisiana	17	2,613.70	1,481.51	9,763.93	1,993.95	3,082.13	16,358.53	35,293.75
Mississippi	23	3,467.03	1,422.34	6,097.51	1,421.08	207.30	29,227.44	41,842.70
Missouri	24	656.60	270.96	1,793.60	798.32	417.66	11,580.20	15,517.34
North Carolina	32	1,884.29	1,177.96	1,888.05	903.80	1,121.38	9,183.14	16,158.62
Oklahoma	35	1,163.65	280.60	2,846.76	1,068.22	266.50	2,092.10	7,717.83
South Carolina	39	318.40	2,089.64	13,824.60	1,493.50	2,035.32	25,066.73	44,768.19
Tennessee	41	1,304.35	1,144.06	3,079.09	640.16	2,191.12	7,766.01	16,124.79
Texas	42	2,180.40	3,879.44	15,618.60	1,937.00	3,224.25	32,307.63	59,148.22
Virginia	45	374.90	396.36	1,642.76	203.44	2,781.90	483.86	5,883.22
Other States and Dis.	76	1,929.40	919.78	600.14	974.85	239.88	1,605.32	6,269.37
Puerto Rico	50	---	---	---	---	---	---	10,420.30*
Laboratories, Training and Other Direct Activities Conducted by CDC Headquarters (including Administrative and Executive Costs)		28,489.75	9,058.10	15,401.91	43,715.63	7,270.57	31,547.45	135,483.41
TOTAL		\$52,592.89	\$31,233.69	\$126,936.41	\$68,110.16	\$63,525.84	\$225,171.13	\$577,990.42

NOTE: Includes regular payrolls for periods ended in July and supplemental or final payrolls processed under 1947 E. Y. appropriations during July, 1946.

* Includes gross pay for all services.

TABLE XI
CDC Larvicide, Minor and Major Drainage Work

JULY 27 - AUGUST 23, 1946

STATE	Areas in Operation	RESIDUAL SPRAYING		LARVICIDAL WORK						DRAINAGE OPERATIONS							
		Number Houses Sprayed	Pounds DDT Used	LARVICIDE USED			SURFACES TREATED ACRES			Clearing Acres	Cleaning Lin. Ft.	NEW DITCHING				Water Surf. Eliminated Acres	Total Man Hours
				Oil Gals.	Paris Green Lbs.	Other Gals.	Oiled	Dusted	Other			Hand	Lin. Ft. Mach.	Dynamite	Total C. Y.		
Alabama	11	14,411	12,603	345	---	---	11	---	---	---	10,000	---	---	---	---	---	23,090
Arkansas	25	36,053	19,355	10,603	40	6,382	725	23	1,901	23	7,040	---	---	---	---	---	46,302
California	2	---	---	1,017	---	69	89	---	140	1	---	---	---	---	---	---	1,120
Florida	8	9,374	8,740	1,384	26	---	45	9	---	3	17,815	425	---	---	39	---	19,061
Georgia	18	29,892	23,292	---	73	---	---	81	---	2	---	---	---	---	---	---	12,580
Kentucky	3	2,680	1,687	---	---	30	---	---	33	---	---	---	---	---	---	---	3,282
Louisiana	8	11,669	10,881	16,444	---	38	672	---	6	3	16,000	200	---	---	7	---	18,997
Mississippi	16	17,468	11,192	---	---	---	---	---	---	---	---	---	---	---	---	---	26,039
Missouri	6	10,690	6,772	---	745	275	---	540	83	---	---	---	---	---	---	---	12,216
North Carolina	2	6,413	5,118	---	---	---	---	---	---	---	3,000	2,215	---	---	290	30	7,071
Oklahoma	6	6,120	5,529	700	44	---	27	21	---	---	---	---	---	---	---	---	2,128
Puerto Rico	6	---	---	1,073	2,362	54	99	1,755	31	6	63,892	700	---	---	155	---	19,794
South Carolina	25	16,642	11,572	---	---	---	---	---	---	43	68,940	---	---	---	---	---	20,590
Tennessee	2	6,347	5,458	---	---	1,190	---	---	555	1	2,585	---	---	---	---	---	11,640
Texas	11	17,261	13,159	575	69	3,283	52	64	156	4	300	---	---	---	---	---	36,853
Virginia	2	---	---	3,055	135	44	99	92	18	---	4,003	---	---	---	---	---	2,738
Total	151	185,020	135,358	35,196	3,494	11,365	1,819	2,585	2,923	86	193,575	3,540	---	---	491	30	263,501
Total 7/1 - 7/26	158	178,291	160,011	32,723	3,214	10,537	1,686	2,406	3,114	64	144,951	4,625	---	85	851	---	279,772

TABLE XII
Personal Services Expenditures for CDC Activities
AUGUST 1946

ALLOCATION UNIT	LOCATION CODE	COMMISSIONED PERSONNEL	PROF. & SCIENTIFIC	SUB-PROFESSIONAL	C. A. F.	CUSTODIAL	TEMPORARY	TOTAL
Alabama	01	\$ 912.60	\$ 541.92	\$ 7,186.51	\$ 830.15	\$ 2,999.07	\$ 24,790.69	\$ 37,260.94
Arkansas	03	2,121.20	2,911.78	23,549.22	7,863.41	28,218.79	---	64,664.40
California	04	---	---	435.80	375.04	---	1,317.08	2,127.92
Florida	09	348.85	1,677.95	12,388.90	1,645.73	2,755.38	17,722.58	36,539.39
Georgia	10	3,500.08	4,441.66	13,749.05	3,057.11	1,636.47	17,866.70	44,251.07
Kentucky	16	363.40	928.66	592.94	595.49	---	3,464.92	5,945.41
Louisiana	17	1,431.62	1,518.80	10,302.83	1,902.30	3,448.30	16,345.71	34,949.56
Mississippi	23	3,213.95	1,151.38	6,492.23	1,439.88	207.30	28,749.99	41,254.73
Missouri	24	656.60	270.96	1,854.10	798.32	189.94	11,048.05	14,817.97
North Carolina	32	1,340.10	1,082.96	2,243.81	964.04	1,183.15	7,822.82	14,636.88
Oklahoma	35	993.18	295.09	1,442.85	1,081.28	210.20	765.90	4,788.50
South Carolina	39	318.40	2,118.59	12,988.72	1,776.31	2,177.36	18,141.76	37,521.14
Tennessee	41	738.30	2,019.94	4,055.94	990.69	3,180.32	9,538.00	20,523.19
Texas	42	2,555.30	4,277.58	14,746.33	1,937.90	3,272.42	31,933.86	58,673.39
Virginia	45	1,759.23	396.36	1,657.22	203.44	2,932.16	483.86	7,432.27
Other States & Dis.	76	2,472.25	783.46	508.59	901.96	226.42	1,745.98	6,638.66
Puerto Rico	50	1,929.15	326.64	828.66	1,054.48	237.42	5,876.86	10,253.21
Laboratories, Training and Other Direct Activities Conducted By CDC Headquarters (including Administrative and Executive Costs)		28,924.97	9,918.74	15,213.15	43,768.63	7,449.08	35,235.04	140,509.61
TOTAL		\$53,579.18	\$34,612.47	\$130,236.85	\$71,186.16	\$60,323.78	\$232,849.80	\$582,788.24

NOTE: Includes regular payrolls for periods ended in August and supplemental or final payrolls processed under 1947 F. Y. appropriations during August 1946.

TABLE XIII

CDC Obligations Incurred by Major Objective Classification

JULY AND AUGUST 1946

	MALARIA	TYPHUS	DIARRHEAL	AEDES AEGYPTI	POLIO	ASSISTANCE TO STATES, GENERAL	TOTAL
01 Personal Services - C.S.Ext.	\$ 852,284.60	\$145,812.44	\$15,326.62	\$22,099.85	\$13,216.73	\$3,200.18	\$1,051,940.42
01 Personal Services - Res.Off.	93,039.08	11,552.58	2,063.00	---	410.00	2,107.00	109,171.66
02 Travel	* 34,366.00	3,206.00	---	---	---	1,774.12	39,346.12
03 Transportation of Things	12,005.90	2,000.00	---	---	---	---	14,005.90
04 Communication Services	3,120.18	30.00	138.05	---	16.50	---	3,304.73
05 Rent and Utilities	8,291.78	72.11	---	5.00	20.00	---	8,388.89
06 Printing and Binding	---	---	---	---	---	---	---
07 Other Contractual Services	16,608.72	1,505.99	171.42	122.06	23.61	10.00	18,441.80
08 Supplies and Materials	304,009.74	5,816.23	18,694.26	932.77	22,731.17	---	352,184.17
09 Equipment	15,397.37	562.84	3.69	---	5,880.90	---	21,844.80
10 Land and Buildings	---	---	---	---	---	---	---
	\$1,339,123.37	\$170,558.19	\$36,397.04	\$23,159.68	\$42,298.91	\$7,091.30	\$1,618,628.49

*Includes travel expenses for Malaria, Diarrheal, Aedes Aegypti, and Polio.