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October – November – December 1946

COMMUNICABLE DISEASE CENTER
U. S. PUBLIC HEALTH SERVICE
FEDERAL SECURITY AGENCY
Atlanta, Georgia

CONTENTS

Material in this bulletin is not for publication.

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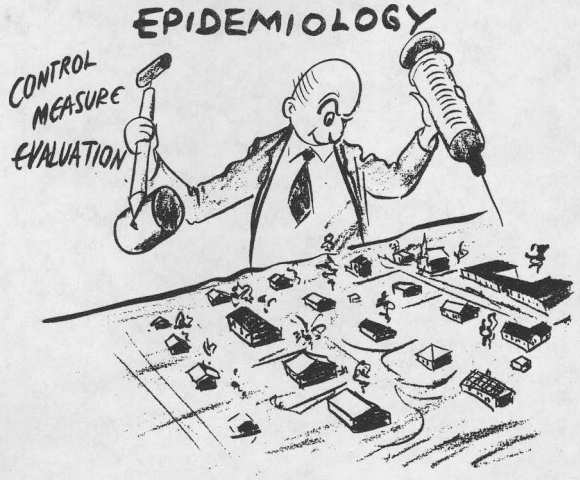
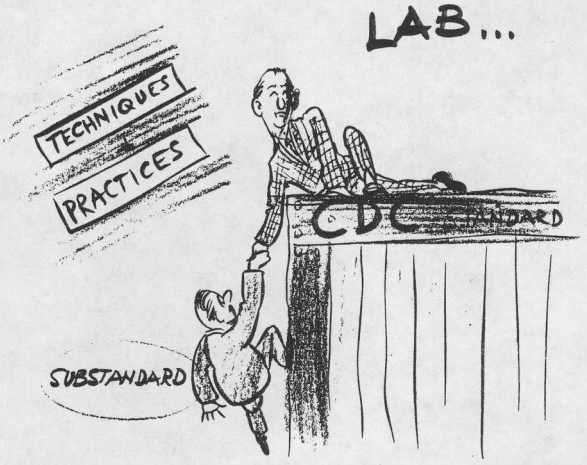
The Communicable Disease Center is a field station of the States Relations Division in the Bureau of States Services of the U. S. Public Health Service. Chart I shows the lines of authority of the Officer in Charge, and the interrelationships of the Headquarters and Field Organizations in the various states. These now number 15 - Alabama, Arkansas, California, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

The functional objectives of the various elements in the Headquarters Organization are indicated in Chart II. The members of the CDC Executive Office are concerned with the formulation and transmission of over-all policy to the divisions and the field organization, and in the administrative direction of the Communicable Disease Center Program. The divisional functions may be summarized as follows:



EPIDEMIOLOGY: This division maintains statistics of reported morbidity and mortality related to diseases of operational or investigational concern to the Communicable Disease Center, and periodically analyzes and interprets them for use in planning and evaluating programs. It assists in field investigations by measuring effectiveness of control measures on human populations in terms of specific morbidity and mortality experience; assists states in analyzing and advising with regard to epidemic phenomena; and supplies statistical planning and interpretive assistance to divisional and other programs.



LABORATORY: Laboratory activities of the Communicable Disease Center are not intended to duplicate those of the National Institute of Health. The principal objective is to support field investigations and to make available to state health laboratories services not now included in the NIH program. The CDC Laboratory provides diagnostic facilities - bacteriologic, serologic, parasitologic, virologic, and rickettsial - necessary for the prosecution of epidemiologic field activities; maintains mobile laboratory units to assist in gathering epidemiological data; provides instructors and other teaching facilities for laboratory training courses; reviews and evaluates technical procedures in diagnostic laboratories; provides consultation for correction of substandard techniques and administrative practices; develops standardized laboratory techniques for survey purposes so that data collected at different times and places may have a greater degree of comparability than at present; provides state and local health laboratories with series of protozoal, helminthic, bacterial, entomologic, and other specimens to assist in training technicians, as a reference museum, and for circulation to local clinical laboratories.

ENGINEERING: The Engineering Division provides facilities for large-scale field operations in the control of rodent- and insect-borne diseases. It assists federal and state agencies in control of certain endemic insect- or rodent-borne diseases by providing demonstration programs or specialized personnel to supervise such operations, where justification is based on high disease rates and assurance of local participation in control programs. The Division also provides facilities for controlled large-scale field-testing of new or improved disease-control materials and equipment; and assists other federal agencies and states in making surveys and recommendations regarding impoundment design, construction, and maintenance for the purpose of minimizing malaria hazards.

ENTOMOLOGY: This Division conducts entomological surveys, upon the findings of which the control program is based, and appraises the effectiveness of control measures.

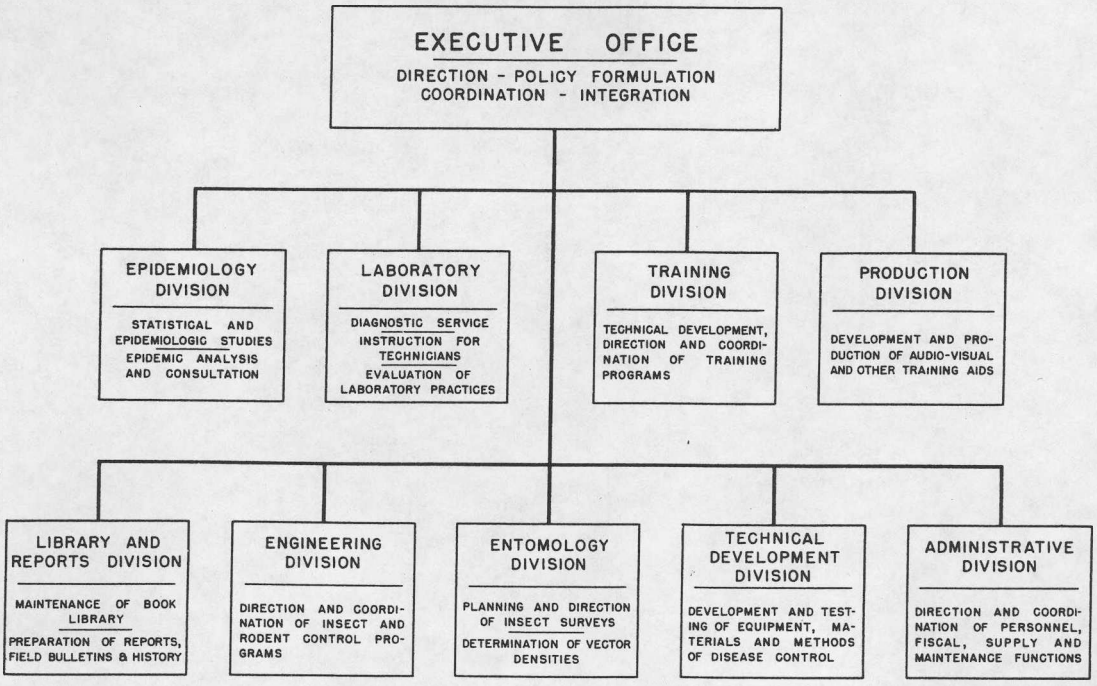
TECHNICAL DEVELOPMENT: New control methods of insect- and rodent-borne diseases are developed and tested by this Division, including new and improved insecticides and rodenticides. It devises new methods of ratproofing structures occupied or used by humans and evaluates communicable disease control practices in terms of hazard to wild life or to agricultural activities.

TRAINING: The training activities of CDC do not propose to infringe upon the prerogatives or fields of endeavor of schools of public health, hygiene, preventive medicine, sanitary engineering, or diagnostic laboratory technique. The Training Division provides in-service training for commissioned officers and civil employees entering the Center in the history, interrelationships, and practices of the various units of

CHART II

COMMUNICABLE DISEASE CENTER

CHART SHOWING STRUCTURE AND FUNCTIONS
OF HEADQUARTERS ORGANIZATION



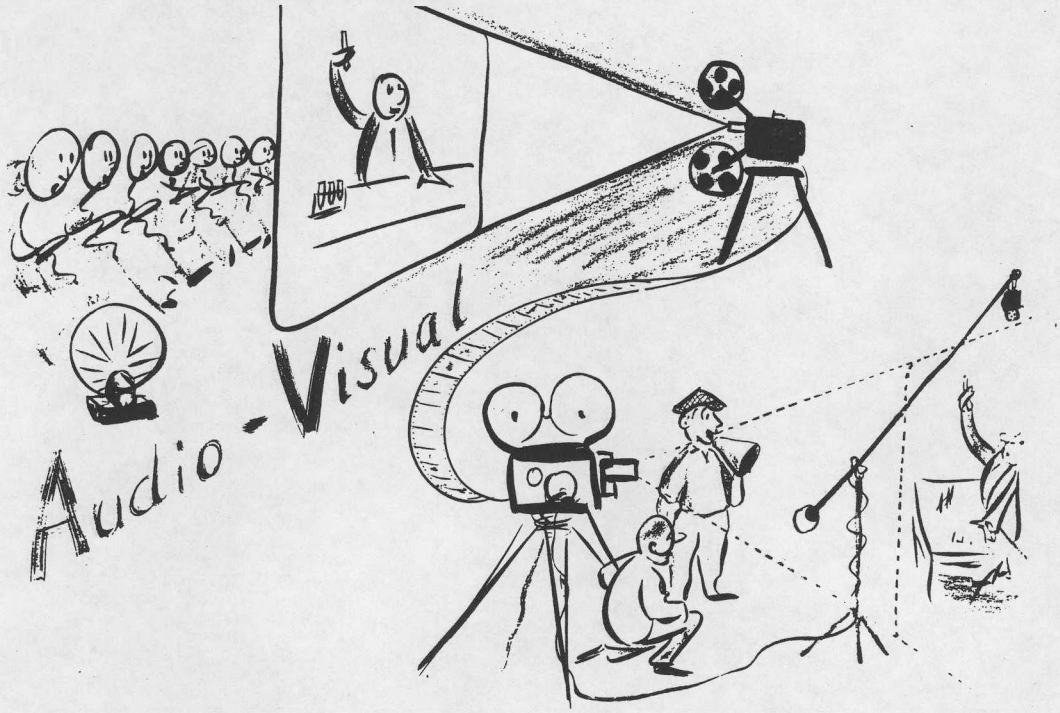
FEDERAL SECURITY AGENCY - U. S. PUBLIC HEALTH SERVICE

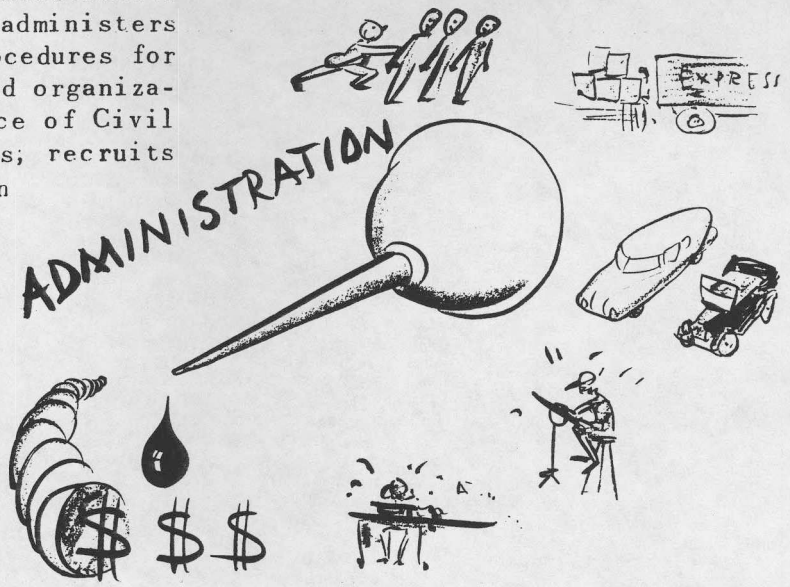
COMMUNICABLE DISEASE CENTER - ATLANTA, GEORGIA

the Communicable Disease Center, the U. S. Public Health Service, and other public health organizations; provides training for the employees of state and local health departments and of federal agencies concerned with the prevention of disease, in effective control practices for insect- and rodent-borne disease, and in the laboratory diagnosis of communicable diseases; provides training facilities for orientation and specialized training of sub-professional state and local public health workers not eligible to attend professional schools of public health; provides public health internship training for inexperienced graduates of schools and departments of hygiene and public health; and maintains a motion-picture and filmstrip library for the use of institutions, instructors, and students in the field of communicable disease control.

PRODUCTION: The production and distribution of audio-visual and other teaching aids will be restricted to the development of these materials for the assistance of professional and technical schools and individuals engaged in instruction and research concerning communicable disease. It is not planned to engage in lay health educational activities. The Production Division develops and produces motion pictures and film strips, illustrating, describing, and documenting investigations and control procedures pertaining to communicable diseases; it analyzes and assists in the utilization of these and other teaching aids with the object of improving training materials.

LIBRARY AND REPORTS: This Division maintains a reading library for investigators, instructors, and students of communicable disease research and control; prepares quarterly field bulletins, annual reports, manuals, and a running history of the MCWA-CDC develment, and other program information materials; and provides non-technical editorial assistance in the preparation of manuscripts to be submitted for publication.





ADMINISTRATIVE: The Administrative Division establishes and administers personnel policies and procedures for both headquarters and field organizations; insures maintenance of Civil Service position standards; recruits personnel; advises on selection of candidates; determines qualifications; prepares consolidated budget; controls alloted funds; certifies and maintains accounting records of expenditures; audits payrolls, miscellaneous vouchers, and travel vouchers; purchases supplies, equipment, and materials; maintains records of CDC property; provides warehousing and distribution facilities; repairs and maintains automotive and other equipment; prepares maps, charts, and other drafted materials; reproduces manual letters, field memoranda, etc., and distributes all such materials to the headquarters and field organizations; it also prepares and processes machine records based on administrative, operational, investigational, and vital statistics data.

The next year will see the virtual liquidation of the program for the operation of which MCWA was activated. Comparable activities on a smaller scale will be continued in Puerto Rico and possibly a few continental locations at the request of War and Navy Departments.

Of the various field programs carried on by the Communicable Disease Center, those noted below have particular interest. Complete details regarding the work cannot be given in all instances as certain of the investigational projects are incomplete, and results of others are still to be published.

WAR MALARIA CONTROL PROGRAM: Mosquito control work is being carried on in the vicinity of Veterans Administration hospitals, as that organization has no special provision for such service. Many of the patients brought together in these hospitals are suffering from malaria and other diseases acquired in the tropics, making it imperative that complete mosquito control be effected in areas adjacent to these hospitals. This project is now known as the Military Areas Malaria Control Program. It consists almost entirely of larviciding, which is being carried on currently in 27 different zones.

EXTENDED MALARIA CONTROL PROGRAM: DDT residual spraying of houses in malarious areas will probably be maintained through 1948 to reduce the likelihood of liberating foreign strains of malaria from returning veterans. It should be continued longer as the most promising approach to the goal of malaria eradication in the United States. This work is being carried on in 274 counties in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Virginia, and Texas (Fig. 1).

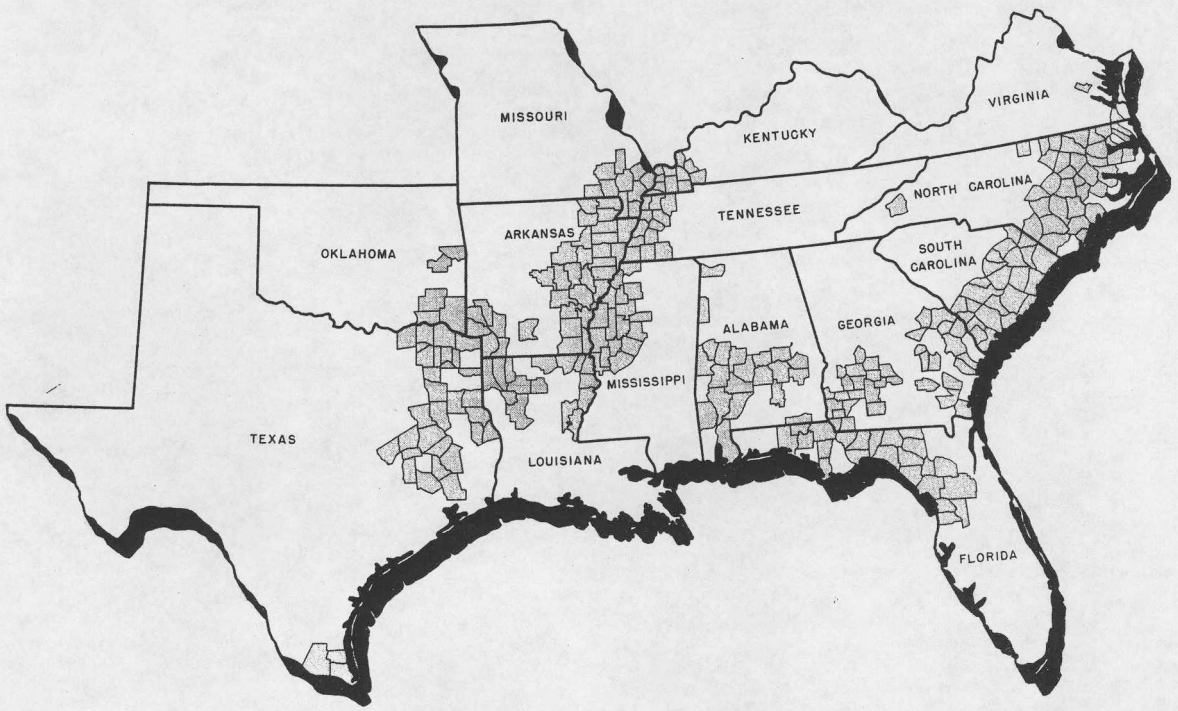
Allocations of funds to states for extended malaria control are based on a formula in which a standard budgetary item for the support of the state CDC activities headquarters organization is supplemented by amounts corresponding to each state's relative share of the reported malaria mortality experienced during recent years. Federal monetary participation in this program is now

roughly 75 to 80 percent of the total, but is diminishing each month. It is hoped that by the beginning of the 1948 fiscal year local sponsorship of costs will be increased to 50 percent or more, with federal assistance restricted to supplying technical personnel, equipment, and materials.

IMPOUNDED WATER STUDIES: As a continuing element in the national malaria prevention program, areas in which water is to be impounded by the U. S. Engineer Department are surveyed by Communicable Disease Center engineers and entomologists, in association with state health department representatives. The purpose of such surveys is to determine (1) the extent of probable malaria hazard contingent upon uncontrolled impoundment, and (2) how this risk, if any, may be minimized by proper design, construction, and maintenance of the impoundment basins. The Communicable Disease Center is reimbursed for these services by the U. S. Engineer Department. Similar cooperative service is being rendered to other federal agencies concerned in the impoundment of water in potentially malarious areas.

A notable contribution to the literature of sanitary science and practice is a compendious volume, now in press, entitled "Malaria Control on Impounded Water," which represents the joint effort of members of the Health and Safety Department, Tennessee Valley Authority, and the Communicable Disease Center, U. S. Public Health Service.

AEDES AEGYPTI CONTROL PROGRAM: These mosquito control activities, a combination of DDT treatment and general sanitation, originally undertaken at the request of the Navy, are being continued in 16 coastal areas of Alabama, Florida, South Carolina, and Texas as a protection against the reintroduction of dengue fever and yellow fever into this country. Local health departments furnished 57 percent of the costs during the first quarter of the 1947 fiscal year. All new projects are required to obtain at least 50 percent of their support from local sources.



TYPHUS CONTROL PROGRAM: Grants-in-aid on a formula basis (standard budgetary item for the state CDC activities headquarters organization plus amounts corresponding to each state's relative share of the recent typhus morbidity reported in the nine states where the bulk of the nation's murine typhus occurs) were made to Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas, with special projects being supported in Arkansas and Virginia. Typhus control operations, including ratproofing of buildings, rat poisoning, and residual dusting of rat runs, burrows, and harborages with 10-percent DDT dust (see Fig. 2) were carried on in 130 counties of the 11 states. Typhus control activities are supported locally to the extent of nearly 70 percent of their cost.

MUSCOGEE COUNTY INSECT CONTROL PROGRAM: This project offered free DDT residual spraying treatment in every one of the 23,959 dwellings or business establishments in Muscogee County, Georgia, and was accepted in over 95 percent of these units. Its purposes were: (1) to serve as an incentive to promote individual improvement of environmental sanitation of homes, yards, and business places; (2) to benefit the communities by reducing the number of disease-bearing insects and insect pests; and (3) to determine how successfully DDT spraying and dusting operations on a county- and community-wide basis could suppress mosquitoes, flies, fleas, bed-bugs, and cockroaches. From all accounts, the project has been highly successful. About 40 percent of the cost is being borne by the Communicable Disease Center.

MALARIA FIELD STUDIES: At Manning, South Carolina, near the Santee-Cooper Impoundment, a Communicable Disease

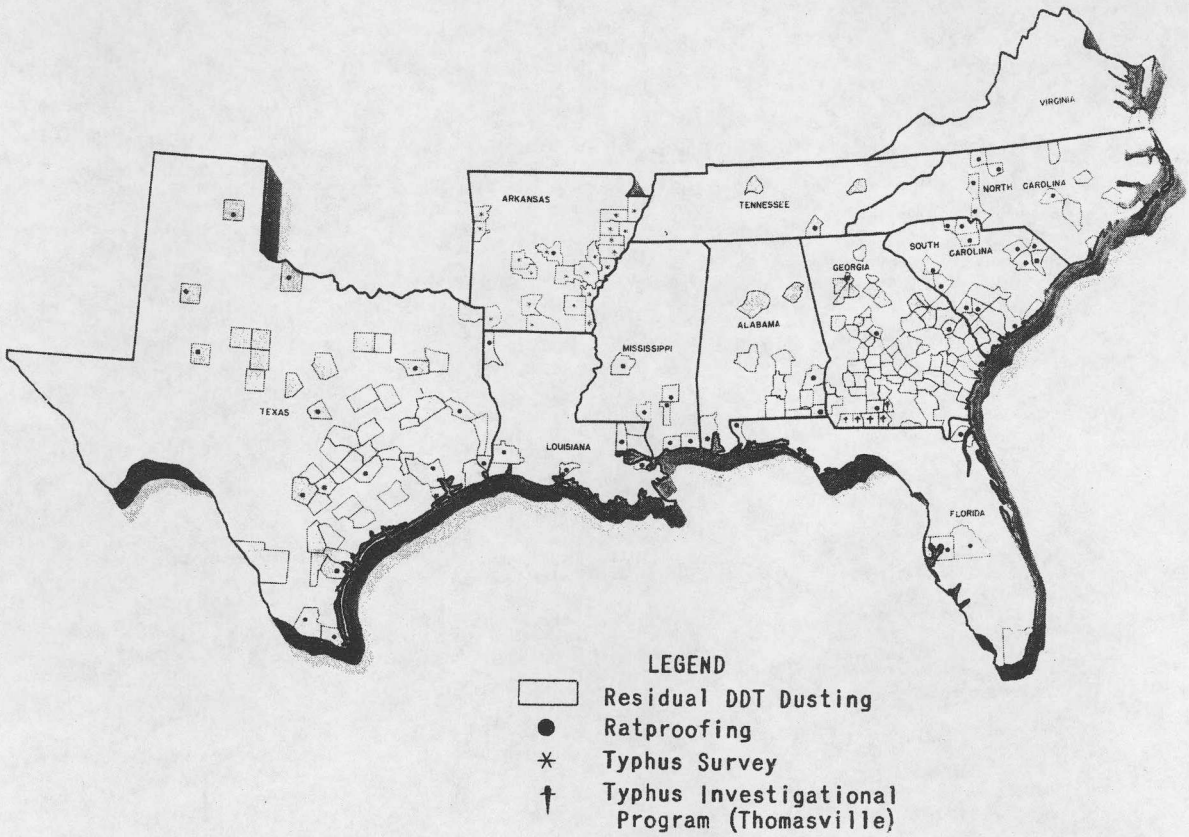


Fig. 2. Extended Typhus Control Operations— Fiscal Year 1946

Center study is being carried on primarily to determine the effect on malaria prevalence of DDT residual spraying of houses and latrines as practiced by MCWA and CDC. During the last two years the Santee-Cooper area has been the only one in the country with notable prevalence of malaria, and even here it has declined markedly. Clinical and parasitologic surveys for malaria are made in the area at frequent intervals and the densities of local anopheline populations are determined regularly. Thus, in addition to the fulfillment of its primary objective, this program provides valuable opportunity to maintain a watch on this most recent outpost of endemic malaria in the country, with the view of obtaining early indications of any potential upswing in malaria prevalence in time to prevent an epidemic spread of the disease.

At the Emory University Field Station in Baker County, Georgia, another field study is under way, sponsored jointly by Emory University and the Communicable Disease Center. This area is topographically different from the Manning station, being representative of the limestone section in southwest Georgia, notorious for its high malaria endemicity until recent years. Regular observations are being continued upon local malaria prevalence, anopheline densities and ecology, and associated ground-water changes. The Communicable Disease Center is especially interested in the investigation of over-wintering habits of anophelines and in the malaria case-finding activities. This area also is considered a lookout station where painstaking surveillance may pay huge dividends in guarding against the return of malaria.

TYPHUS FIELD STUDIES: This project, with headquarters in Thomasville, Georgia, is being carried on in four counties of south Georgia where murine typhus has been prevalent (Figs. 3 & 4). Its primary mission is to determine the effect on the incidence of human typhus of dusting rat runs and harborages with DDT. Comparison of results obtained is being made with other typhus control methods. Field observations are being made on multi-purpose insecticides which have shown promise of reducing numbers of rat mites and lice as well as fleas.

ANOPHELINE HOST PREFERENCE STUDIES: The laboratory procedures concerned with these studies were commenced in 1944 at the Carter Memorial Laboratory in Savannah, Georgia, but have since been transferred to the Virus Laboratory in Montgomery, Alabama. This is an extended investigation of the natural feeding habits of the more abundantly represented species of *Anopheles*.

DYSENTERY CONTROL PROJECT: This is a cooperative undertaking of the Communicable Disease Center and the National Institute of Health, with headquarters at Pharr, Texas. The primary objective is to determine whether or not the control of flies by insecticides will reduce significantly the prevalence of diarrheal disease.

NEUROTROPIC DISEASE -- INSECT CONTROL PROJECT: The headquarters for this project are in Montgomery, Alabama, adjacent to the CDC Virus Laboratory. The object of this investigation is to determine whether the sudden and relatively complete reduction of certain species of insect populations is attended by measurable interference in the development of incipient epidemics of virus diseases. It is to be emphasized that this is *not* a state-aid operational project. Funds for this project will be spent *only* where there appears to be reasonable hope of obtaining scientific information concerning the significance of insects in the transmission of virus diseases. The late summer and fall months of 1946 were spent in developing and improving rapid fly-control techniques.

ENCEPHALITIS STUDIES: The Communicable Disease Center, in recognition of the threat of introduced and extended encephalitic prevalence on the West Coast, is cooperating in a modest way

Fig. 3

TYPHUS FEVER, ENDEMIC, REPORTED IN THE UNITED STATES, BY, FIVE YEAR PERIODS, FROM 1916 TO 1945
(FROM U S P H S "NOTIFIABLE DISEASES")

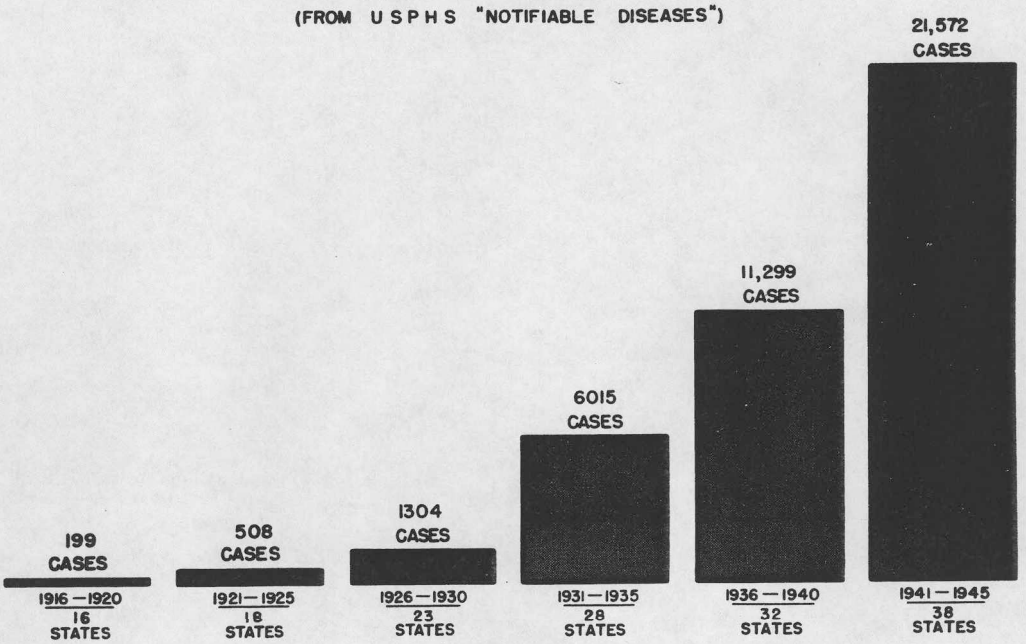
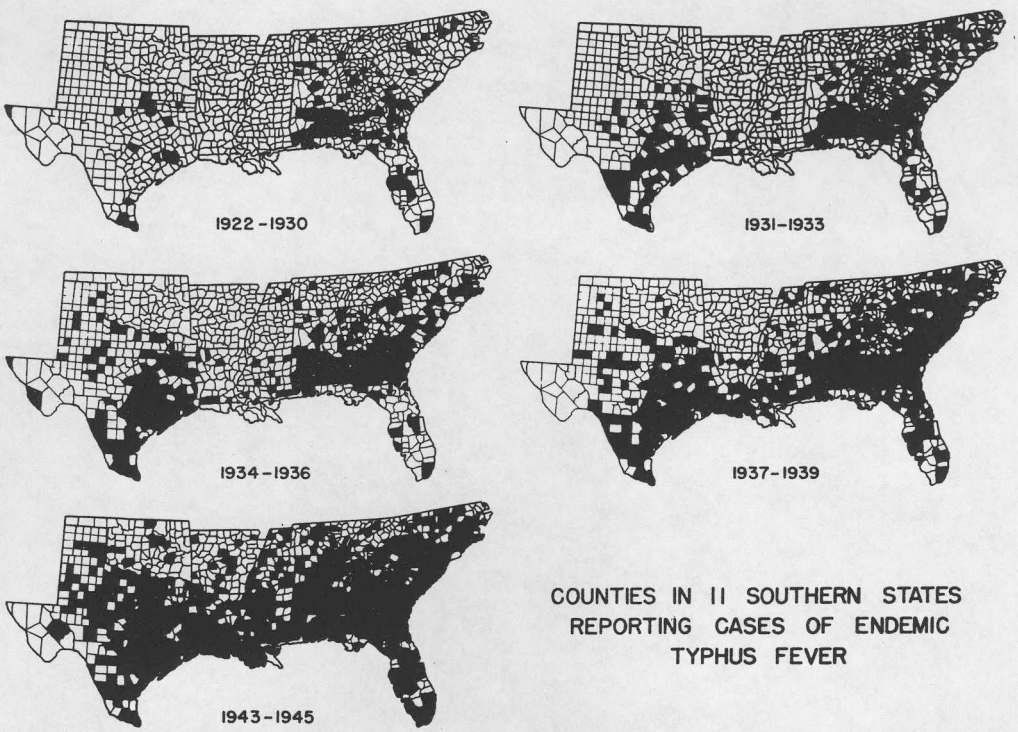


Fig. 4



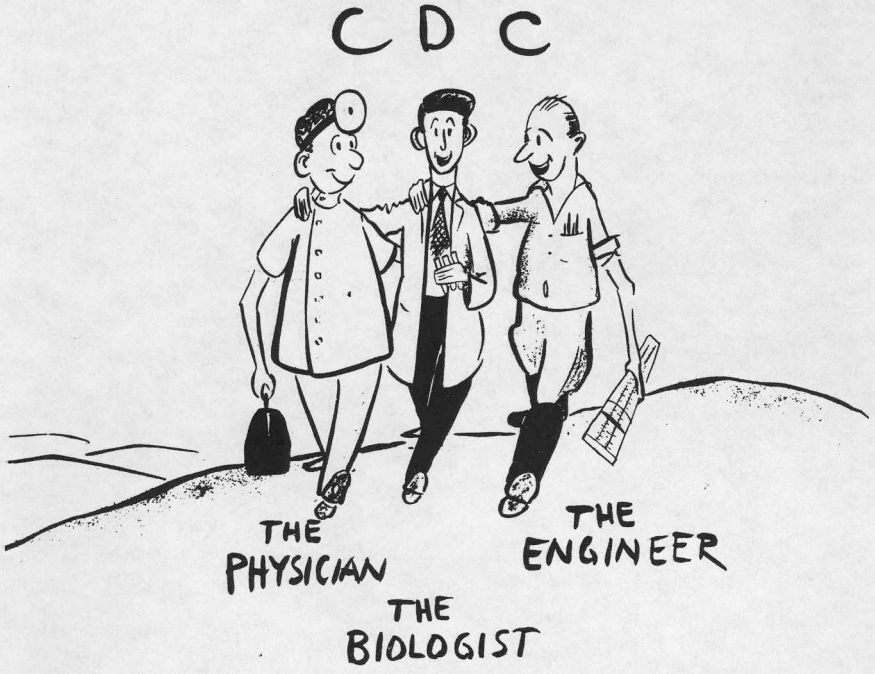
COUNTIES IN 11 SOUTHERN STATES REPORTING CASES OF ENDEMIC TYPHUS FEVER

with the Hooper Foundation of the University of California on studies of possible insect vectors and avian reservoirs of this disease.

Other predominantly intramural activities of the Communicable Disease Center involve entomology to some extent. Thus, considerable portions of the in-service and special training programs are devoted to instruction in distinguishing basic types of insects and in recognizing a limited number of species. The six-weeks course given by the Laboratory Division to federal, state, and local health department laboratory technicians includes instruction in the identification of insects which may be sent to the laboratories from which the students come. The Laboratory Division maintains a large reference museum of insects and, together with the Entomology Division, operates a central insect identification service for the field organizations. Entomologic and other specimens are supplied to state health laboratories as a part of the extension service of the Laboratory Division. Many training films on entomologic subjects have been produced.

A major portion of the work of the Technical Development Division is devoted to insecticide investigations. These include studies of various candidate chemicals possessing some activity as larvicides or adulticides against mosquitoes, house-flies, and the ectoparasites of domestic rodents.

In summary, these are some of the functions and activities of the Communicable Disease Center - with special emphasis on those concerned with entomology. Collectively, they represent a purposeful effort on the part of the Federal Government to transmute scientific facts about certain communicable diseases into field-tested control and prevention practices, and by demonstration and training to familiarize the personnel of state and local health departments with easy, economical methods of applying them. In addition, the Communicable Disease Center assists, where requested, in the suppression of health hazards of interstate and extra continental scope. In reaching these objectives, the Communicable Disease Center desires to cooperate to the fullest possible extent, not only with other federal agencies but with state and local health organizations, private physicians and laboratories, universities, and scientific associations.



INSECT CONTROL DEMONSTRATIONS

District No. 7

District No. 7 was advised by CDC Headquarters that a considerable supply of DDT isomer was available for distribution in the district, provided its use be carefully regulated for demonstration purposes in the control of insects affecting health. Demonstrations were to be mainly for non-profit institutions such as prisons and sanatoria, unsanitary public eating and drinking establishments, food processing plants, hospitals, and other places where the ultimate public health benefits would be most evident.

The District Office had received many requests for DDT from various state health departments and from industries and other organizations confronted with the control of insects affecting health. With the isomer available, plans were made to initiate an insect control demonstration program.

It was considered desirable that district office personnel conduct a demonstration of the proper use of DDT for insect control before any particular allocation of the material was made.

Announcements were made to the various states in the district of the availability of the isomer and the policy of allocation. Requests were received from most of the states in the district and from many institutions for a supply of the material indicating a strong desire to sponsor demonstrational schools.

The demonstration program started in District No. 7 in September 1945, with a demonstration for the Iowa State Health Department at Des Moines. Since this first school, district CDC personnel have been engaged almost continuously in conducting insect control schools and demonstrations throughout the district. Most of the schools have

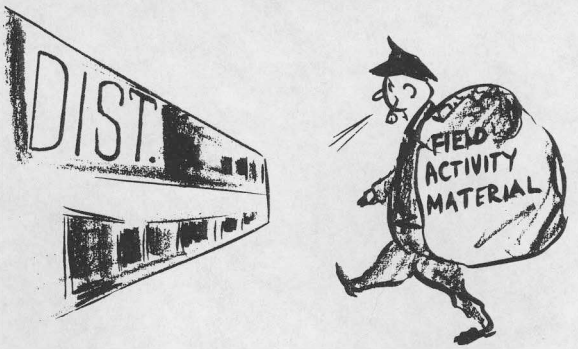
Insect Control Demonstration Unit used in District No. 7.

been held for the training of state and local health personnel, including medical officers, nurses, and sanitarians. Some have been conducted for the training of other than health personnel. Included among these were representatives of milk producing and processing industries, food processing and handling industries, representatives of beverage industries, state and federal hospitals, state and federal prisons, practically all types of Indian Service establishments, and railroad dining car and maintenance representatives. The following tabulation gives a summary of demonstrations to October 30, 1946:

Summary of Control Demonstrations and Schools Completed by District CDC Personnel - July 1, 1945 to October 30, 1946.

SPONSOR	NO. OF DEM.	ATTENDANCE
State Health Departments:		
Iowa	26	440
South Dakota	5	220
Nebraska	1	60
North Dakota	1	20
Kansas	20	530
Missouri	9	95
Indian Service Institutions:		
Minnesota	1	25
South Dakota	5	135
North Dakota	1	25
Nebraska	1	10
Oklahoma	8	276
City Health Departments:		
Des Moines, Iowa	1	40
Des Moines, Iowa (Girl Scout Officials)	1	10
St. Louis, Mo.	13	452
Minneapolis, Minn. (Use of DDT in community sanitation. Training of crews.)		
Emporia, Kansas (Use of DDT in community sanitation. Training of crews.)		
Pratt, Kansas (Use of DDT in community sanitation. Training of crews.)		
Federal Prisons:		
Leavenworth	1	5
Springfield	1	20
Army:		
Will Rogers Field, Oklahoma	1	75
Others: (Special requests from State Health Departments)		
Iowa State College Dairy Short Course		450
Kansas - Mid-Continent Assoc. Dairy, Food, Drug and Feed Officials		75
Kansas - Youth Camp Officials		20
Oklahoma - Sanitation Section State Health Conference		50
Oklahoma - Industrial Hygiene Seminar		30
Minnesota - Minn. Course for Continuation Study		50
Kansas - Demonstration and Exhibit at Kansas State Fair		
Missouri - University of Missouri Farm and Home Week Program		80
District Director - Dining Car Superintendents and Maintenance Personnel, Frisco, Missouri Pacific and Wabash Railroads		30
District Director - Training Administrative Personnel Marine Hospital, Kirkwood, Missouri, in Insect Control		

After completion of the insect control schools, supplies of the isomer were made available to state and local health departments and various institutions, based on the use which would be made of it. Those health departments or establishments which were active in the promotion or prosecution of insect control measures were furnished an ample supply to start their particular programs.



Upon receipt of the isomer, most of the states and local health departments began insect control demonstration activities. The district engineers and sanitarians conducted demonstrational schools for various industries and institutions having problems relative to the control of insects affecting health. Many institutions set up active insect control procedures. In certain areas, the Indian Service carried on regular insect control measures in their hospitals, schools, and reservations. In an attempt to obtain information on state and local activities in insect control, the state health departments were requested to furnish the district office with information relative to the demonstrational and other uses made of the isomer. The data received on demonstrations and other uses are tabulated below.

This indicates the public interest in more active insect control work, the need for such work, and, to a certain degree, promotional achievements of the district office program. Undoubtedly, greater achievements in the control of insects affecting health have resulted from the prosecution of this activity. Its continuance should meet with increased success by virtue of the fact that practical and tangible assistance is being rendered to those confronted with insect control problems.

Summary of Control Demonstrations and Schools Completed by State and Local Personnel — July 1, 1945 to June 30, 1946.

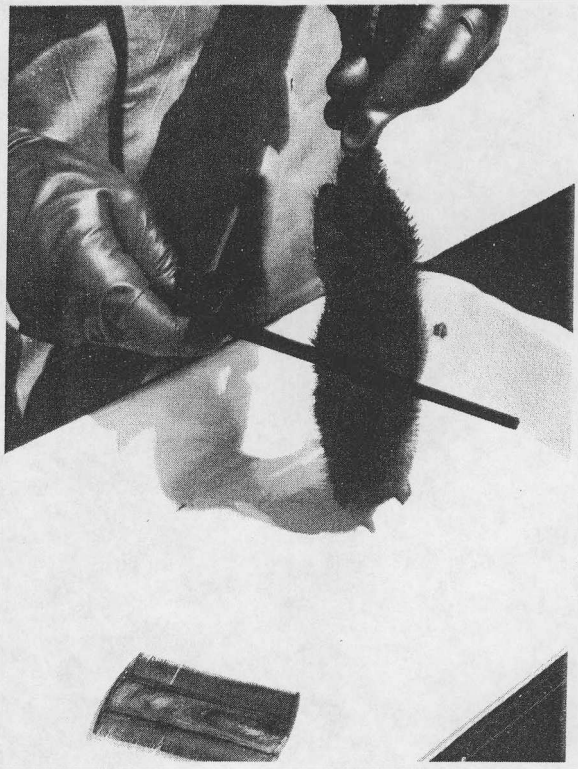
STATE	NO. OF DEM.	ATTENDANCE	NOTES ON INSECTS
Arkansas	4	20	Cockroaches, flies
Iowa	78	720	Bedbugs, cockroaches, flies mosquitoes, silverfish
Minnesota	none		(Isomer being used on mosquito control project at St. Croix park)
Missouri	60	500	Fleas, spiders, cockroaches, lice, moths, mosquitoes, bedbugs, house flies, stable flies, filter flies at disposal plant.
Nebraska	50	705	Bedbugs, flies, mosquitoes, cockroaches.
North Dakota	81	415	Flies, cockroaches, general insect control
Oklahoma	60	1,339	Cockroaches, bedbugs, flies
South Dakota	39	280	Flies, cockroaches, bedbugs, spiders, ants

TYPHUS INVESTIGATIONS
Thomasville, Georgia

The Typhus Investigation Project completed its first year of work in September, 1946. Headquarters for this study were established in Thomasville, Georgia, in September 1945, with sub-headquarters in Quitman, Cairo, and Bainbridge. Training of personnel, acquisition of equipment, and collection of field data got under way in October 1945. Methods of collecting data were fairly well standardized by April 1946, and more suitable space was acquired for headquarters. The organization was crystalized into its present form in July 1946.

The principal purpose of the study is to provide a scientific measure of the effects of certain county-wide typhus control operations (particularly DDT dusting) upon the prevalence of human and rat murine typhus fever, and also upon rat ectoparasite abundance. Four counties in South Georgia make up the principal study area. While these counties have not yielded the highest typhus incidence in the United States, they seemed to be best suited to such a study since they had not undertaken any type of community typhus or rat control program for several years prior to the beginning of the present project. A special DDT dusting program was set up for Brooks and Thomas Counties, and a rat-poisoning campaign was planned for Decatur County. After a preliminary period of trapping, these control operations were started respectively in April, May, and June 1946. Operations in Grady County, the control county, were limited to human incidence, rat prevalence, and rat ectoparasite abundance studies, which are parallel to studies in the other counties.

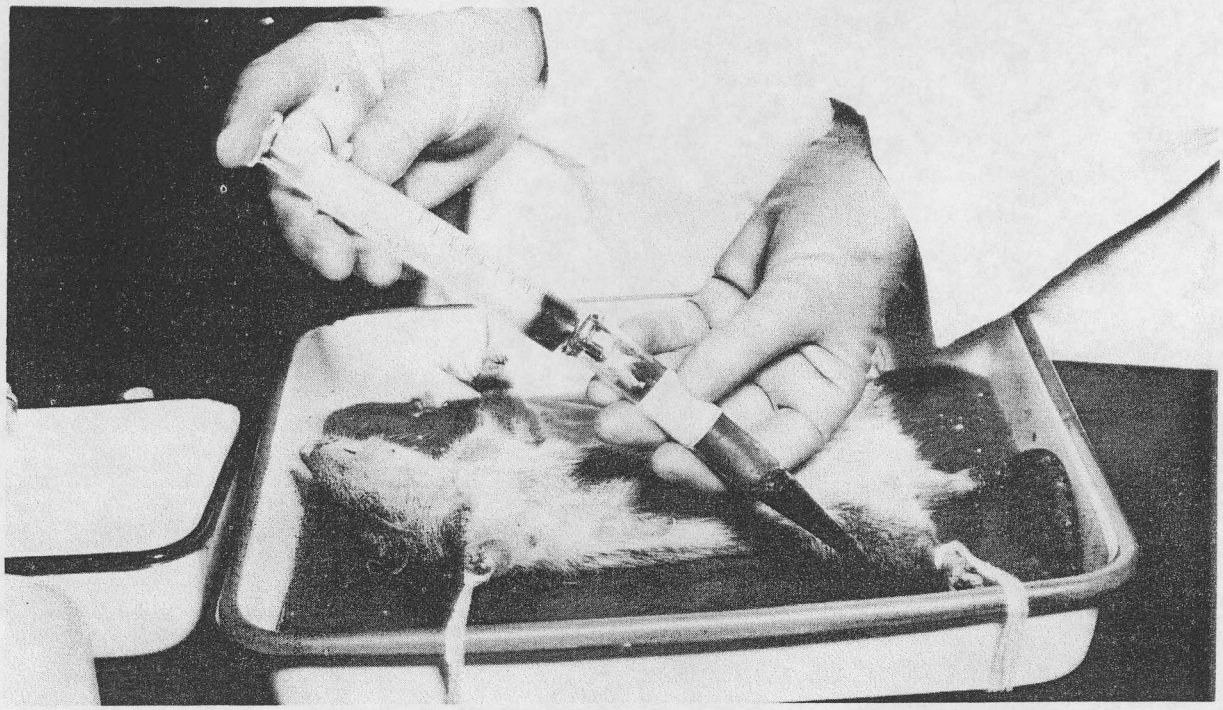
By the end of November 1946 a review of the data revealed a significant reduction of human incidence in Brooks and Thomas Counties (dusted with DDT), as well as in Decatur County which had experienced a county-wide poisoning campaign in May and June 1946. However, in addition to the poisoning campaign mentioned, a residual spray program was also carried on in Decatur County during the 1946 season. This may have influenced the favorable downward trend of human typhus cases in this county. This subject is being investigated further.



Combing ectoparasites from rat for rat ectoparasite abundance studies.

Human typhus incidence in Grady County remained unchanged in 1946 as compared with 1945. These trends continued through December 1946. Station trapping, instituted in April 1946 as a means of obtaining representative samples of rats from each county, is yielding data describing seasonal and geographic distribution of the prevalence of typhus complement-fixing antibodies in rats and the abundance of various rat ectoparasites.

Serological comparisons of the blood



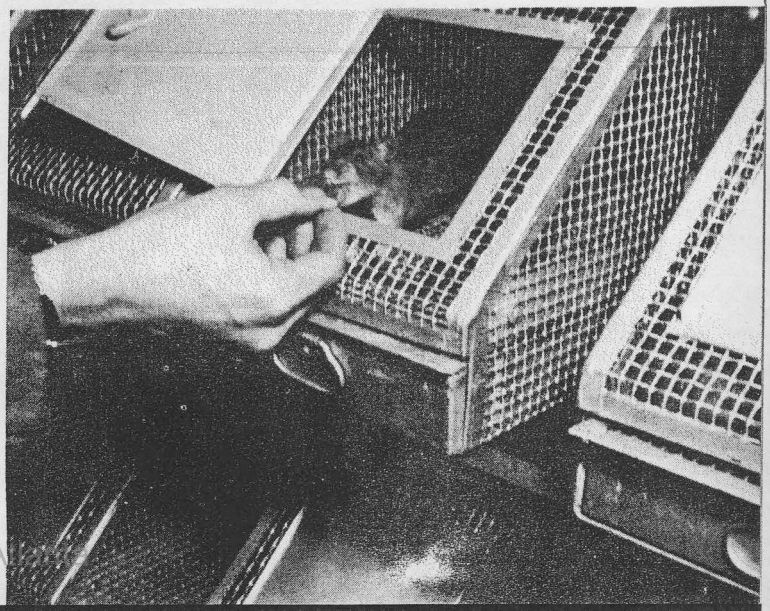
Representative samples of rats trapped in each county are bled for serological comparisons of blood.

of rats trapped during the period April through June with those trapped July through December 1946 show an encouraging decrease in typhus prevalence among rats in Brooks and Thomas Counties, while both Grady and Decatur Counties showed an increase. Since young rats are usually more easily poisoned than old rats, this may account for a part of the increase in the percentage of rats with typhus complement-fixing antibodies in Decatur County. Also an occational animal is found, other than domestic rats, yielding a positive typhus complement-fixation test. The supplemental survey is being pursued further. Rat ectoparasite studies indicate a satisfactory reduction in *Xenopsylla cheopis* abundance on a county-wide basis in Brooks and Thomas Counties, as contrasted with Grady and Decatur Counties.

The expected autumnal rise of *Leptopsylla segnis* seems to have been somewhat subdued in the two DDT treated counties. Other rat ectoparasites which are normally present in significant numbers in this area do not seem to be materially affected by the county-wide DDT dusting operations.

Supplemental studies have been instituted in Cook County in an attempt to develop materials and methods of producing more efficient control of rat mites and lice. A colony of about 100 *R. rattus* has been installed on the project so that effects of DDT on rats may be closely observed for further studies.

A colony of 100 *R. rattus* has been installed to permit close observance of the effects of DDT on rats in future studies.



HEADQUARTERS NOTES

CONFERENCE OF DISTRICT AND STATE REPRESENTATIVES

A conference of CDC district and state representatives was held at the Headquarters Office in Atlanta, Nov. 20 - 22, with Major Harry Hanson presiding.

After a brief opening talk, in which he said that the primary purpose of the conference was " to review progress of the organization to date, and to make plans for next season's program," Major Hanson called for progress reports from the states. Each representative then discussed the type of approach being used to obtain the necessary local participation in the program, and gave an outline of plans for the future.

Details of the conference, including discussions by field and Headquarters personnel, will be presented in a later Bulletin.

ADDITIONAL AUTHORITY FOR CDC

The Chief of the Administrative Division and the Fiscal Officer accompanied the Officer in Charge to Washington in November. Discussions were held, particularly on fiscal matters, with the administrative chiefs of the Office of the Surgeon General. On the basis of such discussions, it is believed that additional authority will be delegated to CDC.

Final arrangements were made for the delegation of travel authority to permit the issuance of travel authorizations. Approval was received to permit direct contact with district offices in requesting the services of a condemnation officer for surveying unserviceable and surplus property. Authority to permit the establishment of an efficiency rating committee was assured soon after January 1. Approval of a Civil Service Board of Examiners was received for the purpose of conducting examinations for establishment of lists of eligibles for CDC positions. Approval was also received to permit the adoption of the simplified payroll procedure by CDC. This procedure reduces considerably the volume of paper work formerly required, and provides for a uniform and simplified method of recording the compensation earned and payable to per annum employees whose earnings are computed on a bi-weekly basis.

NEW PROMOTION STANDARDS

New standards for promotion of Commissioned Officers have been issued. The eligibility of all officers attached to CDC has been checked against the new regulations. Officers who were previously recommended and found ineligible are being re-recommended if they qualify under the new standards.

PERSONNEL CHANGES

Major J. G. Terrill was absent during most of the quarter on assignment to a Special Training School in Radio Biology operated by the Navy at Washington, D. C., and at Kwajalein and Bikini in the South Pacific.

S. A. Sanitary Engineer F. J. Hammerstrom, formerly in charge of the Typhus Unit, became Acting Assistant Chief of the Training Division.

Captain Clyde Fehn, who was transferred to Atlanta from Puerto Rico, took Captain Hammerstrom's place in the typhus program carried on by the In-Service Branch.

Captain Don Schliessmann, Sanitary Engineer on duty in Washington, D. C., was transferred to the Columbus, Georgia, Training Station, to assist in the development of a three-month course for sanitarians and in setting up the laboratory and field training facilities for sanitary engineering.

Training Officer Hugh Eagan, formerly on duty at Savannah, Georgia, was assigned to the Topeka-Shawnee County Health Department to develop the facilities for the field training station to serve Kansas and the states in

U. S. Public Health Service District No. 7.

Mr. A. R. Kinney, Training Instructor, reported for duty in the In-Service Training Branch on November 17 to assist in typhus control training.

Assistant Surgeon (R) Mildred A. Morehead entered on duty on October 1st. Doctor Morehead was assigned to duty in Atlanta, to carry on activities in connection with the Epidemic Aid to States program.

Assistant Surgeon Lindsay Bishop took his oath of office in the Regular Corps in December. Doctor Bishop is being assigned to assist Doctor Quinby in the Neurotropic Virus Disease Insect Control Program.

Arrangements were made through Emory University, in connection with the epidemiological phases of the polio fly-control project, for physicians of the Epidemiology Division to attend clinics at Grady Hospital, in Atlanta, on diseases of the nervous system.

Doctors Quinby, Smillie, Morehead, and Bishop attended the first week of a course on physiotherapy at the Georgia Warm Springs Foundation.

S. A. Sanitarian (R) Roy F. Fritz, of the Entomology Division, was detailed to the position of Entomologist, Typhus Control Branch, to replace S. A. Sanitarian (R) A. Earl Pritchard, who resigned.

Sanitarian J. C. McNair transferred from the Impounded Water Branch in October to the D. C. Health Department in Washington.

In early December Sanitarian Joseph W. Hunt, Jr., was transferred from Little Rock, Arkansas, to Kansas City, Missouri, to continue his rodent control activities as a representative of the Engineering Division, under immediate supervision of the District 7 office. It is contemplated that Mr. Hunt's work will be largely in those states in District 7 where rodent control rather than typhus control is the major problem.

Sanitarian (R) John J. Essex was permanently stationed at Lubbock, Texas, as supervisor of the State Health Department project for the study of plague suppressive measures in the Panhandle of Western Texas. Typhus Control Aid T. S. Scoggins, Jr., is assisting in the project which also includes typhus control measures.

Sanitarian (R) T. E. McNeel completed an assignment with the Fly-Polio Project in Florence, Alabama, during November and has returned to his regular duties as CDC representative in District No. 4, at New Orleans, La.

Captain S. E. Shields, Entomologist, has returned to duty after spending three years with the Army Sanitary Corps. He has been assigned to the Atlanta office.

P. A. Sanitarian (R) F. E. Lyman has been transferred from the Impounded Water Section to fill the position of Assistant Chief of the Entomology Division vacated by Capt. Fritz.

S. A. Sanitary Engineer (R) John G. Ault, former CDC District Supervisor at Monticello, Florida, has been transferred to duty at Jacksonville, Florida.

Sanitarian George A. Sterenberg has taken up his duties in the Office of the Communicable Disease Center in New York City, following his transfer from malaria control work at Camp Kilmer, New Jersey.

Entomologist Basil G. Markos, who has been on an assignment with a Mosquito Control Mobile Unit at San Raphael, California, has been transferred to the CDC Program at Berkeley, California.

Romaine E. Kious, Training Officer at Kansas City, Missouri, was transferred in November to the Internship Training Branch, Topeka, Kansas.

Assistant Engineer (R) Herman R. Mendell, was released from duty at Jefferson City, Missouri, and has returned to his home in San Francisco, California.

Engineer (R) John H. Bright was released from duty at Jackson, Mississippi, to accept the position of Engineer-Manager for the City of West University Place, Texas.

Epidemiology Division

PREMISE SPRAYING — RESIDUAL DDT

As a result of operations conducted in the experimental area in Hidalgo County, Texas, during the first quarter of the 1947 fiscal year, relatively small populations of flies were found present in the second quarter. For this reason only limited spraying activities were continued. Most of the work was done with hand sprayers, using a 5-percent DDT emulsion.

There are 485 house flies on this fly-counting grill. The division into quadrants facilitates making high counts under heavily infested conditions.

After the initial four months of residual DDT spot re-treatment based upon fly population indices determined by grill readings in the Hidalgo County area, there remains little doubt that this method of fly control is far superior to routine general coverage. In general, it was found that the Latin-American sections of the treated towns have required twice or three times as many re-treatments as the Anglo-American Sections.

In studying the results of the work during 1946, it appears that the bi-modal curve of check-town fly abundance coincides closely with that of dysentery prevalence as shown by positive cultures obtained by rectal swab sampling. This coincidence leads to the belief that a population indicated by ten flies per grill count is quite close to the threshold of fly abundance necessary for the transmission of dysentery by flies. A gradual rise from June to November in dysentery prevalence in treated towns

may be attributed to increased contact infections due to a lack of immunity such as probably was created in check towns as a result of excessive fly abundance early in the summer. Significantly, the check-town rate was at all times higher than that of the treated towns.

Experiments in effective periods of outdoor residual spraying have now been inaugurated. Comparisons of effective residual periods will be made between different types of surfaces, degrees of sheltering, types of DDT sprays, concentration of sprays, etc.

Field experiments with methods of DDT application received considerable attention during the second quarter. Methods are being sought which will give maximum fly control with a minimum of material and manpower, but which will encourage the greatest amount of public cooperation.

During late September a revision of all record forms was begun to permit coding data records for IBM punch-card tabulation. The change will permit a much wider scope in comparison of all records.

A complete story on the fly-control work being done in connection with diarrheal disease control will appear in a later Bulletin.

Engineering Division

MALARIA CONTROL

Operation of the Extended Malaria Control Program in endemic malarious areas was continued during the second fiscal quarter without significant change. Residual DDT spraying of homes was carried on in 265 counties in 13 states. In the first quarter 518,748 house sprayings were completed. The table below gives a summary of the residual house spray operations. (Table I)

The residual spraying method of malaria control has been limited to rural homes and small communities. Larviciding has been used in providing control for larger communities since it is more economical where population concentrations of more than 2,500 are involved. However, a number of larger cities have contributed sufficient funds to spray the cities in the 2,500 - 10,000 population group. The entire cost of this type of residual house spraying is paid from local funds. War malaria control larviciding operations were reduced in scope during the second quarter from 75 to 27 zones.

There has been considerable activity by various states in developing methods of local participation in the cost of operations. Difficulties encountered in some programs which involve flat rate charges indicate that the method of obtaining local participation as developed in the State of Georgia is the most feasible method. This involves the use of federal and state funds only for supervision and chemicals, with labor and transportation being provided by the local areas. A general local tax as a means of financing local participation has been found most satisfactory by many communities.

IMPOUNDED WATER STUDIES

The Impounded Water Division completed 26 projects in the second fiscal quarter, and final copies of reports were submitted to the U. S. Engineer Department impoundments, and requests were received for surveys of nine additional impoundments.

Cooperation was given to the International Boundary and Water Commission in a study concerning field investigations of the malaria problem involved in the construction of certain reservoirs on the Rio Grande watershed.

Preliminary conferences were held with representatives of the Soil Conservation Service of the U. S. Department of Agriculture to determine the manner in which the Communicable Disease Center can render assistance to

Table I

SUMMARY OF RESIDUAL HOUSE SPRAYING OPERATIONS

First Quarter, F. Y. 1947

State	No. Counties	No. Houses Sprayed	Lbs. DDT Used	Lbs. DDT per House	Manhours Supervision, Inspection, Annual Leave, Lost Time Maintenance and Miscellaneous	Total EPS Manhours	Total Manhours per House	Total Manhours per Lb. DDT
Alabama	18	50,116	42,283	0.84	27,453	84,214	1.68	1.99
Arkansas	32	85,654	51,096	0.60	23,809	93,696	1.09	1.83
Florida	23	26,829	23,143	0.86	24,529	53,268	1.98	2.30
Georgia	32	75,396	78,017	1.03	54,381	92,318	1.22	1.18
Kentucky	11	6,964	3,952	0.57	4,406	9,081	1.30	2.30
Louisiana	17	31,951	27,264	0.85	16,361	41,015	1.28	1.50
Mississippi	16	73,599	49,834	0.68	45,202	114,978	1.56	2.31
Missouri	9	31,124	18,908	0.61	12,281	32,518	1.04	1.72
N. Carolina	35	20,078	14,863	0.74	12,528	30,096	1.50	2.02
Oklahoma	6	15,339	14,943	0.97	7,921	21,294	1.39	1.43
S. Carolina	23	41,270	29,320	0.71	24,951	70,406	1.71	2.40
Tennessee	11	14,780	12,719	0.86	6,266	15,842	1.07	1.24
Texas	32	45,648	33,531	0.73	32,326	87,354	1.91	2.60
Total	265	518,748	399,873	0.77	439,665	893,329	1.72	2.23

that Agency, and in providing the necessary consideration of the malaria problem which may be involved in the impoundments constructed in the course of their soil conservation work. It was tentatively agreed that a discussion of the malaria control problem would be provided by this headquarters for inclusion in the operation manuals of the various regional offices of the Soil Conservation Service. It is also possible that representatives of this headquarters may be asked to present a discussion, or short training courses, on the problem to the regional staffs of the SCS in certain of their regional offices.

TYPHUS CONTROL

Tabulations of the effect of DDT dusting on typhus in rats and on rodent ectoparasites were prepared for use in Federal Security Agency hearings. Considerable progress was made in the tabulations and coding of the enormous backlog of typhus control evaluation data to permit the use of IBM analyses. A new M-10 form, now designated as CDC 100-3, "Record of Rodent Examination," was devised to eliminate a number of defects in the previous form and to facilitate coding operations.

At the request of the state health departments, assistance was rendered in the typhus and rodent control programs of 11 communities. The typhus control activities of nine state health departments were reviewed and recommendations made, where indicated.

Working drawings for the various DDT dusting devices were prepared and sent to the drafting unit for preparation of finished drawings. In this connection, a new dusting apparatus was obtained and experimented with, resulting in the development of an improved knapsack duster capable of taking the place of both the rotary duster and the hand pump duster.

It is planned to issue these working drawings to the states and projects, together with a memorandum describing the various other dust application equipment.

Pursuant to the request of Medical Director N. E. Wayson, Plague Suppressive Measures Laboratory, and the Texas State Health Officer, arrangements were made to assist the state health department in efforts to control plague in the Texas "panhandle." San. (R) John J. Essex was detailed to assist the state in organizing a joint plague and typhus control program in the areas east and west of Lubbock. Plague in wild rodents has been reported in Cochran County, but it is suspected that it may also be present in other counties in this vicinity. An additional Public Health Service representative will be sent to Texas for this work if it becomes necessary.

A summary of the typhus control operations for the quarter is not yet available. As an indication of the rate of progress, however, Table II is a summary of operations during the period July 29 -August 25, 1946.

Testing equipment for DDT dusting in typhus control.

AEDES AEGYPTI PROGRAM

In the operation of the *Aedes aegypti* projects during the first quarter of fiscal year 1947, a total of 135 persons were employed in 16 areas in Alabama, Florida, South Carolina, and Texas. Eighty-four of these employees were paid from local funds and the remainder were federal personnel. Two additional projects were opened in Florida during the quarter, making a total of seven projects for that state at the present time. Combined *Aedes aegypti* and general sanitation operations continued, with the local health departments furnishing $43,600, or 57 percent, of the total quarterly cost of $74,740. All new projects are required to have at least 50 percent of their support from local sources.

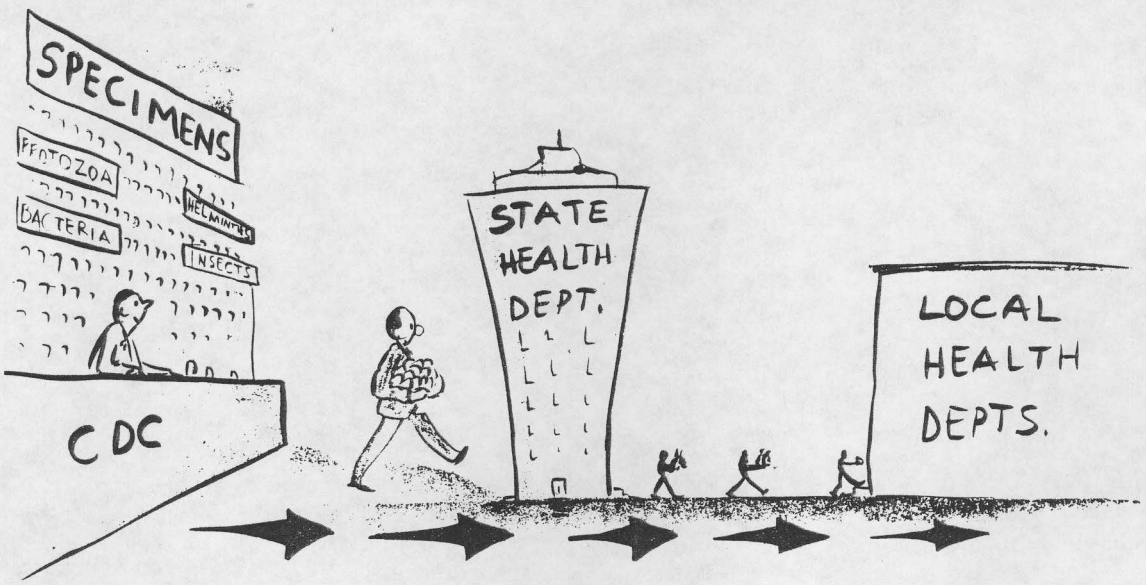
A major portion of the projects are now incorporating DDT dusting for typhus control in the residences where rat problems exist. This is limited strictly to residential areas and is not undertaken in the business districts and other heavily infested areas where regular dusting projects are more desirable.

TABLE II

Type	States	Counties	Premise Applications	Man-Hours L & LF * Premise	Amount per Premise
Residual Dusting					
10% DDT Dust	10	108	43,661	0.53	2.3 lbs.
Rat Poisoning	9	81			
Food Bait			8,157	0.4	0.6 lbs.
Liquid 1080 Poison			2,669	1.6	1.3 pts.
Rat-Proofing	7	33	490	39.0	---

* Labor and Labor Foremen

Laboratory Division



The fifth course in the Laboratory Diagnosis of Parasitic Diseases was held between September 30 and November 8, 1946. Fifteen students attended, representing ten states and the territory of Alaska. Three men from the Tennessee Valley Authority attended the portion on the diagnosis of the malarial parasites.

EXTENSION SERVICE

The Extension Service shipped 547 slides which were examined by more than 1,600 laboratory technicians in 200 different laboratories. Previously, the Extension Service had been shipping two slides of malarial parasites to various laboratories throughout the country each month. During the last quarter of 1946, the Extension Service was expanded to include all types of parasitic material. The November slides included one slide containing microfilariae of *Wuchereria* and one slide of *Leishmania*. The December slides consisted of two species of fleas. In addition to the slide material, all laboratories receiving slides in December were sent a Handbook on the Use of DDT for the control of Household Insects and a pictorial key to the common fleas occuring on rats including the important species now known to be of importance in the transmission of plague and endemic typhus in the United States.

DIAGNOSTIC SERVICES

Between the period October 1 through December 31, 1946, a total of 229 diagnostic specimens were examined by the Parasitology Laboratory. The specimens were fecal, urine, insects and blood. They were examined for parasites, clinicopathological diagnosis or identification.

VIRUS LAB., MONTGOMERY, ALA.

Experiments were made to determine the comparative susceptibility of two strains of white mice to the Lansing polio virus.

Work was started on a new diarrhea epidemic at Pinson, Alabama, suspected of having virus origins. Fecal specimens,

nasal washings and blood samples were inoculated before and after filtration into guinea pigs, hamsters, monkeys, and eggs, for purpose of virus isolation or identification.

SEROLOGICAL TESTS. A total of 23,124 mosquitoes were tested in the host preference studies conducted during the quarter.

Much time and talent was devoted to evaluation and perfection of the precipitin technique now in use, with resultant discovery of several apparently significant laboratory variables.

One hundred twenty-four (124) neutralization tests were made on human sera for Western Equine, Eastern Equine, and St. Louis encephalitides, lymphocytic choriomeningitis and Lansing strain of polio utilizing numerous animal and egg inoculations.

Training Division

COURSE IN TYPHUS, MALARIA, FLY AND TICK CONTROL

The In-Service Training Branch of the CDC Training Division conducted a course on the control of typhus, malaria, flies, and ticks from November 12 to December 4 in Atlanta.

Two weeks of this course were devoted to typhus and rodent control work. Lectures were supplemented by motion pictures and film strips. Field training in typhus and rodent control was provided by the Atlanta typhus control project, where trainees observed DDT residual dusting and participated in the ratproofing work on the project. Field practice was given in trapping and poisoning of rats. In the laboratory the trainees received practice in combing ectoparasites from the rats trapped, and in bleeding the rats to obtain serum for the complement-fixation tests. In addition to identifying the ectoparasites combed from the rats, the group received further training in identification of rodent ectoparasites in the laboratory.

Two days were devoted to training in identification and control of domestic flies. One day was devoted to the identification and control of ticks and methods of making tick surveys. Since all of the trainees had had previous experience in malaria control, only two days were devoted to this subject. The course was interrupted on November 20, to allow the trainees to attend the conference of state and district CDC personnel on November 20, 21, and 22.

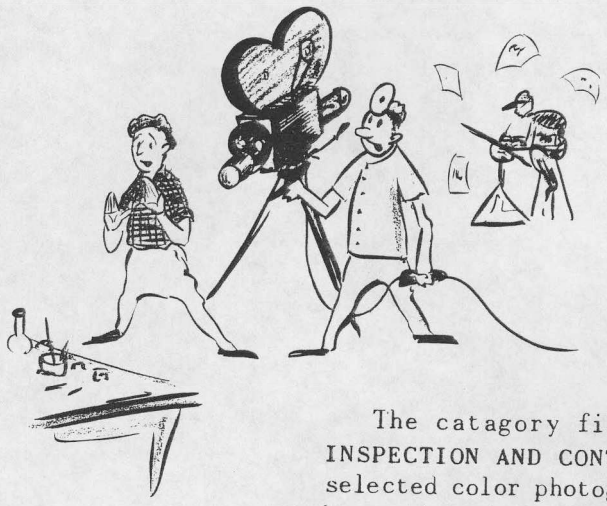
The following CDC district and state men attended the course:

S. A. San. (R) John F. Brandenburg -- CDC Rep., Arkansas; Asst. San. (R) Fred C. Harmston -- CDC Rep., District Number 8; Malaria Con. Spec. Harrell C. Havis -- Oklahoma; S. A. San. (R) Howard B. Hollander -- CDC Rep. Dist. No. 7 Kansas City; Malaria Con. Spec. Chas. E. Hunter -- CDC Rep., Kentucky; Eng. (R) Arthur H. Johnson -- Asst. State Dir., Oklahoma Dept. Pub. Health, Millard B. Killam, City Health Dept., Nashville, Tennessee; S. A. Eng. (R) Sheldon L. Lang -- CDC Rep. Dist. No. 1, New York; San. (R) Travis E. McNeel -- CDC Rep., Dist. No. 4, New Orleans; San. (R) John A. Rowe -- CDC Rep. Dist. No. 7, Kansas City, Missouri, Asst. Entom. Sanford E. Shields -- CDC Rep. (Typhus) Kansas; S. A. Eng. (R) Robert J. Sikorski -- Missouri State Health Dept.; S. A. San. (R) William W. Smith -- CDC Rep. St. Bd. of Health, Jackson, Mississippi; San. Eng. Howard W. Spence -- unassigned, later assigned to St. Thomas, Virgin Islands; San. Joseph E. Borches -- CDC Rep. Dist. No. 2, Richmond, Virginia. Mr. Havis, of Oklahoma, attended on his own time while on annual leave.

IN-SERVICE TRAINING BRANCH

Sixteen visitors from ten foreign countries visited the training courses and participated in training activities during the quarter. Countries represented were Venezuela, Italy, China, Egypt, Canada, Ceylon, England, Mexico, the Philippine Islands, and Jamaica.

Production Division



A motion picture with sound track in Persian, and a film strip in Spanish were included in the five releases of the Production Division during the second quarter of 1947.

"THE LABORATORY DIAGNOSIS OF SCHISTOSOMIASIS", black and white film strip of 67 frames, has a running time of approximately 16 minutes. Designed especially for the training of laboratory technicians, physicians, medical students, etc., the film is concerned with the diagnosis of all three schistosomes, but primarily with *S. japonicum* and *mansoni*. A short introduction emphasizing the importance of the disease is followed by a presentation of technical procedures for identification of schistosomiasis, and the principal items brought out in the film strip are then briefly recapitulated. Available for unrestricted distribution. Production number CDC-TE 5-041.

A Spanish version of this film strip has been released under production number CDC-TE 5-041.1.

The catagory film strip "MOSQUITO INSPECTION AND CONTROL" is made up of selected color photographs which may also be used as lantern slides. No narrative is supplied. Malaria and *Aedes aegypti* control work in the south is depicted. Production number CDC-TE 5-076.

"DDT AS A MOSQUITO LARVICIDE," a black and white motion picture for training crews in the techniques of DDT larviciding illustrates the mixing of DDT larvicide, equipment required for the process, and basic application methods for different types of mosquito breeding areas. Running time is approximately 25 minutes. Available for unrestricted distribution. Production number CDC 4-035.

This motion picture has also been released with sound track in Persian for use by the Iranian Government, and others using the Persian language. CDC-4-035.1.

HYDROLOGIC DATA, EMORY FIELD STATION, a light-box exhibit for use in state health department displays, was completed. Photographs were made at the Emory Field Station in Baker County where the hydrologic experiments are carried on.

Library and Reports Division

Approximately 400 volumes were added to the shelves of the CDC Library during the quarter beginning October 1946, or more than three times as man books as in the previous quarter. A number of 1946 publications were in included:

Albrecht, Frederick Kenneth, "Modern Management in Clinical Medicine"

Allen, Raymond Bernard, "Medical Education and the Changine Order"

Allison, Samuel Dudleston, "VD Manual for Teachers"

Andrews, George Clinton, "Diseases of the Skin, for Practitioners and Students"

Barber, Marshall Albert, "A Malariologist in Many Lands"

Berg, Roland H., "The Challenge of Polio"

Bush, Vannevar, "Endless Horizons"

Carpenter, Stanley J., "The Mosquitoes of the Southern United States"

Chadwick, Henry Dexter, "The Modern Attack on Tuberculosis"

Chicago Institute for Training in Municipal Administration, "Municipal Public Works Administration"

Clark, Walter, "Photography by Infrared"

Conn, Harold Joel, "Biological Strains"

Cunningham, Eilene (Roach), "Classification for Medical Literature"

Encyclopedia Britannica, 1946 Edition

Britannica Book of the Year, 1946

Encyclopedia Americana 1946 Edition

Encyclopedia Americana Annual 1946

Fay, Audrey Jane (Barrett), "A Manual of Nursing Procedures"

Haden, Russell Landram, "Principles of Hematology"

Hawkins, Reginald Robert, "Scientific, Medical, and Technical Books Published in the U. S., 1930-1944"

Lannon, Mary Isidore, "Professional Adjustments"

Mawson, Christopher Orlando Sylvester, "Roget's International Thesaurus"

Millard, Earl Bowman, "Physical Chemistry for Colleges"

Morse, Mary Elizabeth, "Microbiology for Nurses"

Napier, Lionel Everard, "The Principles and Practices of Tropical Medicine"

Peabody, Dean, "The Design of Reinforced Concrete Structures"

Pollack, Philip, "Careers in Science"

Prescott, Samuel Cate, "Water Bacteriology"

Price, Alice L., "Professional Adjustments I"

Rouse, Hunter, "Elementary Mechanics of Fluids"

Russell, Paul Farr, "Practical Malariology"

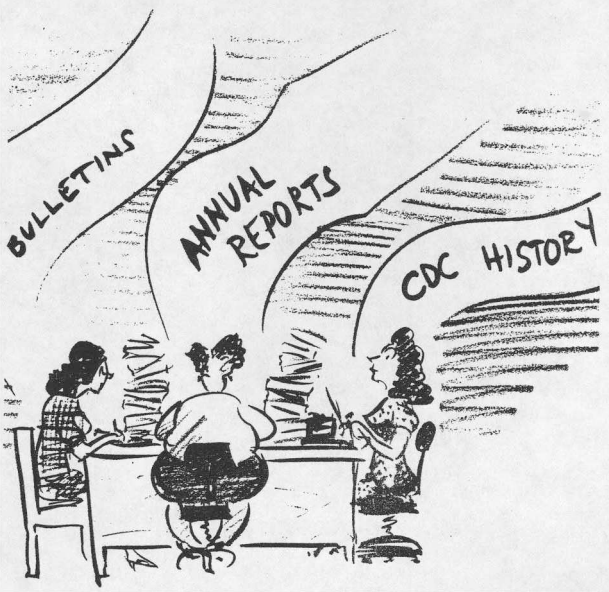
Seelye, Elwyn Eggleston, "Date Book for Civil Engineers," v.1 and v.2

Smith, Carroll Newton, "Biology and Control of the American Dog Tick"

Sommer, Jugo Henry, "Market Milk and Related Products"

Stern, Bernhard Joseph, "Medical Services by Government, Local, State, and Federal"

"Studies on Brazilian Anopheles from the Northeast and Amazon Regions"



Administrative Division

The Administrative Division reports that in addition to modification of equipment during the first quarter of 1947, 130 repair jobs, most of them major, were completed on headquarters and field automotive equipment.

In the first quarter of the 1947 fiscal year, 5,721 obligating documents were processed, 7,360 travel, miscellaneous, and pay roll vouchers were audited and paid; and 1,105 miscellaneous fiscal transactions, such as warehouse transfers, collections, adjustment vouchers, etc., were concluded.

Travel orders may be issued within a week following the original request when final delegation to permit issuance of orders is given the Atlanta Headquarters Office. Efforts are being continued to secure this authority to cover all types of orders, except those covering permanent change of station for commissioned personnel and orders for travel to attend meetings.

More than 1,000 travel order requests are submitted annually to the Central Office at Washington, and under a previous procedure there has been a delay of from two to four months in processing.

A program of assistance to CDC employees was inaugurated in the Headquarters Office at the beginning of the fiscal year. The housing problem was alleviated to some extent by the Employee Relations Officer's securing some houses and furnishing leads as to available living facilities. Information regarding the Federal Credit Union, Federal Automobile Insurance, Employee's Compensation for Injuries, and Employee Counseling was made available to all interested personnel.

Technical Development Division

CORRECTION

In the July-August-September Bulletin, page 21, the last three lines of the Technical Development Division Fly Control story should read, "The compound 1068 has shown promise in residual control of houseflies."

The erroneous statement was made, "The insecticide 1080 has shown promise in residual control of houseflies."

Since 1080 is a highly toxic and extremely dangerous rodenticide, fatal consequences could result from an attempt to use the material as a residual spray for houseflies.

EFFECTS OF DDT MOSQUITO LARVICIDING ON WILDLIFE

Field studies at the Savannah River Refuge on the effects of DDT sprays and aerosols applied by airplane were concluded the last of October. During the course of the study, 1800 square foot surface samples and 720 bottom samples were taken from two check and four treated areas. Samples were taken before treatment, about midseason, and at the end of treatment. Fish population studies were made before treatment in two of the areas, after treatment in three areas, and in a check area. Observations were made on all ponds every week after each treatment to detect any kill of fish or insects. Some dead insects, especially Diptera, Coleoptera, and Hemiptera, were found in the treated ponds. Few dead fish were noted and the fish-population studies indicated that there had been no reduction in the fish population during the first season of treatment.

Studies of the effects on fish in deep water (three to ten feet) of the larvicidal use of DDT, DDD, "1068" and "3956" were concluded the last of November. It

was found that the character of the pond greatly influenced any action of DDT on fish. The pond routinely treated with 0.1 lb. DDT per acre had considerable surface vegetation and organic matter, and was of a type normally requiring treatment for *Anopheles* mosquito control. In this pond there were no detected fish killed after 14 treatments even though there was a large fish population in the pond. In a deeper pond, without surface vegetation – the type not normally requiring treatment for *Anopheles* mosquito control -- significant fish kills were noted after the thirteenth routine treatment of 0.05 lbs. per acre. On the same type of pond, no kills were noted at dosages of 0.025 lbs. per acre.

Routine treatment with DDD at 0.1 pound per acre resulted in fish kills and a reduction of the population. No kills or reductions were noted at dosages of 0.05 and 0.025 pound per acre. The pond receiving 0.05 pound DDD per acre was almost identical to the one receiving 0.05 pound of DDT per acre.

Fourteen routine treatments at 0.1 pound per acre with " 1068" reduced the fish population to a considerable extent. No kills or reductions were noted at routine dosages with 0.05 and 0.025 pound per acre.

Tests with " 3956" indicate it to be an effective fish poison at dosages of 0.1 pound per acre.

CHEMICAL DETERIORATION OF DDT IN RESIDUAL SPRAYING

Tests have been conducted to evaluate more clearly the effect of ultra-violet light and temperatures of approximately 140 and 110 degrees Fahrenheit on deterioration of DDT.

Glass and wood surfaces sprayed with 5 percent DDT in kerosene and 5 percent DDT emulsion were tested. The procedure used was to place four 3" by 12" panels in a pasteboard box, approximately 16½" by 16½" by 10½", and insert an ultra-violet light of the General Electric Company BH4 dark-light type. All other light was shut out and there was no air circulation in the box. After long periods of exposure, the temperature reached as high as 113 degrees Fahrenheit. The total exposure was for 248 hours, or 31 eight-hour days. The ultra-violet light was not operated continuously, but in 8 hour intervals. The results obtained are summarized in the following tabulation.

RECOVERY OF DDT
AFTER EXPOSURE TO ULTRA-VIOLET LIGHT

	5% DDT IN KEROSENE			5% DDT EMULSION		
	Glass	Paper	Wood	Glass	Paper	Wood
1. Control panels kept at room temperature and in dark for one month.	63%	85%	86%	97%	97%	90%
2. Exposed to 248 Hours of ultra-violet light in box. Temperature not controlled; up to 113° F.	41%	——	46%	65%	——	77%
3. Exposed to 248 hours of ultra-violet light in refrigerator. Temperature up to 77° F.	76%	108%	66%	79%	104%	91%

Note: percentages are based on the amount of DDT theoretically applied.

Since the temperature reached as high as 113 degrees Fahrenheit, it was thought possible that some of the DDT loss was due to the heat rather than to the ultra-violet light. In order to keep the heat caused by the ultra-violet light down to room temperature or below, the surfaces being tested were exposed to the ultra-violet light inside a refrigerator. The temperature, during the exposure period of 248 hours, did not reach any higher than 77 degrees Fahrenheit. The results obtained (see accompanying table) from the paper surfaces showed no loss, as compared to panels kept at room temperature in the dark for one month. Only the kerosene-wood panels and the emulsion-glass panels showed any loss of DDT.

Although definite proof is still lacking, it appears that the heat produced by sunlight or ultra-violet light is of more importance in causing loss of DDT than any catalytic effect of the rays.

FIELD NOTES

SEASONAL SUMMARY OF RESIDUAL SPRAY OPERATIONS

Approximately 524,725, or nearly half of the total 1,166,545 spray applications during the season February 23 through October 31, 1946, were made after June 28. Approximately 50 percent of the homes were given a second application. The accompanying tabulation shows a detailed statistical breakdown for the latter half of the season and a cumulative summary for the entire period.

Man-hours expended for supervision, inspection, annual leave, lost time, maintenance, and miscellaneous activities increased sharply during the period August 23 – October 31, amounting to 0.6 of the total. This raised the percentage for the June 28 – October 31 period to 45. This is due in some measure to discontinuance of spray operations prior to October 1, and the use of some personnel for major repair and maintenance work.

RESIDUAL SPRAYING IN SOUTHEAST MISSOURI

According to the "SE-MO DDT News" for October 1946, the Missouri Health Department plans to extend the southeast Missouri residual spraying program to more than 45,000 homes in 1947.

In 1946, 39,000 homes in this area were sprayed, three-fourths of which received two applications during the seven-month spraying cycle. This was considerable expansion over the 1945 total of 20,000 homes sprayed.

The results achieved have been satisfactory, and the program has received the hearty approval and cooperation of local residents. Infant mortality from enteritis has fallen, and there has been a marked reduction of common household pests, such as mosquitoes, flies, and roaches.

The increased activity of the states in securing local contributions on the residual spray program will permit expansion of activities during the 1947 malaria season in some states.

Military establishment malaria control areas with active CDC operations were reduced from 27 on October 1 to 8 on November 30. It is expected that such areas were further reduced in December, but no record is as yet available.

Plans for securing local participation in the Extended Program have been formulated in most of the states and actual collections have already begun. Methods of participation vary from state to state, but response in most cases has been gratifying.

Plans have been discussed with Mississippi state health officials for a parasite and blood survey and typhus investigations to be conducted during the winter months in that State. This should provide valuable data for future operations in Mississippi.

DISTRICT CDC ACTIVITIES

Demonstrations in DDT spraying on Indian reservations were continued in New Mexico (District 9) during October.

SUMMARY OF RESIDUAL HOUSE SPRAYING OPERATIONS

Period Covered June 28 through October 31, 1946

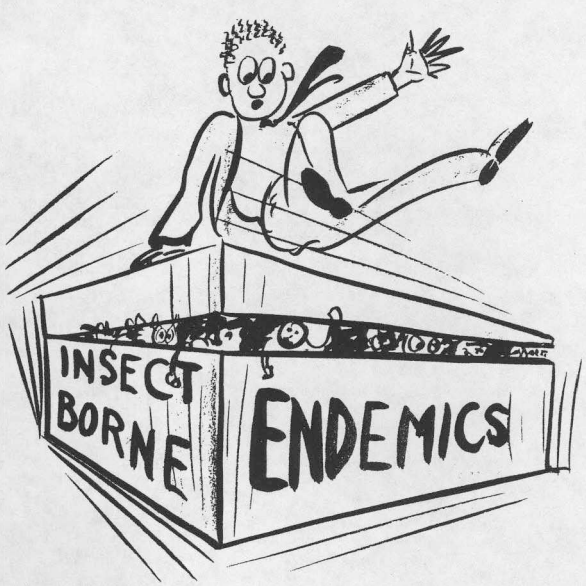
Cumulative Summary: February 23 through October 31, 1946.

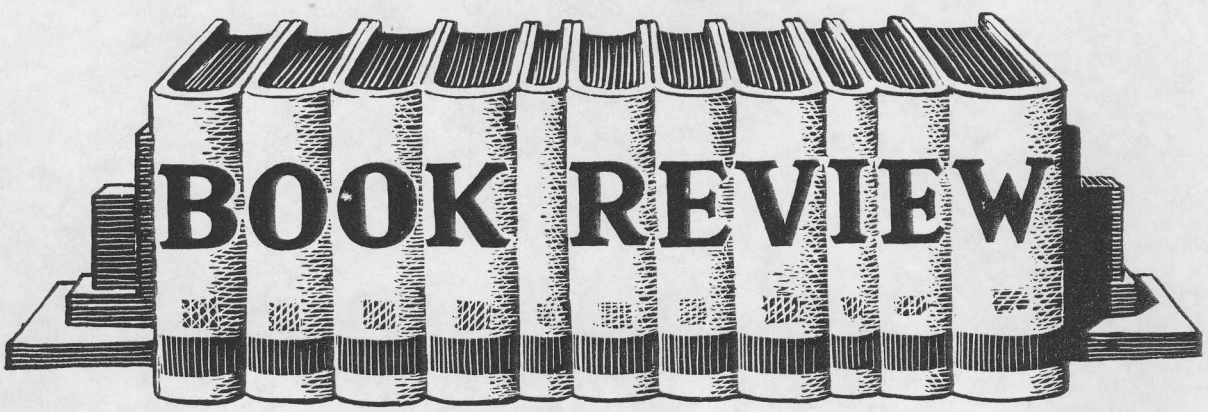
State	No. House Spray Applications	Lbs. DDT Used	Lbs. DDT per House	Manhours Supervision, Inspection, Annual Leave, Lost Time, Maintenance and Miscellaneous	Total EPS Manhours	Total Manhours per House	Total Manhours per Lb. DDT	Total House Spray Applications	Total Lbs. of DDT Used
Alabama	54,822	45,888	0.84	34,901	95,228	1.73	2.07	100,533	82,660
Arkansas	85,654	51,096	0.60	35,108	93,696	1.09	1.83	220,981	139,549
Florida	26,829	23,143	0.86	27,399	53,268	1.98	2.30	54,346	46,844
Georgia	75,396	78,017	1.03	54,381	92,318	1.22	1.18	158,607	196,507
Kentucky	6,964	3,952	0.57	4,940	9,081	1.30	2.30	16,170	9,708
Louisiana	31,951	27,264	0.85	25,543	41,015	1.28	1.50	68,092	50,586
Mississippi	73,599	49,834	0.68	45,202	114,978	1.56	2.31	178,297	133,079
Missouri	31,124	18,908	0.61	12,281	32,518	1.04	1.72	70,125	48,914
N. Carolina	20,078	14,863	0.74	12,528	30,096	1.50	2.02	40,683	28,154
Oklahoma	16,548	15,740	0.95	8,467	23,434	1.42	1.49	33,608	30,651
S. Carolina	41,270	29,320	0.71	26,736	70,406	1.71	2.40	96,852	62,149
Tennessee	14,780	12,719	0.86	13,378	15,842	1.07	1.24	36,358	28,834
Texas	45,710	33,592	0.73	39,441	87,594	1.92	2.61	91,894	60,376
Total	524,725	404,336	0.77	340,305	759,474	1.45	2.24	1,166,545	918,011

With the completion of these demonstrations, this activity was discontinued until next season. The District 3 CDC representative participated in a program audit of the State Health Department of Illinois, and material for development of schedules for evaluation of mosquito, insect and rodent control activities of State Health Departments was furnished upon request of the District 3 office. Rodent control activities were included in the District 7 CDC program and a representative of the Engineering Division (Mr. Hunt) was temporarily assigned to the District 7 office to assist in this work. District CDC representatives also assisted in malaria surveys on impoundments of the U. S. Engineer Department, and further assisted various states participating in the CDC program in planning operations for the 1947 season.

HE'S AG'IN IT . . .

One of the area supervisors in Texas reports that during the second spraying of homes last year 1,183 persons were asked the question: "Are you pleased with the DDT results?" Only three answered in the negative. One of the three explained that he personally had no insect problem to begin with, but he was not pleased with the results anyhow!





THE ELECTRON MICROSCOPE, An Introduction to Its Fundamental Principles and Applications by Eli F. Burton and Walter H. Kohl. Cloth. Price $4.00. 2nd Edition. pp. 325. Frontispiece, illustrations, and diagrams. New York, Reinhold Publishing Company, 1946.

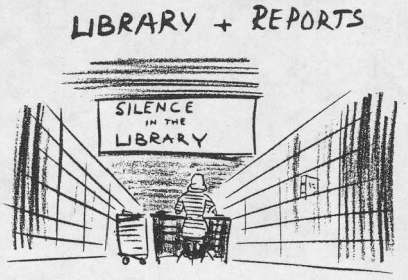
Contrary to the impression gained from the title, this is not a book which requires intensive study for understanding and enjoyment. Although highly technical in parts, as is to be expected in a monograph dealing with as new and as complex an instrument as the electron microscope, the information is presented in a clear, readable style, supplemented by line diagrams. Numerous micrographs, made with both an optical and an electron microscope, aid in showing the reader the relative capabilities of the two instruments.

A large portion of the book is devoted to a presentation of the basic principles and fundamental theories of light, vision, wave motion, and the electron. By including a discussion of resolving power and useful magnification, the authors have made the book valuable as a reference for those using an optical microscope as well as an electron microscope.

One of the most interesting portions of the book is the long chapter devoted to practical applications of the electron microscope, in which we are told what has already been accomplished and what may be done in the future. Although mention is made of certain specialized techniques involved, this is not a manual of instruction in the use of the electron microscope. For such information the reader is offered his choice of numerous references in an excellent appended bibliography.

The authors are to be commended for producing a book which will be useful to both lay and professional students of microscopy, whether it be optical or electron.

Alan W. Donaldson



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Federal Security Agency

TABLE I
Communicable Disease Center, Fiscal Branch
CUMULATIVE OBLIGATIONS INCURRED - BY OBJECT
July 1, 1946 through November 30, 1946

U. S. Public Health Service

	01	02	03	04	05	07			08	09	10	
						OTHER CONTRACTUAL SERVICES						
	PERSONAL SERVICES	TRAVEL & PER DIEM	TRANS. OF THINGS	COMMUNI-CATION SERVICES	RENT & UTILITY SERVICES	REPAIRS	STOR. & CARE OF VEHICLES	MISC.	SUPPLIES & MATERIAL	EQUIPMENT	LANDS & STRUCTURES	TOTAL
7570343.001 - C. C. D.												
Control of Malaria												
A - 1013 - C. S. Sal.	1,797,527.09											1,797,527.09
A - 1014 - Res.Off.Sal.	194,404.76											194,404.76
A - 1015 - Misc.		16.75	31,120.77	7,760.90	31,996.39	29,790.37	1,419.60	24,548.58	617,370.90	47,994.24	2,392.00	794,410.50
A - 1018 - C.S. Sal.(P.R.)	25,212.13											25,212.13
A - 1019 - Res.Off.Sal.(P.R.)	6,455.96											6,455.96
A - 1020 - Mis. (P.R.)			200.00	213.64	48.00	37.35		2,184.00	5,607.11	101.97		8,392.07
Total	2,023,599.94	16.75	31,320.77	7,974.54	32,044.39	29,827.72	1,419.60	26,732.58	622,978.01	48,096.21	2,392.00 *	2,826,402.51
A. A. Control												
A - 1035 - C. S. Sal.	41,935.53											41,935.53
A - 1036 - Res.Off.Sal.	694.40											694.40
A - 1037 - Misc.				7.57	20.00	409.90	36.86	1,469.87	2,296.29			4,240.49
Total	42,629.93			7.57	20.00	409.90	36.86	1,469.87	2,296.29			46,870.42
Typhus Control												
A - 1024 - C. S. Sal.	312,049.91											312,049.91
A - 1025 - Res.Off.Sal.	23,575.58											23,575.58
A - 1026 - Misc.			6,100.00	118.24	269.70	5,575.00	34.00	697.77	51,979.03	2,822.12		67,595.86
Total	335,625.49		6,100.00	118.24	269.70	5,575.00	34.00	697.77	51,979.03	2,822.12		403,221.35
Polio Invest.												
A - 1073 - C. S. Sal.	29,081.16											29,081.16
A - 1074 - Res.Off.Sal.	857.77											857.77
A - 1075 - Misc.			37.48	219.66	60.55	1,001.35		797.59	29,318.37	10,963.93	2,392.00	44,790.93
Total	29,938.93		37.48	219.66	60.55	1,001.35		797.59	29,318.37	10,963.93	2,392.00 *	74,729.86
Diarrheal Dis. Invest.												
A - 1030 - C. S. Sal.	34,020.16											34,020.16
A - 1031 - Res.Off.Sal.	4,741.40											4,741.40
A - 1032 - Misc.				326.33		697.96		23.54	19,416.93	488.93	1,196.00	22,149.69
Total	38,761.56			326.33		697.96		23.54	19,416.93	488.93	1,196.00 *	60,911.25
Total Appro. 7570343.001	2,470,555.85	16.75	37,458.25	8,646.34	32,394.64	37,511.93	1,490.46	29,721.35	725,988.63	62,371.19	5,980.00 *	3,412,135.39
7570342.002 - A. to S. Gen.												
Training (Intern.)												
A - 923 - C. S. Sal.	9,099.17											9,099.17
A - 924 - Res.Off.Sal.	5,132.97											5,132.97
A - 925 - Misc.			150.00	362.90		26.90		10.00	1,526.49	1,149.98		3,226.27
Total Appro. 7570342.002	14,232.14		150.00	362.90		26.90		10.00	1,526.49	1,149.98		17,458.41
7570110(03) - Travel Esp. FSA												
A - 193 - Training		4,893.45										4,893.45
A - 195 - Malaria, Etc.		76,801.14										76,801.14
A - 196 - Typhus		12,617.46										12,617.46
A - 199 - Mal. (P.R.)		701.84										701.84
Total Appro. 7570110(03)		95,013.89										95,013.89
Grand Total - All Appro.	2,484,787.99	95,030.64	37,608.25	9,009.24	32,394.64	37,538.83	1,490.46	29,731.35	727,515.12	63,521.17	5,980.00 *	3,524,607.69

* Being transferred to objective classification 09 (Equipment) during December.

Federal Security Agency

TABLE II
Communicable Disease Center, Fiscal Branch
CUMULATIVE OBLIGATIONS INCURRED - BY OBJECT
July 1, 1946 through December 31, 1947

	01	02	03	04	05	07			08	09	
						OTHER CONTRACTUAL SERVICES					
	PERSONAL SERVICES	TRAVEL & PER DIEM	TRANS. OF THINGS	COMMUNI-CATION SERVICES	RENT & UTILITY SERVICES	REPAIRS	STOR. & CARE OF VEHICLES	MISC.	SUPPLIES & MATERIAL	EQUIPMENT	TOTAL
7570343.001 - C. C. D.											
Control of Malaria											
A - 1013 - C. S. Sal.	2,155,604.07										2,155,604.07
A - 1014 - Res.Off.Sal.	230,088.38										230,088.38
A - 1015 - Misc.		444.47	39,803.01	9,162.33	40,369.75	33,419.61	2,229.80	28,151.24	647,000.94	69,541.54	870,122.69
A - 1018 - C.S.Sal.(P.R.)	53,566.00										53,566.00
A - 1019 - Res.Off.Sal.(P.R.)	11,407.33										11,407.33
A - 1020 - Misc. (P.R.)			250.00	256.75	48.00	46.30	3,325.03		9,327.97	221.83	13,475.88
Total	2,450,665.78	444.47	40,053.01	9,419.08	40,417.75	33,465.91	5,554.83	28,151.24	656,328.91	69,763.37	3,334,264.35
A. A. Control											
A - 1035 - C. S. Sal.	52,892.87										52,892.87
A - 1036 - Res. Off. Sal.	496.40										496.40
A - 1037 - Misc.				5.57	20.00	482.27	96.36	1,473.87	2,590.45		4,668.52
Total	53,389.27			5.57	20.00	482.27	96.36	1,473.87	2,590.45		58,057.79
Typhus Control											
A - 1024 - C. S. Sal.	373,997.98										373,997.98
A - 1025 - Res. Off. Sal.	26,536.67										26,536.67
A - 1026 - Misc.			7,279.48	141.21	301.52	7,145.04	112.33	1,599.50	56,198.54	2,872.99	75,650.61
Total	400,534.65		7,279.48	141.21	301.52	7,145.04	112.33	1,599.50	56,198.54	2,872.99	476,185.26
Polio Invest.											
A - 1073 - C. S. Sal.	36,508.99										36,508.99
A - 1074 - Res. Off. Sal.	1,629.80										1,629.80
A - 1075 - Misc.			237.48	263.47	81.97	1,001.35		797.59	30,020.60	14,175.90	46,578.36
Total	38,138.79		237.48	263.47	81.97	1,001.35		797.59	30,020.60	14,175.90	84,717.15
Diarrheal Dis. Invest.											
A - 1030 - C. S. Sal.	44,472.48										44,472.48
A - 1031 - Res. Off. Sal.	6,200.34										6,200.34
A - 1032 - Misc.				366.23		882.53		23.54	20,172.11	1,705.00	23,149.41
Total	50,672.82			366.23		882.53		23.54	20,172.11	1,705.00	73,822.23
Total Appro. 7570343.001	2,993.401.31	444.47	47,569.97	10,195.56	40,821.24	42,977.10	5,763.52	32,045.74	765,310.61	88,517.26	4,027,046.78
7570342.002 - A. to S. Gen.											
Training (Intern.)											
A - 923 - C. S. Sal.	12,953.08										12,953.08
A - 924 - Res. Off. Sal.	6,966.19										6,966.19
A - 925 - Misc.		64.39	150.00	462.52		40.65		56.77	1,830.72	4,188.51	6,793.56
Total Appro. 7570342.002	19,919.27	64.39	150.00	462.52		40.65		56.77	1,830.72	4,188.51	26,712.83
7570110(03) - Travel Exp. FSA											
A - 193 - Training		5,499.83									5,499.83
A - 195 - Malaria, Etc.		87,123.57									87,123.57
A - 196 - Typhus		13,861.98									13,861.98
A - 199 - Mal. (P. R.)		591.39									591.39
Total Appro. 7570110(03)		107,076.77									107,076.77
Grand Total - All Appro.	3,013,320.58	107,585.63	47,719.97	10,658.08	40,821.24	43,017.75	5,763.52	32,102.51	767,141.33	92,705.77	4,160,836.38

Table III

U. S. PUBLIC HEALTH SERVICE, COMMUNICABLE DISEASE CENTER

SUMMARY OF TYPHUS CONTROL OPERATIONS

August 24 - October 4, 1946

STATE	RESIDUAL DUSTING				RAT POISONING							RATPROOFING			MAN HOUR SUMMARY		
						FOOD BAITS			1080 WATER								
	Counties Reporting	Premise Dustings	Pounds 10% DDT Dust per Prem.	Man Hrs. L & LF* per Prem.	Counties Reporting	Premise Poisonings	Pounds per Premise	Man Hrs. L & LF* per Prem.	Estab. Poisonings	Pints per Estab.	Man Hrs. L & LF* per Estab.	Projects Reporting	Establishments Treated	Man Hrs. L & LF* per Estab.	USPHS Man Hrs. Worked	Other Man Hrs. Worked	Total Man Hrs. Worked
Alabama	8	7,029	3.84	0.63	5	3,908	1.1	0.34	---	---	---	---	---	---	9,285	4,388	13,673
Arkansas	---	---	---	---	1	93	0.3	9.02	286	3.92	2.12	2	70	33.3	616	4,313	4,929
Florida	6	6,244	2.22	0.38	3	2	---	1.00	29	0.86	1.93	3	48	35.5	2,924	5,938	8,862
Georgia	33	17,907	3.53	0.60	18	3,653	0.49	0.51	108	2.92	3.60	2	40	46.0	8,960	9,820	18,780
Louisiana	6	7,990	2.93	0.27	6	6,059	0.11	0.14	150	2.71	2.84	3	69	33.0	4,251	6,011	10,262
Mississippi	3	3,224	1.65	0.46	2	---	---	---	124	1.31	0.85	1	8	22.5	2,928	415	3,343
N. Carolina	7	8,153	1.08	0.23	3	430	1.28	1.06	72	0.67	2.38	2	127	21.9	1,328	5,479	6,807
S. Carolina	4	798	3.21	1.68	2	---	---	---	80	1.80	0.85	3	50	50.8	2,325	4,884	7,209
Tennessee	2	4,876	1.58	0.24	---	---	---	---	---	---	2.38	0	---	---	1,560	---	1,560
Texas	45	9,355	2.60	0.70	45	354	0.68	0.23	2,751	0.87	2.21	11	273	45.8	14,064	23,985	38,049
Virginia	1	1,172	3.15	0.59	---	---	---	---	---	---	1.24	---	---	---	672	464	1,136
TOTAL	115	66,748	2.70	0.49	86	14,499	0.51	0.37	3,600	1.28	1.48	27	685	38.2	48,913	65,697	114,610

* Labor and Labor Foremen

Table IV

U. S. PUBLIC HEALTH SERVICE, COMMUNICABLE DISEASE CENTER

SUMMARY OF TYPHUS CONTROL OPERATIONS

October 5 - November 1, 1946

STATE	RESIDUAL DUSTING				RAT POISONING							RATPROOFING			MAN HOUR SUMMARY		
						FOOD BAIT			1080 WATER								
	Counties Reporting	Premise Dustings	Pounds 10% DDT Dust per Prem.	Man Hrs. L & LF* per Premise	Counties Reporting	Premise Poisonings	Pounds per Premise	Man Hrs. L & LF* per Prem.	Estab. Poisonings	Pints per Estab.	Man Hours L & LF* per Prem.	Projects Reporting	Establishments Treated	Man Hours L & LF* per Estab.	USPHS Man Hrs. Worked	Other Man Hrs. Worked	Total Man Hrs. Worked
Alabama	8	4,760	5.58	0.57	4	2,658	1.13	0.31	---	---	---	---	---	---	5,260	2,827	8,087
Arkansas	---	---	---	---	1	50	0.36	10.56	107	6.20	6.59	2	52	28.71	464	3,066	3,530
Florida	5	3,177	2.60	0.41	---	---	---	---	360	0.1	0.12	3	32	32.00	1,800	3,045	4,845
Georgia	28	12,995	3.43	0.50	10	6,660	0.53	0.47	73	3.54	2.58	2	26	76.92	7,130	7,587	14,717
Louisiana	6	5,445	2.84	0.28	5	4,803	0.12	0.09	337	1.25	1.15	4	132	25.72	3,336	4,282	7,618
Mississippi	2	4,830	1.38	0.40	2	18	0.44	0.67	146	0.91	0.76	1	36	10.30	2,184	991	3,175
N. Carolina	4	5,876	2.52	0.21	2	529	1.04	0.41	105	0.88	3.38	2	108	21.09	1,212	3,602	4,814
S. Carolina	5	905	2.75	1.76	1	7	0.57	1.42	150	0.87	3.76	1	2	172.50	2,315	3,245	5,560
Tennessee	2	2,880	1.70	0.29	---	---	---	---	---	---	---	---	---	---	1,070	---	1,070
Texas	47	3,984	3.42	0.88	1	31	0.77	1.10	1,714	0.85	1.13	13	270	38.05	8,396	17,569	25,965
Virginia	1	1,016	1.67	0.47	---	---	---	---	---	---	---	---	---	---	480	320	800
TOTAL	108	45,868	3.03	0.47	27	14,756	0.53	0.37	2,992	1.06	1.45	28	658	32.19	33,647	46,534	80,181

* Labor and Labor Foremen

Table V

U. S. PUBLIC HEALTH SERVICE, COMMUNICABLE DISEASE CENTER

SUMMARY OF TYPHUS CONTROL OPERATIONS

November 2 - 30, 1946

STATE	RESIDUAL DUSTING				RAT POISONING						RATPROOFING			MAN HOUR SUMMARY		
						FOOD BAITS			1080 WATER							
	Counties Reporting	Premise Dustings	Pounds 10% DDT Dust per Prem.	Man Hrs. L & LF* per Prem.	Counties Reporting	Premise Poisonings	Pounds per Prem.	Man Hrs. L & LF* per Prem.	Estab. Poisonings	Pints per Estab.	Man Hrs. L & LF* per Prem.	Projects Reporting	Establishments Treated	Man Hrs. L & LF* per Estab.	USPHS Man Hrs. Worked	Other Man Hrs. Worked	Total Man Hrs. Worked
Alabama	5	1,809	3.21	0.38	4	1,493	1.20	0.16	---	---	---	---	---	---	1,072	1,716	2,788
Arkansas	---	---	---	---	1	42	0.38	7.14	130	2.41	4.34	2	42	24.93	420	2,251	2,671
Florida	5	3,689	2.59	0.44	1	1,830	0.40	0.38	113	0.61	1.76	4	52	19.10	1,967	3,640	5,607
Georgia **	32	13,003	4.14	0.45	19	4,666	0.52	0.42	57	0.28	2.81	3	11	11.76	5,042	7,643	12,685
Louisiana	6	3,960	2.94	0.37	6	2,924	0.09	0.16	287	2.63	1.21	4	62	57.91	3,168	4,325	7,493
Mississippi	2	3,479	1.08	0.31	---	---	---	---	59	1.07	1.12	1	35	8.86	1,605	460	2,065
N. Carolina	4	3,988	1.08	0.21	3	1,741	0.69	0.14	90	0.69	4.01	4	170	18.96	1,235	4,554	5,789
S. Carolina	5	677	2.63	1.57	---	---	---	---	136	0.90	3.66	3	16	7.47	2,085	2,675	4,760
Tennessee	2	1,921	1.85	0.32	1	3	---	8.00	---	---	---	1	24	22.75	1,148	876	2,024
Texas	30	3,101	3.27	1.06	3	122	0.36	0.34	1,724	0.91	1.32	14	226	43.13	7,854	15,560	23,414
Virginia	1	988	4.19	0.49	---	---	---	---	---	---	---	---	---	---	480	320	800
TOTAL	92	36,615	2.97	0.46	38	12,821	0.51	0.31	2,596	1.20	1.72	36	638	34.40	26,076	44,020	70,096

* Labor and Labor Foremen

** Georgia Counties Estimated

Table VI

U. S. PUBLIC HEALTH SERVICE, COMMUNICABLE DISEASE CENTER

SUMMARY OF TYPHUS CONTROL OPERATIONS

December 1 - 28, 1946

STATE	RESIDUAL DUSTING				RAT POISONING						RATPROOFING			MAN HOUR SUMMARY		
						FOOD BAITS			1080 WATER							
	Counties Reporting	Premise Dustings	Pounds 10% DDT Dust per Prem.	Man Hours L & LF* per Premise	Counties Reporting	Premise Poisonings	Pounds per Premise	Man Hours L & LF* per Prem.	Estab. Poisonings	Pints per Estab.	Man Hours L & LF* per Estab.	Projects Reporting	Establishments Treated	Man Hours L & LF* per Estab.	USPHS Man Hrs. Worked	Other Man Hrs. Worked	Total Man Hrs. Worked
Alabama	4	304	2.99	0.77	3	313	0.99	0.41	---	---	---	---	---	---	764	1,440	2,204
Arkansas	---	---	---	---	1	29	0.79	---	94	4.11	7.78	2	62	15.68	492	2,010	2,502
Florida	5	4,100	2.56	0.42	1	470	0.79	0.83	164	0.41	1.43	4	46	21.43	1,980	3,491	5,471
Georgia	27	14,388	4.08	0.52	20	3,973	0.59	0.65	76	2.25	3.08	3	36	68.30	6,604	9,387	15,991
Louisiana	6	2,788	2.88	0.34	6	2,404	0.12	0.19	1,037	2.09	0.67	3	55	66.38	3,204	4,189	7,393
Mississippi	2	3,092	1.08	0.29	---	---	---	---	30	0.90	1.00	1	26	10.69	1,328	368	1,696
N. Carolina	5	3,079	0.97	0.33	4	1,743	0.52	0.28	67	0.37	2.50	3	126	18.70	1,080	3,696	4,776
S. Carolina	5	663	4.38	2.01	---	---	---	---	48	0.71	4.70	2	4	192.00	2,056	1,664	3,720
Tennessee	2	2,521	1.87	0.31	1	3	---	---	---	---	---	1	24	29.00	1,202	1,168	2,370
Texas	24	2,967	2.68	0.80	29	200	0.14	0.72	1,716	0.86	1.53	12	148	55.65	7,204	15,160	22,364
Virginia	---	---	---	---	---	---	---	---	---	---	---	---	---	---	120	290	410
TOTAL	80	33,902	2.95	0.50	65	9,135	0.47	0.46	3,232	1.35	1.53	32	527	38.71	26,034	42,863	68,897

* Labor and Labor Foremen

Table VII

PERSONAL SERVICES EXPENDITURES FOR CDC ACTIVITIES

September 1946

ALLOCATION UNIT AND SYMBOL		COMMISSIONED PERSONNEL	PROF. & SCIENTIFIC	SUB-PROFESSIONAL	C. A. F.	CUSTODIAL	TEMPORARY	TOTAL
Alabama	01	$ 1,059.40	$ 812.88	$ 10,846.06	$ 1,137.24	$ 4,269.54	$ 35,003.57	$ 53,128.69
Arkansas	03	1,867.50	2,987.63	22,184.73	7,451.01	22,485.64	---	56,976.51
California	04	274.73	---	217.90	189.93	---	658.54	1,341.10
Florida	09	1,268.57	1,538.17	12,049.96	1,645.46	2,412.63	18,364.70	37,279.49
Georgia	10	3,173.72	3,406.34	13,089.53	1,816.89	1,085.66	10,863.87	33,436.01
Kentucky	16	249.00	1,385.01	889.41	1,096.52	---	4,357.21	7,977.15
Louisiana	17	1,385.75	2,283.02	13,396.75	2,907.88	5,004.52	18,023.28	43,001.20
Mississippi	23	2,392.41	1,395.26	6,305.35	1,383.63	207.30	26,910.38	38,594.33
Missouri	24	654.50	270.96	1,528.60	798.32	189.94	10,229.94	13,672.26
N. Carolina	32	1,037.50	1,624.44	1,848.60	1,430.28	2,672.59	9,419.18	18,032.59
Oklahoma	35	520.92	561.22	2,028.40	1,090.50	207.30	1,455.50	5,863.84
S. Carolina	39	317.00	2,268.54	15,311.62	1,747.00	2,131.63	13,511.01	35,286.80
Tennessee	41	735.50	1,233.36	3,488.65	670.12	1,753.62	6,992.87	14,874.12
Texas	42	2,172.00	4,537.12	15,495.76	2,104.68	3,194.41	25,035.68	52,539.65
Virginis	45	---	396.36	3,721.17	203.44	2,712.08	132.94	7,165.99
Other States & Dis.	76	2,328.00	894.88	106.54	923.33	---	2,665.33	6,918.08
Puerto Rico	50	2,175.28	326.64	828.66	1,054.48	237.42	6,372.10	10,994.58
Laboratories, Training and Other Direct Activities Conducted by CDC Headquarters (including Administrative and Executive Costs)		27,251.29	10,512.06	15,348.08	42,872.21	6,357.92	40,969.99	143,311.55
TOTAL		$48,863.07	$36,433.89	$138,685.77	$70,522.92	$54,922.20	$230,966.09	$580,393.94

Note: Includes regular payrolls for periods ended in September and supplemental or final payrolls processed under 1947 Fiscal Year appropriations during September, 1946.

Table VIII

PERSONAL SERVICES EXPENDITURES FOR CDC ACTIVITIES

October 1946

ALLOCATION UNIT AND SYMBOL		COMMISSIONED PERSONNEL	PROF. & SCIENTIFIC	SUB-PROFESSIONAL	C. A. F.	CUSTODIAL	TEMPORARY	TOTAL
Alabama	01	$ 1,070.20	$ 541.92	$ 7,624.59	$ 658.54	$ 2,397.19	$ 18,525.03	$ 30,817.47
Arkansas	03	1,904.70	3,130.28	18,771.58	7,572.44	12,360.86	---	43,739.86
California	04	84.54	---	435.80	379.86	---	1,317.08	2,217.28
Florida	09	693.30	2,565.44	14,826.99	2,474.99	3,577.54	14,200.77	38,339.03
Georgia	10	2,334.95	3,451.93	9,533.74	1,569.63	1,142.58	6,037.38	24,070.21
Kentucky	16	374.90	609.46	468.65	345.32	---	2,357.02	4,155.35
Louisiana	17	1,391.35	1,533.26	10,926.21	2,833.10	5,904.03	9,114.26	31,702.21
Mississippi	23	1,900.45	2,206.55	6,388.09	873.56	207.30	13,899.98	25,475.93
Missouri	24	656.60	270.96	1,376.62	798.32	356.72	8,581.08	12,040.30
N. Carolina	32	693.30	1,087.79	2,094.14	908.29	251.66	3,574.77	8,609.95
Oklahoma	35	845.25	561.22	958.42	1,637.88	207.30	1,725.01	5,935.08
S. Carolina	39	334.40	2,108.94	18,155.80	1,507.11	2,569.36	1,637.21	26,312.82
Tennessee	41	738.30	1,262.30	2,087.98	670.12	2,684.98	4,990.08	12,433.76
Texas	42	1,998.00	4,485.13	13,390.76	1,957.19	2,053.23	15,477.41	39,361.72
Virginia	45	---	594.54	949.48	203.44	899.34	233.86	2,870.66
Other States & Div.	76	2,337.80	788.34	543.37	363.72	59.55	1,593.46	5,686.24
Puerto Rico	50	1,888.05	326.64	932.90	1,054.48	237.42	6,497.51	10,937.00
Honolulu	51	---	---	---	---	---	113.10	113.10
Laboratories, Training and Other Direct Activities Conducted by CDC Headquarters (including Administrative and Executive Costs)		25,249.70	8,970.29	11,907.63	41,728.10	5,959.95	35,643.97	129,459.64
TOTAL		$44,495.79	$34,494.99	$121,372.75	$67,536.09	$40,869.01	$145,508.98	$454,277.61

Note: Includes regular payrolls for periods ended in October and supplemental or final payrolls processed under 1947 Fiscal Year appropriations during October, 1946.

Table IX

PERSONAL SERVICES EXPENDITURES FOR CDC ACTIVITIES

November 1946

ALLOCATION UNIT AND SYMBOL		COMMISSIONED PERSONNEL	PROF. & SCIENTIFIC	SUB-PROFESSIONAL	C. A. F.	CUSTODIAL	TEMPORARY	TOTAL
Alabama	01	$ 1,074.00	$ 541.92	$ 4,303.82	$ 658.54	$ 1,411.19	$ 6,807.34	$ 14,796.81
Arkansas	03	1,505.50	4,511.27	10,454.56	11,111.00	3,093.37	---	30,675.70
California	04	---	---	653.70	578.46	---	1,961.78	3,193.94
Florida	09	690.50	1,692.42	9,611.90	1,812.77	2,462.87	8,263.68	24,534.14
Georgia	10	1,958.00	3,098.64	7,258.38	1,653.01	1,090.74	4,002.79	19,061.56
Kentucky	16	373.50	609.46	413.40	255.01	---	765.82	2,417.19
Louisiana	17	1,385.75	1,538.08	4,363.32	1,681.50	1,879.20	2,430.36	13,278.21
Mississippi	23	1,892.75	754.58	3,564.81	1,310.34	310.95	3,615.87	11,449.30
Missouri	24	654.50	406.44	1,670.49	1,197.48	535.08	2,118.24	6,582.23
N. Carolina	32	690.50	1,092.62	1,343.65	943.46	251.66	1,949.72	6,271.61
Oklahoma	35	456.75	1,262.73	944.25	1,316.13	804.18	2,114.55	6,898.59
S. Carolina	39	327.00	3,163.41	12,113.54	2,265.00	2,058.37	1,911.05	21,838.37
Tennessee	41	735.50	1,286.41	1,934.04	670.12	725.16	1,696.18	7,047.41
Texas	42	1,867.50	6,530.35	19,517.65	3,190.25	8,637.58	9,920.35	49,663.68
Virginia	45	---	620.68	939.48	305.16	4,835.83	684.15	7,385.30
Other States & Dis.	76	2,328.00	669.33	---	650.82	94.97	975.13	4,718.25
Puerto Rico	50	1,543.18	489.96	2,234.13	1,904.35	356.13	9,605.96	16,133.71
Laboratories, Training and Other Direct Activities Conducted by CDC Headquarters (including Administrative and Executive Costs)		24,795.69	10,783.01	14,493.54	61,075.49	7,591.03	46,821.96	165,560.72
TOTAL		$42,278.62	$39,051.31	$95,814.66	$92,578.89	$36,138.31	$105,644.93	$411,506.72

Note: Includes regular payrolls for periods ended in November and supplemental or final payrolls processed under 1947 Fiscal Year appropriations during November, 1946.

Table X

PERSONAL SERVICES EXPENDITURES FOR CDC ACTIVITIES

December 1946

ALLOCATION UNIT AND SYMBOL		COMMISSIONED PERSONNEL	PROF. & SCIENTIFIC	SUB-PROFESSIONAL	C. A. F.	CUSTODIAL	TEMPORARY	TOTAL
Alabama	01	$ 1,078.20	$ 551.56	$ 3,311.35	$ 513.41	$ 714.85	$ 2,613.60	$ 8,782.97
Arkansas	03	1,511.10	3,017.46	5,834.04	7,398.59	1,603.41	---	19,364.60
California	04	---	217.90	217.90	385.64	---	580.52	1,401.96
Florida	09	693.30	1,852.02	7,527.50	1,815.66	1,301.76	4,160.60	17,350.84
Georgia	10	1,591.11	3,216.66	5,772.99	1,424.49	1,090.74	4,047.95	17,143.94
Kentucky	16	374.90	609.46	408.80	189.94	---	498.96	2,082.06
Louisiana	17	1,391.35	1,538.08	4,331.29	1,681.50	1,879.20	2,517.82	13,339.24
Mississippi	23	1,525.55	328.84	2,263.00	873.56	213.08	2,481.97	7,686.00
Missouri	24	374.90	270.96	1,113.66	798.32	606.90	1,412.16	4,576.90
N. Carolina	32	1,009.40	1,232.92	1,917.04	652.22	251.66	1,761.13	6,824.37
Oklahoma	35	458.85	841.82	677.82	877.42	---	1,374.66	4,230.57
S. Carolina	39	328.40	2,108.94	8,896.46	1,510.00	1,477.83	1,465.18	15,786.81
Tennessee	41	738.30	1,334.63	2,633.64	670.12	618.62	1,574.45	7,569.76
Texas	42	2,287.35	4,169.70	11,566.87	1,988.04	536.66	4,630.41	25,179.03
Virginia	45	---	454.26	464.74	203.44	889.95	424.30	2,436.69
Other States & Dis.	76	2,337.80	1,044.90	---	433.88	---	418.54*	3,398.04
Puerto Rico	50	1,520.14	163.32	427.81	609.70	118.71	3,728.05	6,567.73
Laboratories, Training and Other Direct Activities Conducted by CDC Headquarters (including Administrative and Executive Costs)		19,751.53	7,817.39	9,544.13	42,995.37	6,057.89	28,626.88	114,793.19
TOTAL		$36,972.18	$30,770.82	$66,909.04	$65,021.30	$17,361.26	$61,480.10	$278,514.70

Note: Includes regular payrolls for periods ended in December and supplemental or final payrolls processed under 1947 Fiscal Year appropriations during December, 1946.

* Credit balance due to current month adjustments to previous month expenditures.

Table XI

CDC OBLIGATIONS INCURRED BY MAJOR OBJECTIVE CLASSIFICATION

September 1946

	MALARIA	TYPHUS	DIARRHEAL	AEDES AEGYPTI	POLIO	ASSISTANCE TO STATES, GENERAL	TOTAL
01 Personal Services - C.S.Exp.	$1,288,696.87	$218,106.97	$19,383.94	$29,077.18	$18,235.66	$ 4,309.66	$1,577,810.28
01 Personal Services - Res.Off.	138,544.30	17,328.87	3,094.50	---	410.00	3,160.50	162,538.17
02 Travel	60,215.07*	5,369.44	---	---	---	2,461.05	68,045.56
03 Transporaation of Things	24,185.60	4,000.00	---	---	58.60	---	28,244.20
04 Communication Services	4,929.67	58.85	230.54	6.00	47.36	131.82	5,404.24
05 Rent and Utilities	18,312.49	139.27	---	10.00	27.67	---	18,489.43
07 Other Contractual Services	33,645.97	3,203.03	475.30	512.34	898.34	36.90	38,771.85
08 Supplies and Materials	516,910.30	41,784.19	18,771.13	1,475.91	28,090.73	1,293.30	608,325.56
09 Equipment	33,031.79	1,705.94	10.64	---	7,902.95	679.75	43,331.07
TOTAL	$2,118,472.06	$291,696.56	$41,966.05	$31,081.43	$55,671.28	$12,072.98	$2,550,960.36

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

Table XII

CDC OBLIGATIONS INCURRED BY MAJOR OBJECTIVE CLASSIFICATION

October 1946

	MALARIA	TYPHUS	DIARRHEAL	AEDES AEGYPTI	POLIO	ASSISTANCE TO STATES, GENERAL	TOTAL
01 Personal Services - C.S.Exp.	$1,564,604.98	$248,298.75	$21,779.48	$31.389.15	$25,014.85	$ 5,878.24	$1,896,965.45
01 Personal Services - Res.Off.	173,925.59	21,678.08	3,816.55	892.40	410.00	4,214.00	204,936.62
02 Travel	74,642.99*	7,633.21	---	---	---	4,293.77	86,569.97
03 Transportation of Things	24,160.60	5,000.00	---	---	32.48	---	29,193.08
04 Communication Services	6,815.10	87.39	269.68	7.21	183.71	230.37	7,593.46
05 Rent and Utilities	24,705.00	244.27	---.	20.00	42.73	---	25,012.00
07 Other Contractual Services	46,989.35	4,899.60	578.01	1,834.29	968.98	36.90	55,307.13
08 Supplies and Materials	930,750.87	46,028.90	19,036.92	1,979.69	27,994.82	1,381.44	1,027,172.64
09 Equipment	40,838.91	2,017.19	487.73	---	8,425.07	---	52,448.65
10 Lands and Buildings	2,392.00	---	1,196.00	---	2,392.00	---	5,980.00
TOTAL	$2,889,825.39	$335,887.39	$47,164.37	$36,122.74	$65,464.64	$16,714.47	$3,391,179.00

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

Table XIII

CDC OBLIGATIONS INCURRED BY MAJOR OBJECTIVE CLASSIFICATION

November 1946

	MALARIA	TYPHUS	DIARRHEAL	AEDES AEGYPTI	POLIO	ASSISTANCE TO STATES, GENERAL	TOTAL
01 Personal Services - C.S.Exp.	$1,822,739.22	$312,049.91	$34,020.16	$41,935.53	$29,081.16	$ 9,099.17	$2,248,925.15
01 Personal Services - Res.Off.	200,860.72	23,575.58	4,741.40	694.40	857.77	5,132.97	235,862.84
02 Travel	77,519.73*	12,617.46	---	---	---	4,893.45	95,030.64
03 Transportation of Things	31,320.77	6,100.00	---	----	37.48	150.00	37,608.25
04 Communication Services	7,974.54	118.24	326.33	7.57	219.66	362.90	9,009.24
05 Rent and Utilities	32,044.39	269.70	---	20.00	60.55	---	32,394.64
07 Other Contractual Services	57,979.90	6,306.77	721.50	1,916.63	1,798.94	36.90	68,760.64
08 Supplies and Materials	622,978.01	51,979.03	19,416.93	2,296.29	29,318.37	1,526.49	727,515.12
09 Equipment	48,096.21	2,822.12	488.93	---	10,963.93	1,149.98	63,521.17
10 Lands and Buildings	2,392.00	---	1,196.00	---	2,392.00	---	5,980.00
TOTAL	$2,903,905.49	$415,838.81	$60,911.25	$46,870.42	$74,729.86	$22,351.86	$3,524,607.69

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

TABLE XIV

CDC Larvicide, Minor and Major Drainage Work

AUGUST 24, - OCTOBER 4, 1946

STATE	Areas in Operation	RESIDUAL SPRAYING		LARVICIDAL WORK						DRAINAGE OPERATIONS							
				LARVICIDE USED			SURFACES TREATED ACRES					NEW DITCHING					
		Number Houses Sprayed	Pounds DDT Used	Oil Gals.	Paris Green Lbs.	Other Gals.	Oiled	Dusted	Other	Clearing Acres	Cleaning Lin.Ft.	Hand	Lin.Ft. Mach.	Dynamite	Total C.Y.	Water Surf. Eliminated Acres	Total Man Hours
Alabama	12	21,542	18,039	440	---	---	12	----	---	---	14,900	---	---	---	---	---	33,147
Arkansas	26	15,098	6,403	7,128	22	4,064	384	16	1,339	40	5,475	---	---	1,100	2,933	---	34,797
California	2	---	---	1,203	---	110	102	---	52	---	---	---	---	---	---	---	1,608
Florida	9	8,269	5,252	1,303	54	355	40	26	13	5	58,686	---	---	---	---	---	18,552
Georgia	19	20,824	16,463	---	140	---	---	132	---	2	---	390	---	---	48	---	13,292
Kentucky	3	2,279	876	---	---	13	---	---	13	---	---	---	---	---	---	---	2,910
Louisiana	8	12,461	9,366	9,562	---	45	406	---	8	7	17,100	---	---	---	---	---	21,855
Mississippi	15	30,254	15,528	---	---	---	---	---	---	---	---	---	---	---	---	---	35,338
Missouri	7	9,944	4,782	---	1,006	304	---	810	113	---	---	---	---	---	---	---	14,092
North Carolina	5	6,797	4,692	---	---	---	---	---	---	---	---	---	---	---	---	---	7,735
Oklahoma	6	7,172	7,184	636	39	---	30	17	---	---	---	---	---	---	---	---	2,929
Puerto Rico	6	---	---	2,177	3,814	195	217	3,055	63	7	46,981	2,600	---	---	100	---	26,619
South Carolina	23	6,132	4,373	---	---	---	---	---	---	1	24,120	---	---	---	---	---	13,928
Tennessee	4	2,877	2,170	---	---	8,562	---	---	756	2	2,280	---	---	---	---	---	11,736
Texas	28	11,802	9,090	234	214	2,051	15	97	148	---	300	---	---	---	---	---	25,078
Virginia	2	---	---	2,245	215	12	52	149	5	4	5,250	450	---	---	23	---	3,191
Total	175	155,451	104,218	24,928	5,504	15,711	1,258	4,302	2,510	68	175,092	3,440	---	1,100	3,104	---	266,807
Total 7/26 - 8/24	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