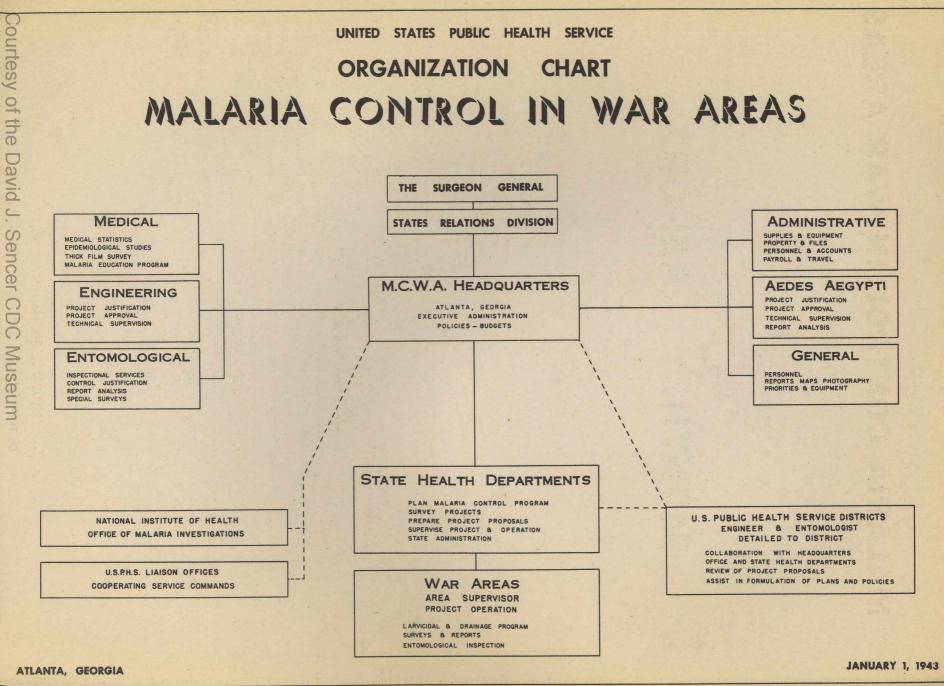
MALARIA CONTROL IN WAR AREAS

MONTHLY REPORT

DECEMBER, 1942



FEDERAL SECURITY AGENCY U. S. PUBLIC HEALTH SERVICE Courtesy of the David J. Sencer ATLANTAS GEORGIA



MONTHLY REPORT Malaria Control in War Areas December 1942

SYLLABUS

Winter temperatures reduced anopheline breeding sufficiently in December to permit discontinuance of larvicidal work in all except 20 areas located in Louisiana, Texas and Puerto Rico. Larvicidal oil and Paris green consumptions in December were only 15% and 38% respectively as much as in September when the larvicidal program was at its height. Minor drainage, clearing and channel cleaning operations continued in 104 areas.

There was a sharp increase in the number of major drainage projects during December. Of the 37 projects in operation, 15 were new projects, 14 were begun in November and 8 started in October. Dynamiting for major drainage is used extensively and its use is expected to increase still further as additional projects are started. Termination of the Work Projects Administration on or shortly after February 1, 1943, will make it necessary for the MCWA program to assume responsibility for continuation of certain major drainage projects adjacent to military establishments which are now operating with W. P. A. facilities.

The malaria survey work continued; a total of 19,756 thick film blood slides were stained and some 3,647 slides were examined, but as yet the results of the examinations have not been correlated with data on environmental and other factors influencing malaria transmission.

The educational program began to take definite form. At a conference held this month, plans were projected for the organization of units of visual education materials on malaria and yellow fever to be used in personnel training. Also, work was begun on a series of special reports dealing with medical subjects of importance to the MCWA program.

Acdes acgypti control was extended this month to include San Benito, Texas, operating under the Brownsville unit, and five special areas in the vicinity of Miami, Florida. As cooler weather almost eliminated outdoor breeding of Acdes acgypti in Texas, the crews spent the greater part of December doing indoor inspectional work and making surveys to locate permanent "mother foci" breeders. In Houston, Texas, 100 cisterns were sealed with concrete at an average cost for materials of 35¢ per cistern.

About \$411,195. of Public Health Service funds were encumbered during December, of which about 90% was for personal services.

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	TABLE I
	MALARIA CONTROL IN WAR AREAS
USPHS	LARVICIDE AND MINOR DRAINAGE PROJECTS
	DECEMBER 1 - 31, 1942

				L'HL & HAS	DECEMBER 1	- 21, 1744	13	No. 1	and the second second	
STATE	Areas	War Estab-		and the second	LARVICIDAL WORK	Σ	ant de	OTHER WORK	Same Service	TOTAL
in Opera- tion		lish- ments	Lonvic	ide Used	Surface	es Treated	Ditching &	Clea	Man	
		Pro- tected	Oil Gals.	Paris Green Lbs.	Ditches Lin.Ft.	Ponds Sq.Ft.	Cleaning Lin.Ft.	Ditches Lin.Ft.	Ponds Sq.Ft.	Hours
Alabama Arkansas California D. C. Florida	3 11 2 1 9	25 36 17 58	1,867	 137	1,200	12,900 8,162,080	8,840 58,451 1,500 23,738 120,674	13,750 9,913 26,352 32,605	15,200 3,737,870 546,274 677,755	2,922 22,649 2,484 3,960 30,085
Georgia Illinois Indiana Kentucky Louisiana	10 1 1 1 10	57 10 16 12	33,631	16 229	5,240 772,005	196,446 107,075,542	39,627 2,300 214,856	15,550 232,950	1,561,282 21,44,177 80,098 2,295 4,865,008	18,323 1,200 828 4,412 69,845
Maryland Mississippi Missouri North Carolina Oklahoma	N OF ON	79 148 10	=		=		16,310 25,020 2,885 59,569 79,985	13,075 18,305 23,085	120,900 1,574,925 291,440 538,080 2,206,291	4,084 12,012 3,560 18,613 3,792
Puerto Rico South Carolina Tennessee Texas	6 38 14-4	17 43 40 153 21	1,660	7,244 40	3,465,110	201,219,666	364,601 155,662 103,618 376,258 35,606	152,882 51,364 8,175 199,440 648,858	728,042 6,396,028 3,392,186 975,060	59,059 14,212 10,879 49,130 14,786
Virginia	104	631	52,882	7,666	5,127,320	325,299,966	1,689,500	1,446,304	27,952,851	346,835
10000					C. Sandar	an at the	marte M.	here with any	and all see	had
DE BELLEMAN	A CONTRACTOR		179 - 25 M		JULY 1 - DEC	CEMBER 31, 1942	1	Same - Carry	Contraction of the	11 = 0=
Alabama Arkansas California D. C.			11,503 31,304 8,562 1,750 35,493	5,246	141,970 11,258,231 104,510 159,611 3,207,982	18,824,750 241,306,269 6,686,025 522,366 353,657,228	114,696 535,376 155,634 59,360 2,122,596	98,327 293,488 216,522 32,605 478,080	1,196,450 18,038,801 4,243,789 19,391 3,993,153	44,185 144,577 8,640 18,755 183,195
Florida Georgia Illinois Indiana Kentucky			263 7,339 3,088 23,524 616,356	9,282 1,291 2,294 6,498	3,403,936 1,449,125 69,000 1,758,275 71,790,905	423,931,605 17,483,716 4,212,825 83,781,011 1,433,734,846	546,924 6,305 890 20,034 326,377	583,238 11,655 170,978 146,140 766,983	16,068,575 3,202,811 975,829 2,781,902 4,747,785	115,877 15,753 11,297 43,058 407,587
Louisiana Maryland Mississippi Missouri North Carolina			45,395 8,992 88,578 15,237	10 596 164	7,922,247 196,765 19,312,320 743,217	10,501,519 45,225,369 87,285,069 38,327,446	57,367 445,229 29,605 1,397,346 173,915	58,418 1,068,418 114,275 3,168,378 233,815	321,700 13,417,241 2,449,931 11,839,271 5,180,237	9,292 112,498 31,722 162,125 40,179
Oklahoma	1	1.50	17,071	204		880 1.58 51.8	1,130,534	512,476	2,519,900	292,492

	2014	1 10			ŤA	BLE II				
Total		:	,392,725	83,021	195,575,397	4,493,228,565	12,200,422	20,971,323	2)4,204,11-5	-
Virginia			50,746	14,615	5,010,615				234,164,783	T
Puerto Rico South Carolina Tennessee Texas	=		6,895 175,673 49,224 212,803	34,594 3,597 75 2,210	15,578,669 19,045,270 6,786,714 27,634,035 5,010,615	889,458,548 399,082,317 59,106,585 317,870,756 62,230,315	1,130,534 2,602,343 271,554 1,872,619 331,718	512,476 2,767,029 138,727 1,592,201 8,519,572	88,933,363 8,042,103 39,333,381 4,859,170	A CALL
Oklahoma			15,237	164	743,217	20,721,440	-1)))-)	520 1.76	2,519,900	100

292,492 417,613 74,649 321,575 123,050

2,578,119

	TYPE OF PERSONNEL													
STATE	Commi No.	ssioned Pay	Prof No.	. & Sci. Pay	Sub-P	rof. (1) Pay	C. No.	A. F. Pay	Custo No.	odial Pay	Tota: No.	Pay	Percent No.	of Total Pay
Alabama Arkansas California D. C. Florida	1 1 1 2	161 285 285 492	55217	1,192 1,067 332 275 1,486	2 10 6 2 16	218 1,517 976 347 2,654	2422	243 562 362 345 617	96 141 11 16 168	9,203 14,009 1,622 1,715 17,358	106 161 21 22 196	11,017 17,140 3,292 2,967 22,607	3.1 4.8 0.6 5.8	3.0 4.8 0.9 0.8 6.2
Georgia Illinois Indiana Kentucky Lousiana	 1 5	143	5 3 1 4 10	933 550 275 808 2,075	25 4 7 31	4,044 617 1,031 4,610	41134	577 120 120 457 577	87 14 49 389	8,522 1,473 400 5,035 39,883	121 22 7 63 439	14,076 2,760 938 7,331 48,342	3.6 0.6 0.2 1.9 13.0	3.9 0.7 0.3 2.0 13.2
Maryland Mississippi Missouri North Carolina Oklahoma	2 1 1	667 172 144	14594	525 824 1,192 2,308 892	44595	450 2,140 783 1,512 728	2 2 1 3 1	337 337 120 1457 120	22 87 26 266 34	2,318 8,811 2,694 26,369 3,520	29 109 38 287 45	3,630 12,779 4,961 30,645 5,404	0.9 3.2 1.1 8.5 1.3	0.9 3.5 1.4 8.5 1.4
Puerto Rico South Carolina Tennessee Texas Virginia	1	300 219	36 4 11 3	* 1,242 917 2,628 800	9 28 7 35	* 4,764 1,142 6,487 767	73242	* 479 352 607 337	453 389 62 266 158	40,880 6,384 27,757 14,369	472 427 75 317 169	24,059 47,665 8,795 37,698 16,273	14.0 12.6 2.2 9.4 5.0	6.6 13.6 2.3 10.3 4.5
Aedes aegypti Florida South Carolina Texas	=		1 - <u>1</u> -	267 745	43 14 9	6,325 961 2,536 6,059	31	375 60 180 8,490	<u>31</u> <u>-</u> 6 8	3,422	78 15 20 144	10,389 1,021 4,131 25,843	2.3 0.4 0.6 4.3	2.7 0.3 1.2 7.0
H. Q. & Dist. (2) Total Percent of Total	26 43 1.5	8,482 12,547 3.7	11 109 3.2	2,033 23,366 3.9	33 324 9•5	50,668 14.9	124	16,231	2,783 82.2	780 237,194 69.7	3,383 100.0	364,063	100.0	100.0

MALARIA CONTROL IN WAR AREAS

NUMBER OF PERSONNEL ON DUTY ON DECEMBER 31, 1942 AND TOTAL PAYROLL FOR MONTH OF DECEMBER

* Figures not available
 (1) Includes Entomological Inspectors
 (2) Includes Headquarters and District offices, malaria survey, special investigations and employees temporarily attached to Headquarters pending assignment to States.

MONTHLY REPORT Malaria Control in War Areas December 1942

Cooler weather reduced anopheline breeding to a new low in December. By the end of the month, larviciding had ceased in all but 20 areas in Louisiana, Texas and Puerto Rico. Roughly 50,000 gallons of oil and 7,700 pounds of Paris green were used in December as compared with almost 150,000 gallons of oil and 19,000 pounds of Paris green used in November. Only 15% as much oil and 38% as much Paris green were used in December as in September when the larvicidal program was at its height.

The number of areas in operation decreased from 118 in November to 104 in December. Minor drainage continued throughout the month in all operating areas. Man hours used in larvicidal and minor drainage work were 10% less in December than in November. Table 1 shows data on the larvicidal-minor drainage program for the month and cumulative figures from July 1 to December 31. Table II shows data on the number of employees and the payroll for December.

Major Drainage - The number of major drainage projects almost doubled during December. Of the 37 in operation, 15 were new projects started during the month, 14 were projects begun in November and 8 were begun in October. Besides incidental clearing and cleaning, to date, over 173,270 linear feet of new ditch have been constructed and 258 acres of surface water eliminated. These accomplishments should effect a saving of some 130,000 gallons of oil and

	T		and the second se	and the second second	and the second se	and the second second	A CONTRACTOR OF THE CASE			
STATE	No. of Projects	Clearing Brushing Acres	Channel or Ditch Cleaning Lin.Ft.		New Ditching Lin.Ft. Cu.Yds.		Ditch Lining Sq.Ft. Lin.Ft.	Underground Drains Lin.Ft.	Water Sur Eliminate Acres	
Alabama Arkansas Illinois Indiana	4 1 2 1	3.0 5.78	200 7,160	11,194	4,424	75			5.0	12,044
Kentucky Mississippi Missouri North Carolina	2 3 1 4	•77 •04 54•6	 1,380 20,118	500 5,270 1,200 17,386	615 918 180 5,374	16 2,043 2,736	Ξ		1.55	16 2,764 4,170 1,589
Oklahoma Puerto Rico South Carolina	1 2 15	3.48 109.82	1,800 102,205	1,000 19,040	3,319				69.58	23,313 2,090 20,361 51,742
Total	37	177.79	132,863	57,150	15,345	4,983	1 × 1 × 1 × 1 × 1 × 1		109.93	120,742
10 . PJAD111	TOUCHD	STERN D	NORMON T	Jı	ly 1 - D	ecember 31	1, 1942			
Alabama Arkansas Illinois Indiana		16.95 10.6 13.0 0.3 •	3,800 8,815	34,652 140 1,940	21,882	1,175		=	26.1	67,935 3,661 4,020 16
Kentucky Mississippi Missouri North Carolina	Ξ	2.3 0.8 0.04 294.28	1,380 790,102	2,750 5,270 1,200 104,194	1,687 918 180 21,039	24 2,043 10,887		=	1.55 141,75	8,689 4,170 1,589 127,147
Oklahoma Puerto Rico South Carolina		4.4 128.02	1,105 2,600 114,266	1,600 21,780	121,727 5,913	133 336			67.85	4,146 22,007 64,246
Total	000	470.69	922,068	151,746	173,530	14,800			247.55	307,626

TABLE III MALARIA CONTROL IN WAR AREAS USPHS MAJOR DRAINAGE PROJECTS DECEMBER 1 - 31, 1942

8,125 man days of labor for larviciding each breeding season. Table III shows the progress of major drainage projects in December and presents cumulative figures on major drainage work from July 1 to December 31.

Thirteen major drainage project proposals from nine states, totaling \$153,803.00, were reviewed and approved this month. These December proposals brought the grand total of major drainage project proposals reviewed by the Headquarters Office to 58, with total costs estimated at \$965,323. By the end of January, major drainage operations will have progressed sufficiently to permit presentation of a detailed picture of field activities.

The use of dynamite in major drainage is increasing. In December, this office purchased 18,350 pounds of dynamite, totaling \$2,064.00 for use on projects in Arkansas, Kentucky, Missouri, North Carolina, South Carolina, and Virginia. The comparatively lower cost of dynamiting, especially the reduction in man power, recommends its more general use wherever conditions are favorable.

Major drainage projects now operating under W. P. A. will soon close, following the Presidential order terminating the Work Projects Administration on or shortly after February 1, 1943. At a joint conference in Atlanta, Georgia, attended by representatives of the W. P. A., the Fourth Service Command, and Headquarters office of MCWA, an agreement was reached whereby the Army would take over all malaria control activities conducted by W. P. A. inside military establishments while the Malaria Control in War Areas program would assume responsibility for continuation of such projects outside military establishments which can be approved under established policy.

Equipment - Lists of equipment needed for the 1943 larvicidal season were prepared and steps are being taken to procure these items. It was not possible last year to anticipate all equipment needs early enough to obtain field deliveries in time to meet all operational schedules. Priority restrictions severely delayed production on items requiring critical materials. An early start on next year's needs should prevent recurrence of similar troubles.

Each state participating in the Malaria Control in War Areas program has been requested to inform the Headquarters Office of all W. P. A. projects operating within its boundaries, together with a list of any equipment owned by the W. P. A. Efforts will be made to transfer available construction equipment which may be needed to this program.

In compliance with the requirements of the Office of Defense Transportation it has recently been necessary to secure a Master Certificate of War Necessity and in addition, a Fleet Unit Certificate of War Necessity covering the operation of each MCWA truck. The Fleet Unit Certificates have been distributed to the various trucks.

Changes in the system of gasoline rationing required new gasoline ration books for all Malaria Control in War Areas vehicles - "T" books for trucks and "C" books for passenger cars including station wagons. Since the Master Certificate of War Necessity for trucks is issued to the Headquarters office, all "T" ration books are secured by the Headquarters Office and distributed to the various State and District Offices.

Automotive equipment reports to the Office of Defense Transportation and the Office of Price Administration necessitate a Daily Car and Truck record for each vehicle. These reports include daily use of vehicle, miles travelled, passengers and equipment handled and related data. This requirement has added an additional heavy burden to project operation.

Approximately 500 vehicles (cars, trucks and station wagons) are now in use by Malaria Control in War Areas.

Personnel and Payroll - During the first six months of the Fiscal Year 1943, the number of employees on the program of Malaria Control in War Areas increased from about 2,600 on July 1 to 3,750 at the end of September and then declined to about 3,400 by the end of the calendar year. Turnover in personnel has been rapid; two people have been hired for every one still working.

In this period the establishment of an overtime pay bill by Congress, Victory tax deductions and War Bond deductions have changed the standard payroll forms and procedures considerably and have increased the work load on the administrative sections of both the State and Headquarters offices.

Approximately 2,500 employees of the Malaria Control in War Areas program are obtaining War Bonds through the payroll deduction plan. All records relating to the purchase of bonds are maintained by the Headquarters Office and the bonds are distributed through this office.

Blood Survey - Thick film slides collected in the several states during the fall months are being examined in the Memphis laboratory. In December 3,647 slides were examined. During the month 6,638 slides were stained in Memphis and 13,118 were stained in the North Carolina State Laboratory and forwarded to Memphis for examination.

Plans have expanded for the study of the epidemiology of malaria in the regions touched by MCWA. A detailed plan to correlate the thick film survey findings with social, economic and environmental factors has been made.

Educational Program - In December, a visual education conference was held to consider the sources and quality of available film materials on malaria and other mosquito-borne diseases. A survey was made of motion pictures; showings were given of each picture and discussions held concerning its merits. Plans were projected for the organization of units of visual educational materials on malaria and yellow fever for use primarily in training new MCWA personnel, but it is expected that such materials may have broader use in health education. The plans are therefore being made to coordinate this work with that of the Division of Sanitary Reports and Statistics.

Work was begun on a series of special reports dealing with medical subjects of importance in this program. The first of these will include: "Yellow Fever, with Special Reference to the Present Dangers in the United States", "Dengue Fever", and "Encephalomyelitis". These subjects will be treated particularly from the standpoint of their present menace in the United States and the relation of the MCWA program to them. A fourth subject is "The Measurement of Malaria in the United States, with Special Reference to the Use of Splenometry".

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Aedes aegypti Control - As cooler weather almost eliminated outdoor <u>Aedes aegypti breeding in Texas</u>, the units in each area were instructed to place primary emphasis on locating and eliminating interior hold-over breeding places and large permanent "mother foci". Newspaper publicity preceded the beginning of interior inspections of residences, in order to acquaint the public with the purpose of the visits. At each station some time was devoted to giving the inspectors detailed instructions in larvae identification.

The Brownsville unit of the dengue-yellow fever control program was extended to San Benito, Texas to protect a new Civilian Air Patrol Base. In Houston the file index of abandoned cisterns was completed and work was begun on sealing or otherwise mosquito-proofing them. By December 31, one hundred cisterns had been sealed with 2500 pound test concrete at an average cost for materials of 35¢ per cistern.

Before the end of the month, in Galveston, complete records had been secured on over 600 cisterns preparatory to mosquito-proofing. During the Christmas holidays inspections of the interiors of all Galveston schools revealed at least one neglected water container breeding <u>Aedes aegypti</u> in each building. In one school seven such containers were found. A survey was made of Corpus Christi cotton warehouses to locate fire barrels. The locations of over 14,000 barrels were recorded for future treatment with phenothiazine to prevent mosquito breeding.

The December general breeding index at Key West, Florida remained about stationary near the 2.93% level reached in November. Reductions in most of the inspection zones were not reflected in the city-wide figure because of certain troublesome high sections of the city. Five new special zones have been added to the Miami, Florida control area. These included Miami Beach, the City of Opa Locka and the areas adjacent to the Miami Municipal Airport, the Pan American Airport and the Eastern Air Lines Airport.

The Selective Service called the second and last entomologist assigned to the Charleston, South Carolina area since August. Control work continued on a routine basis under direction of the chief supervisor.

Expenditures - About \$411,200. of Public Health Service funds were encumbered during December. The approximate amounts are as follows:

.01	Personal Services	\$364,062
.02	Travel	14,278
	Transportation	41
.04	Communication Services	1,173
.05	Rents and Utility Services	1,334
.07	Other Contractual Services	8,750
.08	Supplies and Materials	17,697
.09	Equipment	3,860
	Total	\$411,195

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COMMUNITY EDUCATION FOR MALARIA CONTROL A Supplementary Malaria Control in War Areas Program

Soon after the beginning of the Malaria Control in War Areas program in the spring of last year, it became obvious that complete protection of troops and war workers could not be achieved by the program in those instances where the people spend a considerable portion of their time in uncontrolled malarious areas. Evening walks through rural areas five to ten miles from camp are common. Military personnel and war workers sometimes reside singly or in small groups at some distance from protected zones. The necessity for finding some method of reducing the endemic malaria reservoir in these broader areas led to the development of a program for Community Education in Malaria Control.

Plans for an experimental program for the 1942 season were prepared in collaboration with the Chief of the Field Activities in Health Education Unit of the Division of Sanitary Reports and Statistics. The plan adopted was presented to the State Health Officers of several states in a memorandum on May 30 for a program to go into effect two weeks later. Because of the necessary speed, the limitations of supervisory personnel and the experimental nature of the project, the program was limited to twenty-six counties in seven states.

Assistants in Health Education were employed for the counties where the program was undertaken - in most instances on the recommendation of the local Health Officer. The persons employed were principally school teachers who were unoccupied during the summer months. In selecting personnel, emphasis was placed upon a background of public relations and scientific training. The

RESULTS OF COMM PROGRA	UNITY EDUCATION M-1942
PEOPLE LEARNED ABOUT MALARIA	THEY DID SOMETHING ABOUT IT
MEETINGS 1,050 ATTENDANCE 38,648	HOUSES SCREENED 468
PERSONAL CONTACTS 10,487	HOUSES - SCREENS REPAIRED 1,529
DISPLAYS AND EXHIBITS 83	PONDS OR DITCHES CLEANED 139
RADIO PROGRAMS 63	PLACES SPRAYED, DUSTED, OR OILED 796

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twenty-six persons employed assembled in Memphis on June 16 for a ten-day intensive training course in malaria and in Techniques of Community Education. They were acquainted with effective methods for working with individuals and groups in their own communities to the end that the people of the community will face and study their own problems and find ways to solve these problems themselves.

The educators returned to their communities with a well-balances perspective regarding their own positions. The training they had received had convinced them that the subject was so broad that they could not possibly be experts after only two weeks exposure to it. They understood fully that their work would be directly under the County Health Officer in each instance and they would be members of his staff subject to his direction. They would have the advantage of continued advice and consultations from Health Education Supervisors. The administrative relationships of these health educators is indicated on the chart on the inside cover. The counties in which the program was conducted are shown on the map on the back cover.

The results of the program justified the earlier hope that some definite and tangible results would be visible. A summary of the incompletely reported results appears in the table at the bottom of Page 7. The present low malaria rates and the inadequacy of the available methods for measuring malariousness make it impossible to state in terms of malaria incidence just how effective this supplemental educational program was in reducing the endemic malaria reservoir in war areas around which it operated. However, since the procedures which are being used in attacking the insect vector on the regular program are effective, it is safe to conclude that the results of this program, which achieved similar action in areas outside the one-mile control zones, will contribute materially to decreasing the opportunity for infection of war-connected personnel whose protection is the objective of the Malaria Control in War Areas program.

The significance of the contributions made by the educational program reach beyond the immediate observable effects. A firmer entrenchment of the position of the County Health Department; a greater spirit of cooperation between the school and the health department and the inevitable carry-over of the program into the schools by the teachers when they return to their regular work; the effect of this program on establishing comprehensive health education programs in several health departments and many school systems; the demonstration of what can be done in health education in counties with a small budget; the stimulation of people to face their own problems and do something about them themselves; the increased likelihood that local groups will continue malaria control programs after emergency funds are withdrawn; and the successful demonstration of democracy at work in the realm of communities facing their health problems, are contributions which in broad perspective may be as important as the direct contribution which has been made to malaria control efforts.

With one or two exceptions, the State and County health officials were not only pleased but enthusiastic with the results of this program. These results indicate the advisability of carrying on the program in all the war areas where malaria control projects are operated during the next season. The first season's small scale experiment having proved so successful, the educational program will be expanded to become a standard part of the attack on the malaria problem by the Malaria Control in War Areas program.

