tages and applications of resonance is inadequately illustrated, and does not replace the idea of mesomerism by the more general conceptual scheme of resonance.

Somewhat surprising is the omission of the few principles delineating the characteristics and generalizing the behavior of carbonium ion intermediates. Some of the reactions, intelligent understanding of which is made difficult by the omission, are the Wagner-Meerwein rearrangement, the reaction of diazomethane with ketones, the reaction of nitrous acid with primary amines and the Friedel-Crafts reaction. Among other important topics not treated is the work of Lucas and Winstein in which they produce convincing evidence for the bromonium ion intermediate, important in the displacement reaction and mechanism of addition to olefins.

There is at present no single book fulfilling the requirement of organic chemists and since many subjects are well discussed and comprehensively reviewed in Professor Remick's book alone, it is another work of circumscribed organic applicability which will be useful for chemists seriously interested in studying modern theories of organic chemistry.

WM. VON E. DOERING
COLUMBIA UNIVERSITY

REPORTS

WARTIME HEALTH AND EDUCATION[1]

THE decisive contribution of science and technology to the winning of the war is recognized by all. The maximum contribution of science is equally essential in the postwar development of America. A nation free from fear and free from want, a nation which guarantees to its citizens a Bill of Economic Rights, is possible only with continued scientific research and development.

Scientific workers are as widely varied in economic status as the workers in any other field. The term "scientist" describes the $25,000-a-year director of an industrial laboratory as well as the $1,500-a-year laboratory worker in a hospital or school. There has been great variability moreover in wartime changes in the salaries of scientists. Many workers in the field of physics have left their jobs to go into war work, often at a considerably higher salary. But in government and academic science, particularly in the biological branches, scientists have in most cases remained at their pre-war positions, with rigidly fixed pre-war salaries.

It is unfortunate that no adequate data are available on the economic status of scientists; but from the meager information at hand, one can safely conclude that large numbers of American scientists are receiving salaries in the neighborhood of $150–$200 a month, or between $35 and $50 a week.

Even where salaries have increased in the course of the present war, they have been largely offset by increased taxation and the rise in the cost of living. All scientists—not only those in the lower income groups—have a great stake in the quick institution of the complete stabilization program proposed by President Roosevelt. Unless the current trend to inflation is halted, the scientist, along with all other professionals, will be faced with a serious situation which is bound to reduce the effectiveness of his contribution to the nation.

A wartime problem which many scientists face is that of the difficult living conditions in "war-boom" communities. Many scientists from distant parts of the country have been brought to communities where living costs have risen far more than for the country as a whole and where housing facilities are wholly inadequate to meet the new demands.

Scientists, perhaps more than most professional and white collar workers, are involved in war work for which they are paid, directly or indirectly by the Federal Government through such agencies as the Office of Scientific Research and Development and the National Defense Research Council. Unless a proper plan of action is followed by the Federal Government in turning from the wartime to a peacetime economy, there will be disastrous economic dislocations among scientific workers after the war. This would be both a personal and national calamity. As has already been indicated, the maximum contribution of all scientists is as essential to the welfare of the people after victory as it is now.

The American Association of Scientific Workers suggests the following steps, which would help to avert such economic dislocation:

(1) Continuation and expansion of governmental financing of scientific research, through subsidies to universities and other academic institutions as well as through the expansion of the government's scientific and technical agencies. Only by such governmental action can the full scientific skills developed during the course of the war be used.

(2) Continue the activities of the National Roster of Scientific and Specialized Personnel, with increased possibilities of functioning in a broader way, in the selection and placement of scientific personnel after the war.

(3) Those scientists who have left their homes to do

[1] Summary of statement presented to Senate Sub-committee on Wartime Health and Education on January 27, 1944, by Dr. Kirtley F. Mather, president of the American Association of Scientific Workers.

war work in some other part of the country and who wish to return to their original jobs and homes should be considered as drafted men and women returning from service to their country. Every effort should be exerted to make their former jobs available to them. They should be furnished with severance pay sufficient to get them back to their homes and over the initial hard times. This is just as much a national responsibility as that recognized in giving "mustering-out pay" to members of the armed forces.

SPECIAL ARTICLES

CHEMOTHERAPY OF FILARIASIS IN THE COTTON RAT BY ADMINISTRATION OF NEOSTAM

FLORIDA cotton rats are frequently infected with a filarial worm, *Litmosoides carinii*. The adult parasites dwell in the pleural space and microfilariae occur constantly in the peripheral blood of the rats. Since infected animals can be readily procured and since the infection bears some similarity to certain of the human filarial diseases, the cotton rat filariasis appears to supply a much-needed means of testing drugs for potential activity in the treatment or prophylaxis of human filariasis.

Several drugs have been tested in this laboratory for therapeutic action in the cotton rat infection. Among these, neostam (stibamine glucoside, Burroughs Wellcome and Co.) has given particularly favorable results. The adult filarial worms have been killed after a few doses of this drug and gradually thereafter microfilariae have disappeared from the peripheral blood of treated animals.

In Table 1 are given data on ten treated and two control untreated cotton rats. Four doses of neostam, each of from 40 to 60 mgm, were administered intramuscularly to the animals every week until autopsy and microfilaria counts on the tail blood were made almost every day. The animals were autopsied after the intervals indicated in the table and searched for adult worms. In the treated rats presented in the table, in which the microfilaria count finally reached zero, every adult worm was dead when recovered at autopsy. Usually the adult worms from the treated rats were found massed together, often completely enveloped by inflammatory exudate. In other treated rats, besides those shown in the table, which were autopsied before all microfilariae disappeared from the peripheral blood, the adult worms were likewise dead and enveloped by exudate, in some animals after as brief a time as eleven days from the beginning of treatment. It appears from these data that the repeated injection of neostam has resulted in the cure of filariasis in the cotton rat and, since the drug is well tolerated by man in comparatively large doses,[1] its trial in human cases of filariasis seems to be indicated.

TABLE 1

EFFECT OF NEOSTAM ON THE FILARIAL WORM LITOMOSOIDES CARINII IN COTTON RATS

Cotton rat No.	Microfilariae counted in 100 microscope fields × 430 on designated days											Adult worms recovered at autopsy†
	Before treatment	After treatment										
		1	7	14	21	28	35	42	49	56	64	
1	136	94	100	52	20	28	16	7	5	2	0*	40 to 50; dead; matted together.
2	44	0	4	3	5	5	1	3	1	0*		5 to 10; dead; enveloped by exudate.
3	50	28	32	22	24	28	4	1	3	1	0*	10; dead; matted together.
4	4	4	0	0	0	0	0*					1; dead.
5	12	10	0	0	0	0	0*					10; dead; enveloped by exudate.
6	92	62	92	70	38	7	6	6	0	3	0*	50; dead; some matted together.
7	180	152	230	84	16	64	8	3	2	1	0*	50; dead; matted together.
8	92	72	16	4	0	0	0*					25; dead; enveloped by exudate.
9	124	44	56	0	0	0*						20; dead; enveloped by exudate.
10	108	96	116	62	26	5	0*					40; dead; some matted together.
11 (Control)	16	18	36	12	24	20	10	38	48	42	52*	8; living; freely moving.
12 (Control)	252	232	232	176	110	192	90	176	136	186	198*	50; living; freely moving.

* Day of autopsy.
† When worms are matted together, numbers are approximated.
Schedule of treatment: Rats 1 through 7: 40 mgm; Rats 8 through 10; 60 mgm } 4 times weekly until autopsy.
Rats 11 and 12: Untreated controls.

JAMES T. CULBERTSON
HARRY M. ROSE
DEPARTMENTS OF BACTERIOLOGY AND MEDICINE,
COLLEGE OF PHYSICIANS AND SURGEONS,
COLUMBIA UNIVERSITY

THE ROLE OF CALCIUM IN CARCINOGENESIS

IN a comprehensive review on the role of the fixed bases in cancer, Shear[1] pointed out that "much con-

[1] L. E. Napier, *Indian Jour. Med. Res.*, 16: 911, 1929.
[1] M. J. Shear, *Am. Jour. Cancer*, 18: 924, 1933.