Group IV: Given same mixture as other groups with addition of greens, two animals depilated and given 5.5 lithopone units every other day, other three not radiated. This group showed very clearly that, on a normal diet, ultraviolet light did not hinder growth.

Groups I, II and III gave almost identical results. After the eleventh day there was a rapid loss of weight at exactly the same rate in all three groups. Only one or two animals, however, showed any sign of diarrhea. The results plotted in Fig. 2 (A) show conclusively that on this diet, as on the two preceding ones, ultraviolet light had no effect in preventing or postponing scurvy and sunlight seemed equally ineffectual.

The autopsies showed the same lesions as in the previous experiments. The recovery curves of the three animals left in group I and the two left in each of groups II and III, after the addition of orange and cabbage to the diet, are given in Fig. 2 (B), groups II and III being radiated as before. All three groups recovered at approximately the same rate so that after the production of scurvy on this diet subsequent radiation with ultraviolet light did not prevent recovery. This may have been due to the better diet but may also have been due to the fact that less radiation was given than before.

CONCLUSIONS

Three experiments with different scorbutic diets showed that ultraviolet radiation is entirely ineffectual in preventing or postponing scurvy. With diets in which other factors, besides the scorbutic vitamin, were lacking, ultraviolet light hastened loss of weight and death from scurvy somewhat and prevented recovery after orange and cabbage were added to the diet. This, however, was not true when a diet lacking only in the antiscorbutic vitamin was used.

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EFFECTIVE DUST TREATMENTS FOR THE CONTROL OF SMUT OF OATS

THE use of copper dusts for the control of certain smuts of cereals has received considerable atttention by investigators in America during the past four or five years. The report of Darnell-Smith, of Australia, in 1919 provided the stimulus for a change of the trend of research in this connection, by diverting attention from the sprinkling and soaking methods previously employed, to the use of dusts. This form of treatment presents a new idea in seed disinfection. By the use of a weak, slowly available fungicide, infection is prevented coincident with the germination of the grain in the soil, yet by reason of the low solubility of the chemicals used, the seed is not likely to be injured.

Most effective and consistent results have been obtained in the control of covered smut of wheat with copper carbonate. In the case of covered and loose smuts of oats, results have been variable. While copper and nickel compounds used as dusts have greatly reduced the amount of smut in nearly all instances, their fungicidal efficiency has not been sufficient to provide commercial control and to merit general recommendations.

After three years of trial in Ohio, no copper or nickel compound used alone as a dust has been found adequate for the control of oats smut. On the other hand, when combined with mercuric chloride the mixture proved to possess a fungicidal value which compared very favorably with formaldehyde.

In treating grain it is not only desirable that the fungicide used should be effective for the control of smut, but also that the germination of the seed should be stimulated or, at least, not impaired. The data presented in the table indicate that with the copper and nickel compounds combined with mercuric chloride there was marked stimulation in the germination of the grain. This is not apparent in the plots treated with formaldehyde.

In the preliminary tests one part of the copper or nickel salt and two parts by weight of mercuric chloride were thoroughly mixed and ground together. This mixture was used at the rate of three ounces per bushel for treating grain. The mercuric chloride, when used alone, was found to have very poor adhesive properties; also, because of its high comparative cost and extreme degree of toxicity, it would be less desirable than when used with some other compound which would serve as a carrier. The basic idea involved is to add just enough of the mercuric chloride to the copper or nickel salt that the fungicidal value of the mixture may be raised to the required efficiency for oats smut control. Further trials will be necessary to more accurately determine the minimum amount of the salts that may be effectively

RESULTS OF SEED TREATMENTS

The table gives in the first column the per cent. of smut; in the second the per cent. stand on basis of check, and in the third the per cent. of gain or loss due to treatment

Check	32.	100.	—32.
Formaldehyde sprinkling method	00.	87.5	—12.5
Formaldehyde diluted 1-1 with water	.01	97,2	— 2.7
Formaldehyde dry diluted 1-10 with water.	.007	94.2	— 5.7
Copper carbonate	4.6	105.3	+ .7
Copper carbonate plus mercuric chloride.	.05	101.5	+1.45
Copper sulphate (not anhydrous)	11.4	102.0	— 9.4
Copper sulphate plus mercuric chloride...	.7	112.7	+12.0
Nickel carbonate	3.6	100.7	— 2.9
Nickel carbonate plus mercuric chloride..	.5	111.1	+10.6
Copper acetate	8.0	107.0	— 1.0
Copper acetate plus mercuric chloride...	.5	116.0	+15.5

employed, also with the end in view of reducing the cost of the mixture.

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THE GEORGIA ACADEMY OF SCIENCE

THE Georgia Academy of Science held its third annual meeting on November 21 and 22 at Emory University. Officers for the ensuing year were elected as follows: L. L. Hendren, University of Georgia, *president;* G. H. Boggs, Georgia School of Technology, *vice-president;* Henry Fox, *secretary-treasurer.* The following persons were elected members of the executive council: C. R. Fountain, Mercer University; N. P. Pratt, Citizens and Southern Bank, Atlanta, and R. P. Stephens, University of Georgia.

The following minute was adopted and ordered to be entered on the records of the academy:

Dr. William Henry Emerson, dean and professor of chemistry in the Georgia School of Technology, and charter-member of the Georgia Academy of Science, died on Thursday, November 13, 1924, in the sixty-fifth year of his age.

Dr. Emerson was a distinguished chemist, an energetic and laborious investigator and an inspiring and successful teacher. A modest, gentle and lovable personality he won and held the respect and affection of all with whom he was associated.

In his death science has lost a brilliant votary, the state a most valuable citizen, the School of Technology a loyal and devoted officer and administrator, and the Academy of Science an honored and beloved member.

This minute is inscribed in token of the admiration and esteem entertained by the members of the academy for Dr. Emerson and of the great sorrow occasioned them by his death.

The following persons were unanimously elected members of the academy: Dr. George Bachmann, professor of physiology, Emory University; Dr. E. R. Clark, professor of anatomy, University of Georgia Medical School; Dr. M. P. Jarnagin, professor of animal husbandry, State College of Agriculture; Mr. R. D. Kneale, chief engineer, S. E. Findley Co.; Dr. Edwin Linton, professor of parasitology, University of Georgia Medical School; Dr. Mary S. MacDougall, professor of biology, Agnes Scott College; Dr. J. L. McGhee, professor of chemistry, Emory University, and Dr. J. F. Messick, professor of mathematics, Emory University.

The following papers were presented at the meetings:

Some additional evidence of the interference principle in osmosis: J. L. MCGHEE.

Selection in castor beans: T. H. MCHATTON.

Some new organic fluorides: O. R. QUAYLE. (Introduced by J. S. GUY).

Two troublesome fungi: E. S. HEATH.

Stone Mountain flora: E. S. HEATH.

Determinism, mechanism and freedom of the will: A. S. EDWARDS.

Recent discoveries in archeology: W. A. SHELTON. (Read by title.)

Porocephalus cordeli. A new species of Lingualid from Georgia: JOSEPH KRAFKA, JR. (Read by title.)

Illustrated talk on Stone Mountain: S. W. MCCALLIE.

Tetraploidy: MARY S. MACDOUGALL.

The relation of the vagus nerves to the atrio-ventricular nodes: GEORGE BACHMANN.

History of science in Georgia: R. P. STEPHENS.

Absorption spectra of solutions: J. S. GUY.

Types of mathematical relations as they occur in general physics: L. L. HENDREN.

The Lewis-Langmuir structure of the atom applied to complex compounds: C. J. BROCKMAN. (Introduced by R. P. STEPHENS.)

A study of certain factors involved in the course of laboratory infections with Plasmodium praecox: G. H. BOYD. (Introduced by R. C. RHODES.)

Treatment of malaria in birds: G. H. BOYD.

HENRY FOX,
Secretary

BIOLOGICAL MEETING AT RIVERSIDE, CALIFORNIA

A JOINT meeting of the San Jacinto Section of the Western Society of Naturalists and the Synapsis Club of the Citrus Experiment Station of Riverside was held on October 31 and November 1. On the first day of the meeting President H. S. Foster presided at the reading of the following papers:

Afferent and efferent pathways in the nervous system: DR. W. A. HILTON, Pomona College.

Remarks concerning Pacific plankton diatoms of tropical and temperate waters: W. E. ALLEN, Scripps Institute for Biological Research, La Jolla, Calif.

Chromosomes of Citrus: Illustrated with lantern. DR. H. B. FROST, Citrus Experiment Station, Riverside, Calif.

A recent collecting trip in Florida and Alabama: Illustrated with lantern. DR. F. B. SUMNER, Scripps Institute for Biological Research, La Jolla, Calif.

A sphinx among fishes: O. D. HOWARD, University of Southern California.

The first day's meeting was held in the science lecture room of the University of California, Southern Branch.

On November 1, the societies met at 10 A. M. for a field trip to Del Rey in charge of Dr. Loye Miller, of the University of California, Southern Branch, to study marsh, sand dune and beach life.

The officers elected for the following year were: *President,* Dr. O. L. Sponsler, University of California, Southern Branch; *Secretary-treasurer,* Dr. W. A. Hilton, Pomona College.