rabies infection of wild and domestic animals that is in danger of becoming wide-spread in the far west. The fact that the extensive dissemination of the disease is taking place through the agency of coyotes makes the situation a difficult one to meet. Outbreaks of rabies among coyotes have been noted from time to time for several years in parts of Washington, Oregon and northern Idaho, and the Forest Service undertook last year to aid in bringing the disease under control by employing hunters to make war on coyotes in the National Forests of some infected localities. Since, however, the coyotes breed in the foothills and around the outskirts of the forests, a more comprehensive campaign is called for. The eradication of coyotes in sparsely settled or rough country is said to be an exceedingly difficult task. Inasmuch as these animals are always a source of considerable losses to the livestock industry of the west, congress last year provided a special fund of $125,000 to be spent by the Biological Survey for the eradication of predatory animals both in the national forests and on the public domain, and from this fund a special allotment has now been made to provide for fighting the rabies. The disease first appeared in parts of eastern Oregon and Washington and northern Idaho, in a region surrounded by natural barriers which tended to confine the outbreak. Domestic animals and human beings were bitten, and a good deal of alarm was manifested by residents of the infected districts, many of whom feared for the safety of their children on the roads to and from school. The disease is now reported as having extended into northern Nevada and northern California, whence it may easily be carried far. The Forest Service, the Biological Survey and the State Board of Health are working together to meet the situation in California. Modoc and Lassen counties have been put under quarantine by the state board, which has appointed forest rangers inspectors in Modoc County. Funds have been provided by the Biological Survey for the employment of additional men and the purchase of traps and poison. The public will be enlisted in the campaign, which will be led by the Biological Survey officials and the forest rangers.

## UNIVERSITY AND EDUCATIONAL NEWS

WESTERN RESERVE UNIVERSITY has purchased twelve acres of land adjoining its present site and increasing it from 23 to 35 acres. The amount paid for the land is not made public, but the tax valuation is $230,000.

FOUR business men of Portland have contributed $25,000 toward the new buildings for the Medical Department of the University of Oregon, Portland. This makes available the $50,000 appropriated by the state. The officers of the college now propose to raise an additional $100,000.

OVER $3,500 worth of chemicals, scientific glassware and other laboratory supplies ordered by the University of Washington from Germany a year ago, but held up at Rotterdam, will shortly reach this country. The British embassy has advised government officials that importation will not be prevented any longer.

A RECENT fire is said to have caused $50,000 damage to the Havemeyer chemical laboratory of New York University.

DR. OWEN L. SHINN, professor of chemistry in the University of Pennsylvania, has been appointed director of the university summer school.

THE following new appointments have been made in the Western Reserve Medical School: Dr. J. Rogoff, formerly of the department of physiology and pharmacology, Vanderbilt Medical School, Nashville, to be instructor in experimental medicine; Dr. C. H. Fiske, formerly assistant in biological chemistry, Harvard Medical School, to be associate in biochemistry; Dr. R. W. Scott, formerly demonstrator of medicine, Western Reserve University, to be instructor in physiology.

## DISCUSSION AND CORRESPONDENCE

### THE DETERMINATION OF NITRATES IN SOILS

IN the June number of the *Journal of Industrial and Engineering Chemistry* appeared an interesting article by E. R. Allen, of the Ohio Agricultural Experiment Station, en-

titled, "The Determination of Nitric Nitrogen in Soils," in which several of the older methods for determining this elusive radical received extended and probably deserved criticism.

Among those receiving its full share was the aluminum reduction method proposed by the writer a little over two years ago. The title of the article proclaiming this method was, "The Aluminum Reduction Method as applied to the Determination of Nitrates in 'Alkali' Soils." It was at that time put forward by the writer, not as the best possible method that the future might develop for this purpose, but as one which, in the presence of the soluble chlorides, sulfates and carbonates abounding in the "alkali" soils of the arid west, would give far more reliable results than the phenol disulfonic acid method of Gill then commonly used in soil work. Comparisons with this latter method are given. Another reason for developing the method in question was to accurately determine nitrates in nitrification cultures in soils containing one or more of the "alkali" salts. Occasionally large amounts of nitrates are here encountered, and, as was shown, when more than twenty or twenty-five milligrams of nitrogen as nitrate are present, the colorimetric method previously mentioned is of questionable value even in the absence of "alkali."

Briefly, the criticism of the method as made by Allen is that very high amounts of soluble humus and organic matter cause incomplete reduction, the results running low.

As all soil scientists know, the "alkali" soils of California and other arid sections are *very low* in soluble organic matter commonly termed humus.[1] They vary from almost nothing to, in some few cases, 3 per cent. The average for the surface soils of California is 1.28 per cent. It was for these soils, and not for those high-humus soils of the middle west, that the aluminum reduction method was originally intended. It was satisfactorily tried out with varying amounts of the "alkali" salts singly and combined, also with soluble organic matter in the forms of glucose and soluble humus, in amounts far in excess of that ever leached from "alkali" soils with distilled water.

The writer admits that some of the statements made for the accuracy of his method were possibly too broad and far-reaching, but they were made more especially with reference to its application to "alkali" soils, as the title should suggest. The method, as proposed, has been successfully used by others in arid sections, and the author still recommends it for use under such conditions.

In conclusion the writer wishes to state that he will be the first to welcome any method for determining nitrates in soils which combines accurate and reliable results with a minimum of time expended.

*Note.*—Since the above was written (July last) an article entitled "The Determination of Nitrates in Soil," by R. S. Potter and R. S. Snyder[2] has appeared in which the aluminum reduction method, proposed by the writer and criticized by Allen, is shown to be far superior to the colorimetric methods even where the high humus soils of Iowa were used.

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[1] See "Humus and Humus-nitrogen in California Soil Columns," University of California Publication in Agricultural Science, Vol. 1, pp. 173–274, by R. H. Loughridge.

## A SIMPLE METHOD FOR THE ELIMINATION OF PROTOZOA FROM MIXED CULTURES OF BACTERIA

Protozoa, particularly various flagellates and ciliates, often hamper the study of the higher bacteria in mixed cultures.

Such cultures may be readily and effectively freed from these undesired animals by centrifugalization. By this means protozoa are quickly thrown to the bottom of the tube, while the bacteria for the most part remain in suspension. If subcultures are then inoculated from the supernatant fluid they will be found entirely freed from protozoa.

Doubtless this "fractional" centrifugali-

[2] *Jour. Ind. and Eng. Chem.*, Vol. 7, No. 10, p. 863.