While we have had no facilities for determining the amount of ultra-violet light to which these animals were exposed, we have every reason to believe that it must have been negligible, since most authorities are agreed that the production of ultra-violet light by the ordinary filament is small and that this is largely if not completely absorbed by the glass bulb. While the possibility is not excluded that the variations in bone deposition are due to ultra-violet light, we can not escape the conclusion that the longer wave-lengths also possess ossifying power.

These observations are in accord with our observations (R.A.D.) on poultry, in which we have noted definite superiority of birds reared on a leg-weakness-producing diet and exposed to sunshine, as compared with birds subsisting on the same ration but irradiated with ultra-violet light from the quartz mercury vapor lamp.

R. ADAMS DUTCHER
H. E. HONEYWELL
PENNSYLVANIA STATE COLLEGE

A COMPARISON OF THE COPPER CONTENT OF OKLAHOMA WHEAT WITH THOSE OF OTHER STATES

As part of a study on the copper content of Oklahoma plants, we secured wheat samples from various states[1] and analyzed them for copper according to the tentative method published in the proceedings of the Association of Official Agricultural Chemists.[2] Ash and moisture determinations were run in the conventional manner.

It was thought that these figures might be of interest in indicating the relative abundance of copper in the different parts of the United States, such an assumption being based on the work of several scientists, most recent of which is the work of Elvehjem and Hart,[3] in which they indicate that the copper content of the soil is reflected in the plants grown thereon.

As might be expected, there are considerable differences in the various percentages, reaching in one case slightly over 100 per cent. On the other hand, the totals are small in any case and the percentages are not such as to show any great abundance or lack of copper in any section represented.

TABLE I

ANALYSIS OF OKLAHOMA WHEATS

(Copper expressed in milligrams per kilogram of material)

Variety	Per cent. Moisture	Per cent. Ash	Cu. in Fresh Wt.	Cu. in Ash Fresh Wt.
Kanred	9.3	2.07	6.0	289
Blackhull	10.5	2.00	6.3	315
Fulcaster	9.1	2.21	7.0	313
Unnamed	9.1	1.64	5.1	314
Turkey	7.8	1.99	6.8	343
Average	9.2	1.98	6.2	315

TABLE II

ANALYSIS OF WHEATS FROM VARIOUS REGIONS OF THE UNITED STATES

(Copper expressed in milligrams per kilogram of material)

State	Variety	Per cent. Moisture	Per cent. Ash	Cu. in Fresh Wt.	Cu. in Ash Fresh Wt.
Rhode Island	Golden Chaff	8.8	1.52	5.3	348
Virginia	V. P. I. 112 wheat	8.8	1.68	6.8	403
Texas	Denton	9.6	1.49	7.8	524
Indiana	Fultz	10.0	1.94	6.6	339
Oregon	Unnamed	8.2	1.50	4.2	281
Arizona	Boart	10.3	1.45	6.0	414
New Hampshire	Ohio Trumbull	6.8	1.73	4.4	254
Wyoming	Unnamed	6.6	1.73	4.5	261
Colorado	Kanred	7.9	1.61	5.8	362
Ohio	Average of six	9.2	1.84	6.1	331
Missouri	Michigan Wonder	8.6	1.84	6.2	339
California	C. I. 1442	6.3	1.75	8.7	497
Oklahoma	Average of five	9.2	1.98	6.2	315
Average of states		8.8	1.78	6.0	345

The only noticeable trend in the percentages is that the northern samples are, as a rule, the lowest. There are, however, not enough analyses reported here to make this fact assume any great importance. Finally, there seems to be no relation between the ash content and the copper content, which fact is perhaps surprising in view of the probable adsorption of copper along with other mineral elements.

JAMES E. WEBSTER
FRANK JANSMA
OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE

[1] We desire to thank the various experiment station workers who so generously furnished us with the samples for these analyses.

[2] *Journal* of the Association of Official Agricultural Chemists, xii: 35–36, 1929.

[3] C. A. Elvehjem and E. B. Hart, "The Copper Content of Feeding-stuffs," *J. Biol. Chem.*, lxxxii: 473–477, 1929.