DISCUSSION

ISOLATION OF URACIL FROM LIVER

In the course of a fractionation procedure designed for the isolation of one of the water-soluble vitamins from liver extract, a crystalline compound was obtained which was identified as uracil. Because we have been unable to find a report of the presence of free uracil in liver and because of the rather unusual, yet simple method that yielded the pure material, it may be of use to other workers to record our observations briefly.

A commercial alcohol-soluble fraction of pork liver extract obtained as a by-product in the preparation of the pernicious anemia factor was used as a starting material.[1] This sirup was dissolved in water, concentrated under reduced pressure, adjusted to a pH between 6 and 7, and extracted continuously with ether for 75 hours. A pale yellow, crystalline deposit slowly formed in the boiling flask during this time. These crystals were filtered off and recrystallized from water. The resulting white product gave a strong test for uracil when treated with bromine water and barium hydroxide, and contained 25.3 per cent. nitrogen (calculated for uracil, 25.1 per cent.). The phenylhydrazine derivative prepared according to Levene's directions[2] melted at 250°; 5-phenylhydrazine-uracil melts at 252°. The yield amounted to 0.007 per cent. of the fresh liver.

These facts leave no doubt as to the presence of uracil in the liver extract. However, it may be possible that the pyrimidine was an artifact, and that it arose from cytosine during preparation of the extract. Since enzyme action is rapid, artifacts may conceivably arise even in the relatively short time required to make an aqueous extract of the organ.

Similar procedures applied to rice bran extract have resulted in the isolation of uracil from this material also.

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[1] We wish to thank Dr. David Klein of the Wilson Laboratories for generous gifts of this material.

[2] P. A. Levene, *Jour. Biol. Chem.*, 63: 658, 1925.

FACETTED PEBBLES IN EASTERN VENEZUELA

In the southwest part of the state of Anzoategui, in eastern Venezuela, there are extensive areas of rolling savanna land, covered by coarse grass and a thin growth of scrubby trees; with the drainage courses marked by narrow bands of dense tree growth. The surface is composed of late Tertiary sand and clay; and over much of the area there is a sprinkling of pebbles, concentrated by erosion as a lag gravel from some of the sandy beds. Nearly all these pebbles are of quartz, well-rounded; with occasional less-rounded fragments of chert. The greater number range from about one-half inch to two inches in greatest dimension.

Scattered among these rounded pebbles there are also facetted pebbles of quartz, with rarely a facetted chert pebble. Many are well-formed dreikanters, with triangular cross section and lens-shaped sides. Occasional pebbles, oval in general shape, have only one well-developed edge. A greater number of pebbles show only partial facetting. Their frequency varies considerably in different localities, perhaps having been governed by favorable exposure to the prevailing wind. A rough analysis of groups of 200 pebbles, gathered from eight widely separated localities, is given in Table I.

TABLE I

Locality	A	B	C	D	E	F	G	H
Good specimens	0	1	2	2	2	3	5	12
Partially facetted	1	5	3	4	8	4	24	22
Some facetting	4	8	5	10	22	9	28	31
Not appreciably facetted	195	186	190	184	168	184	143	135

The two localities showing greatest frequency of facetting are on opposite sides of the valley of the Aribi River, on upland benches; the other localities are at places on the savanna lands not especially exposed to the wind.

Since they were facetted most of the pebbles have acquired a rust-colored film from the sandy soil. Some on stream terraces are clear white, but their edges are somewhat rounded, as if they had undergone partial re-rounding since being facetted.

In many places the surficial material has been cemented by iron oxide into hard sandstone and conglomerate; which, by differential erosion, now cap low mounds, knolls and even hills, rising above the mean level of the savanna lands. The pebbles in the conglomerate are so like those of the lag gravel that it seems probable they all have a common origin.

In a few places where blocks of the conglomerate are exposed to winds from the east or southeast, the surface pebbles have been polished, and even worn into curved surfaces; but an unsuccessful search was made for facetted pebbles embedded in the conglomerate. It would seem, therefore, that the conglomerate was formed prior to the period of facetting, and also in some places underwent sand-blasting.

The region now has a mean annual rainfall in excess of fifty inches, and is not subject to high winds carrying sand. It seems probable that the facetted pebbles indicate a former period of aridity which occurred after the lag gravel was formed, perhaps sometime during the Quaternary period.

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ISOTOPES OF URANIUM AND LEAD

THE *Science News Letter* item on Dr. Nier's work[1] in its headlines at least rather ignores the preceding work, preliminary to Dr. Nier's brilliant papers. That "lead atoms may yield clues to very old earth's history" and that in ordinary uranium there are two kinds of atoms with different atomic weight, yielding leads of different atomic weights, was argued by T. R. Wilkins as far back as 1926,[2] and, as he suggested, then in early days there would have been not merely more uranium, but a larger proportion of the more quickly decaying uranium isotope—actinouranium, and hence in the older uraniferous minerals the radiogenic lead would have more of that isotope, specifically Pb (207).

Though for some time there has been fair agreement as to the rate at which actinium (which yields Pb 207) and radium (which yields Pb 206) were being formed at present, there has not been agreement as to the relative *amounts* of the isotopes and hence of the relative decay constants of UI and AcU.

Wilkins's point of view has been strongly supported by A. v. Grosse, who drew a curve connecting the age of a lead with the proportion of Pb (206) to Pb (207), and John L. Rose[3] estimated the proportions by strength of the spectral lines and also gave curves to estimate age. Dempster also made a preliminary estimate of the proportions of the uranium isotopes.

There has, however, been a uniformity in the atomic weight of radiogenic lead, not easy to explain,[4] and it has been not easy to tell how much ordinary lead might be mixed in.

Dr. Nier's success in recognizing the amount of ordinary lead by the amount of Pb 204 present, and in getting the various isotopes not only of lead but uranium with much greater accuracy than before and from much smaller quantities, ten milligrams or less, is a great step in advance and puts age determinations by lead on a sounder basis, and the variation of the proportions of isotopes in what has been supposed to be ordinary lead makes it not needful to suppose a common source for all of it. The identification of Pb (204) as characteristic of common lead enables one to allow for it.

The report of the committee on the measurement of geological time will not be out until next fall, I regret to say. Thus, I think this note of explanation desirable, so that the important work of Nier toward settling the important controversies started by v. Grosse and Holmes may not be minimized, and yet the fact recognized that it is supported by and a continuation of the pioneer work of Wilkins and others.

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1 June 18, 1938, p. 392; SCIENCE, Supplement, p. 10, June 10, 1938.

2 *Nature*, 117: 719–720, 1926; *Phys. Rev.* (2) 29: 352, 1927; *Bull. Geol. Soc.*, 38: 124, 1927.

3 John L. Rose and R. K. Stranathan, "Geologic Time and Isotopic Composition of Radiogenic Lead," pp. 792–6 (1936), with references to previous work.

4 A. Holmes, "Age of the Earth" (3rd ed.), pp. 151–153; *Ec. Geol.*, 32: 763–782, 1937.

AUTHORITY CITATIONS IN BIOLOGICAL NOMENCLATURE

THE protest[1] against dual authority citations as now prevalent in American botanical literature is well taken. Unfortunately the author raises the question, What authority should be used, the original describer of the species or the maker of the generic-specific combination? Generic-specific combinations change every twenty years. Zoologists have been using for decades, with apparent satisfaction, the original describer. Thus that system must be quite usable and is far more stable.

As a matter of fact, the majority of biologists have no use for the authority because the old original descriptions are extremely meager and lack comparative data. Manuals and recent monographs are used by the great majority of biologists. Only the highly specialized systematist consults the old original descriptions, and he does not need to know under what genus any one species originally appeared, as he has the page citation and the series number of the species in his catalogue. Moreover, one hundred years hence these ancient citations will no longer be consulted.

Many of the old authorities are of no practical importance; they are of historical interest. A real contribution to the advancement of nomenclature would be to discard the original authority and supplant it by reference to the best description, including the best set of figures—which would usually be the latest family or generic monograph of the species in question. In such a monograph the historically minded biologist would find all necessary references to the original and primitive descriptions.

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1 SCIENCE, 88: 128, August 5, 1938.