necessary to make sure that the cooperating scientists know enough about fundamental principles and terminologies to understand each other.

The looseness found by Professor Herskovits in the use of the word "psychology" is simply not there. Professor Dice's statement is: "The characters of man that are inherited include not only his anatomical features, but also his physiology and his psychology." This gives a clear enough indication that learned behavior mechanisms are not implied, for what has to be learned has not been inherited in any biological sense.

The term "race" is admittedly one which may have a variety of implications, but Professor Dice used the words "many races." One might, therefore, reasonably assume that he did not have any three- or four-fold grouping in mind, but was using the term in the more general sense of a strain, breed or lineage.

The term "environment," used without qualification, means all the surrounding conditions and influences that affect the organism. If only a part of the environment is to be considered, this, if not sufficiently brought out by the context, is indicated by a qualifying adjective, as in the examples, "physical environment" and "social environment," mentioned. Such distinctions should not be overemphasized, however. Malnutrition will result whether proper food is physically inaccessible or is made unavailable by cultural habits.

There remains the possibility that Professor Dice was mistaken as to what is recognized by orthodox anthropologists. Be that as it may, the point of the disputed paragraph was that physiological and psychological traits can be inherited. As to this, those who are accustomed to thinking in terms of evidence rather than dogma and who have any real familiarity with either mice, dogs or men seem to have very little doubt.

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F_2 AND N^1-METHYLNICOTINAMIDE

IN a recent article in this journal, Huff and Perlzweig[1] take exception to a criticism of their findings made by Najjar and White[2] and propose, in the interest of clarity, definitions for the substance F_2 and its precursor. We wish to point out that our criticism was not made of their "findings," but of a single conclusion based thereon, a criticism we are prepared to maintain. Moreover, their proposed definitions are not in accord with all the experimental facts.

We criticized these authors for identifying the factor F_2, which we had defined[3] as "the fluorescent substance obtained from normal urinary eluates after alkali addition" with the cation N^1-methylnicotinamide, which is virtually, if not completely, nonfluorescent. They maintain that we have used the term F_2 in a double sense: (1) as a precursor in urine and (2) as a highly fluorescent derivative of such precursor, and that they were following our precedent in using the term for the urinary precursor, which they identified as N^1-methylnicotinamide. Although they are correct in stating that we spoke of "the excretion of F_2 in urine" on more than one occasion, the context indicates that we referred to the fluorescent material obtained after treating the urinary eluate with alkali and butanol. What was not clear to any one during the early stages of this work was, whether the material actually excreted in urine was: (a) a precursor, converted into a highly fluorescent compound by the reagents employed, (b) a substance exhibiting fluorescence only in alkaline media or (c) a substance rendered soluble by butanol which thus served to bring out its fluorescence. We have entertained each of these ideas at different times. This matter was still obscure when Huff and Perlzweig published their identification study,[4] nor did their publication, valuable as it was, clarify this phase of the problem. The first definite indication of a chemical difference between the urinary precursor and the final highly fluorescent compound came with the publication of Najjar and White,[2] who in the interest of clarity felt justified in criticizing frankly a claim which, it was then obvious, dealt with but half of the problem of the identification of F_2.

The distinction between the precursor and the fluorescent derivative F_2 was clearly made by Najjar and White,[2] and we are delighted that Huff and Perlzweig are in essential agreement with this position. The one point in which we differ from them is in their identification of the urinary precursor as the cation N^1-methylnicotinamide. Some reasons for this were presented in our last publication[2]; others have come to light since. Until recently we believed that the F_2 precursor in urine was non-fluorescent, but we now have evidence that it possesses some bluish fluorescence, a property not shared by pyridinium salts. The urinary precursor also appears to differ when different antipellagric agents are given. We have found[6] that reinickates obtained from urinary eluates after the ingestion of nicotinic acid of nicotinamide show significant differences. We have also failed to secure a crystalline picrate from urine eluates after

[1] J. W. Huff and W. A. Perlzweig, SCIENCE, 100: 28, 1944.

[2] V. A. Najjar and V. White, SCIENCE, 99: 284, 1944.

[3] V. A. Najjar and L. E. Holt, SCIENCE, 93: 20, 1941.

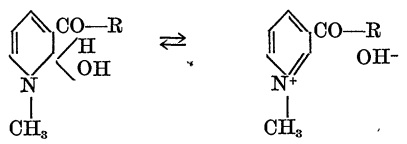
[4] J. W. Huff and W. A. Perlzweig, *Jour. Biol. Chem.*, 150: 395, 1943.

[5] W. A. Perlzweig, M. L. C. Bernheim and F. Bernheim, *Jour. Biol. Chem.*, 150: 401, 1943.

[6] V. A. Najjar and V. White, unpublished observations.

nicotinic acid administration, although one can be readily obtained after the administration of nicotinamide. On this account we are inclined to disagree with the conclusion of Perlzweig *et al.*[4, 5] that the administration of nicotinic *acid* gives rise to the excretion of the N-methyl *amide* derivative in urine.

Our interpretation of these findings[7, 8] is that the urinary precursor of F_2 consists in large part, if not entirely, of a radical which we may refer to as the "F_2 nucleus," which appears to be the N^1-methyl α-carbinol (I). This, however, may be in equilibrium with pyridinium compounds (II):



I II

in which case at acid pHs one might have an appreciable fraction of the uninary precursor present as pyridinium salt.

We have no wish to belittle the work of Perlzweig and his collaborators, the merit of which we thoroughly appreciate. However, their claim for the complete identification of the F_2 precursor in urine as the cation N^1-methylnicotinamide does not appear to be supported by all the evidence available, that which we have cited above as well as that of Ellinger and Coulson.[9, 10]

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ASCORBIC AND DEHYDROASCORBIC ACID IN COOKED GARDEN BEETS

RECENTLY some beets of the Detroit Blood Red variety, which had been stored in a vegetable storage cabinet from October, 1943, to July, 1944, were brought to our laboratory. The beets were firm and very well preserved. Since our work on potatoes indicates that some of the reduced ascorbic acid is apparently changed to dehydroascorbic acid on storage, it seemed worthwhile to test the beets. Accordingly, representative samples of the 1943 crop of stored beets and of the 1944 crop of fresh beets grown on the same soil were obtained. The 1944 beets were nearly as large as the 1943 beets, but were not quite so mature.

[7] V. A. Najjar, V. White and D. B. M. Scott, *Bull. Johns Hopkins Hosp.*, 74: 378, 1944.

[8] V. A. Najjar, M. M. Hammond, M. A. English, C. C. Deal and M. B. Wooden, *Bull. Johns Hopkins Hosp.*, 74: 406, 1944.

[9] P. Ellinger and R. A. Coulson, *Nature*, 152: 383, 1943.

[10] R. A. Coulson and P. Ellinger, *Biochem. Jour.*, 37: Proc. XVII, 1943.

The 1943 crop had been stored in a vegetable storage cabinet well insulated from the furnace heat of the basement. The cabinet was provided with an opening to admit cold air from the outside, and the withdrawal of warm air by means of an electric fan.

Since beets are not eaten raw, they were cooked until done, peeled and assayed immediately for ascorbic acid. The data are presented in Table 1.

TABLE 1

ASCORBIC ACID AND DEHYDROASCORBIC ACID IN COOKED GARDEN BEETS

Description of sample*	Ascorbic acid, fresh basis, mg/100 gms		
	Reduced	Dehydro	Total
1944 crop—fresh	17.48	8.41	25.89
1943 crop—stored 9 months	12.61	13.14	25.75

* The beets were furnished by J. Clayton Russell in the Department of Agricultural Engineering, North Dakota Extension Service.

Although the beets were from different crops, the differences in the relative amounts of reduced and dehydroascorbic acids in the fresh and stored beets indicate a considerable change of ascorbic acid to the dehydroascorbic form during storage, without any appreciable destruction. Furthermore, the full vitamin C value is not shown by determining only the reduced ascorbic acid.

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AGE AT STARRING IN AMERICAN MEN OF SCIENCE

THE age at which the representatives of the various sciences were starred has varied among the sciences and from time to time. In general, this recognition is earliest attained in the physical sciences and slowest in pathology and botany. Since 1909 the trend has averaged upward, but there has been little change in chemistry and psychology, while in astronomy and geology a downward trend is indicated by the recent

TABLE 1

MEDIAN AGE OF THOSE STARRED

Starred in	1903	1909	1921	1927	1932	1937	1943
Anatomy	39	36	40	40	47	51	46
Anthropology ...	51	36	44	52	41	42	48
Astronomy	48	37	46	45	42	39	36
Botany	41	38	45	48	46	49	49
Chemistry	40	37	42	42	40	43	43
Geology	46	40	47	48	49	46	43
Mathematics	42	33	39	39	35	38	37
Pathology	45	39	44	45	47	50	52
Physics	42	38	40	41	35	39	40
Physiology	41	34	41	41	42	42	50
Psychology	40	39	42	44	43	43	41
Zoology	40	38	44	42	44	43	46