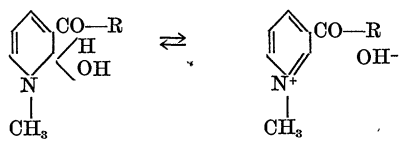
nicotinic acid administration, although one can be readily obtained after the administration of nicotinamide. On this account we are inclined to disagree with the conclusion of Perlzweig *et al.*[4, 5] that the administration of nicotinic *acid* gives rise to the excretion of the N-methyl *amide* derivative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

VICTOR A. NAJJAR
VIRGINIA WHITE

DEPARTMENT OF PEDIATRICS,
THE JOHNS HOPKINS UNIVERSITY

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.

EUNICE KELLY
F. W. CHRISTENSEN

DEPARTMENT OF ANIMAL AND
HUMAN NUTRITION,
NORTH DAKOTA AGRICULTURAL
EXPERIMENT STATION

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

starrings. This is shown in Table 1 of the median age at starring.

TABLE 2

AGE OF THOSE FIRST STARRED IN 1943

	Anatomy	Anthropology	Astronomy	Botany	Chemistry	Geology	Mathematics	Pathology	Physics	Physiology	Psychology	Zoology
Median age	46	48	36	49	43	43	37	52	40	50	41	46
Oldest	65	62	55	65	59	67	78	67	54	59	57	64
Next oldest	58	51	52	62	59	65	56	58	54	58	54	64
Youngest	42	40	29	37	29	32	33	37	32	41	35	35
Next youngest ...	44	41	31	39	33	38	33	42	32	42	37	37

Table 2 gives more details as to the most recently starred group. It reveals that the median ages were lowest in astronomy and mathematics, 36 and 37 respectively. At the other extreme were pathology and physiology with medians of 52 and 50. In five of the sciences a person past sixty-five was starred but in four sciences the next to the oldest person was under 55. The youngest persons starred were an astronomer and a chemist of 29, followed by an astronomer of 31, a geologist and five physicists of 32, three chemists and two physicists of 33. Conversely, in three sciences, the youngest person starred was past forty.

STEPHEN S. VISHER

INDIANA UNIVERSITY

SCIENTIFIC BOOKS

STATISTICS

The Advanced Theory of Statistics. By MAURICE G. KENDALL. Vol. I. xii + 457 pp. J. B. Lippincott Company, agents. $16.00.

THE title page contains neither date nor place of publication, but the preface is dated 1943 and the publishers are Charles Griffin and Company, who publish the well-known book by Yule recently brought out in a new edition under the joint names of Yule and Kendall.

New statistical theory, though found in large amount in a few specialty journals such as *Biometrika,* the *Journal of the Royal Statistical Society, Metron* and the *Annals of Mathematical Statistics,* is really scattered very widely (for example, the great memoir of R. A. Fisher which started us off on a new line of ideas appeared in the Philosophical Transactions of the Royal Society of London). It is therefore a great convenience that Kendall has brought a large amount of this new and advanced statistical theory together in one place.

As there is no table of contents in the book we may give the titles of the chapters: I. Frequency-distributions. II. Measures of Location and Dispersion. III. Moments and Cumulants. IV. Characteristic Functions. V and VI. Standard Distributions. VII. Probability and Likelihood. VIII. Random Sampling. IX. Standard Errors. X. Exact Sampling Distributions. XI. Approximations to Sampling Distributions. XII. The χ^2 Distribution. XIII. Association and Contingency. XIV. Product-moment Correlation. XV. Partial and Multiple Correlation. XVI. Rank Correlation. Each chapter is arranged on the decimal system and is closed with notes and references. There is an excellent detailed index.

The book is therefore not only a treatise for study and reference but an indication for further more detailed study by following up the references to the literature. If the reader desires to try his hand at exercises there are plenty in true English style, some easy and some so hard he will probably have recourse to the original source cited for help. Although many who work with statistics will find much of the book quite beyond them, the author states his results succinctly and many who stop not for the proofs will use the results.

There are of course a few points I consider bad among so many good ones. I do not like the old statements that leptokurtic curves are sharply peaked and platykurtic ones flat-topped relative to the normal curve (p. 82) because I have never been able to appreciate in what way an isosceles triangle is flatter-topped or less sharply peaked than the normal curve —and for other reasons. I do not like the suggestion (p. 53) that it is a matter of convention whether we consider that a frequency function has a mean when the "principal value" of $\int xf dx$ is finite though $\int |x| f dx$ diverges, or the similar suggestion (p. 145) that there is nothing sinister about heterotypic frequency functions; for from the point of view of the sampling theory the mean in the first case and some at least of the parameters in the second have infinite standard deviations and are thus statistically indeterminate.

I note that the name of C. S. Peirce does not occur in the index nor, so far as I have observed, in the text, despite the importance of his ideas on chance and statistics. I do not like the phraseology (p. 166) "certainty that a proposition is not true is represented by zero"—it is all right, I suppose, but somehow it sounds queer. Then on page 184 it is offered as an exercise to prove that the probability is $\frac{1}{4}$ that three points taken at random on a circle lie on the same semi-circle; if the circle is divided by a given diameter the probability is $\frac{1}{4}$ that the three points lie on one or