3,505 Pelargonium; 1,647 Pink Patrician; 2,941 Miller's Yellow; 578 Northland; 533 Dark Pink Patrician; 6,993 Hercules Virginia; 3,936 Light Pink Patrician; and 3,205 White Patrician.

Five test plants of *D. barbatus* were concurrently inoculated with an extract from each of the carnation plants tested, using a carborundum powder No. 320 as an abrasive. Equal numbers of plants of uninoculated *D. barbatus* were maintained as controls. Table 1 compares the results obtained with the two techniques.

These data show only very slight differences between results from the ultraviolet light test and those obtained by inoculation of *D. barbatus*. This ultraviolet-fluorescence technique has proved useful for more than 2 years in indexing carnation cuttings for foundation stock. The identity of the fluorescent material is not known. It very likely is not the actual virus, however, because the heat and butanol treatment would have precipitated any protein present during preparation.

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Abundance of N^{15} in the Nitrogen Present in Crude Oil and Coal

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A recent paper by White and Yagoda (*1*), disclosed an apparent correlation between the concentration of the N^{15} isotope and the geological age of the pitchblende ores. The abundance of N^{15} increased from the 0.371 ± 0.002 atom % present in the atmosphere today to as much as 0.614 ± 0.012 atom % in a uraninite sample $1{,}050 \times 10^6$ years old.

TABLE 1

N^{15} CONTENT OF SEVERAL COALS AND CRUDE OILS

Description	Geological age in yr ($\times 10^6$)	Atom % N^{15}
Crude oil, Leduc No. 1, Alberta, Canada	290 (Devonian)	0.3715 ± 0.0003
Crude oil, Lloydminster No. 3, Alberta, Canada	105 (Lower Cretaceous)	0.3725 ± 0.0013
Coal, Atoka formation, Seminole, Okla.	230 (Pennsylvanian)	0.3740 ± 0.0016
Coal, Frontier formation, Little Horse Creek, Wyo.	70–110 (Cretaceous)	0.3687 ± 0.0002
Cylinder nitrogen		0.3705 ± 0.0005
Comparative Data by White and Yagoda (1)		
Atmospheric nitrogen		0.371 ± 0.002
Uraninite, Wilberforce, Canada	1,050	0.614 ± 0.012

Inasmuch as no hypotheses were presented which adequately explained this correlation, it seemed of interest to us to see if this same phenomenon might apply to the chemically bound nitrogen found in crude oils and coals. If some such time scale could be established for determining the age of nonradioactive geological samples, it would be of great value to the petroleum geologist in particular.

The nitrogen samples were obtained by the conventional Dumas analytical combustion. The azotometer was then connected through a liquid nitrogen trap to the gas inlet system of a G-E analytical mass spectrometer. In all cases, the gas analyzed contained over 99% nitrogen. Trace amounts of oxygen and water were obtained in several of the samples. As also observed by White and Yagoda, a small peak at mass 30 was found, which may be attributed to $N^{14}O^{16}$.

As shown in Table 1, the percentage abundance of N^{15} in the nitrogen obtained from the organic matter in the oil and coal is essentially the same as found in the atmosphere today. In no case was the deviation greater than the probable over-all reproducibility of the experiments. The values shown in the table are the average of at least three mass spectrographic analyses on each sample.

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Internal Consistency of Determinations of Absolute Optical Configuration by the One-Electron Theory of Optical Rotation

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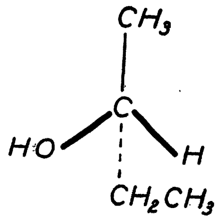
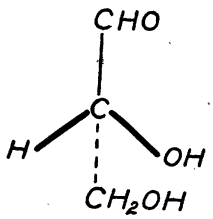
In 1938 Eyring and his co-workers (*1*) developed the one-electron theory of optical rotation and, with its aid, assigned to (−)2-butanol the absolute configuration I

I

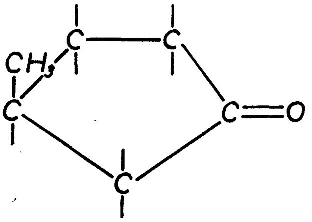


II

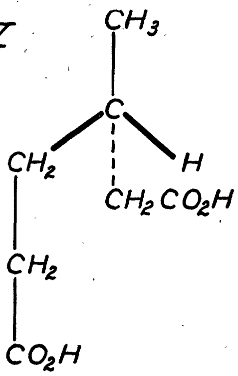


an assignment which was in harmony with the traditional assumption (*2*) of II for the configuration of (+) glyceraldehyde and which agreed with theoretical treatments of this problem by Kuhr (*3*) and Kirk-

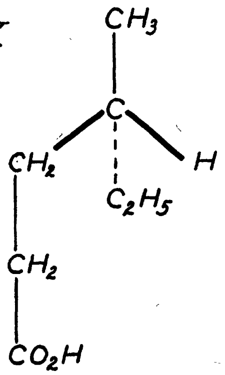
III



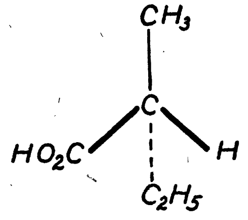
IV



V



VI



wood (*4*), but conflicted with theoretical views advanced by Boys (*5*). Shortly thereafter (*6*) the Eyring group applied this theory to the problem of the absolute configuration of (+)3-methylcyclopentanone, a more "tractable" molecule, to which they assigned the structure III.

On first sight the formulations I and III appear inconsistent, since there exist data (*7*) in the literature by which it may be shown that III must belong to the steric series, III (+ ?), IV (+ ?), V (+ ?), VI (+ ?). But (+) methylethylacetic acid has been shown (*8*) to be produced (over *s*-butyltoluenesulfonate) from I with practically certain Walden inversion!

The apparent paradox vanishes, however, on closer inspection of the detailed calculations (*6*), for it appears that in computing (*6*, p. 369) the rotatory strength,

$$R_{ba} = C\,\mathrm{Im}\{(\psi_{2p_y}/ex/\psi_{3d_{x+y}})(\psi_{2p'_z}/m_x/\psi_{2p_y})\},$$

where

$$m_x = \frac{i\hbar e}{2mc}\left(z\frac{\partial}{\partial y} - y\frac{\partial}{\partial z}\right),$$

an error (in the sign) was made, so that this quantity should have been taken as

$$R_{ba} = \frac{+e^2\hbar}{2mc}(\psi_{2p_y}/x/\psi_{3d_{x+y}})(\psi_{2p'_z}/1/\psi_{2p_z})C.$$

Whence it follows that III represents not (+), but (–) 3-methylcyclopentanone.

Accordingly, III (–) becomes configurationally identical with VI (–) and I (–), which result lends strength not only to Eyring's treatment of the configurational problem, but also to the idea that the (arbitrary) stereochemical formulations now in current use are actually the correct ones. Certainly the foregoing analysis calls into question the recent sweeping statement of Turner and Lonsdale (*9*) that "At present . . . there is no sound evidence either for or against the correctness of the Fischer convention."

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A Special Respiratory System in Mammalian Adrenal Glands

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Mechanisms by which tyrosine or phenylalanine may be converted to adrenaline have been suggested many times, but the pathway of this oxidative conversion is as yet unknown. Coincident with this failure is the lack of any direct evidence for the presence of an active tyrosinase in mammalian tissues, although some data have been presented suggesting that such an enzyme does exist (*1*).

Since it has been shown (*2, 3*) that the production of melanin in the amphibian and the chick is brought about by the presence of neural crest derivatives in the skin, presumably by the action of a tyrosinase (*4*), the adrenal medulla, also a derivative of the neural crest, might be expected to contain an active tyrosinase. The presence of tyrosinase in this tissue has not been reported in the literature, however. It has been our experience that the addition of tyrosine to surviving slices of adrenal medulla at pH 7.0–7.5 does not result in an augmented oxygen consumption as measured in the Warburg manometer.

The lack of stimulation observed in these cases does not necessarily indicate the absence of the enzyme, but may mean that the enzyme is already saturated with substrate, so that further additions have no effect on any oxygen consumption due to this enzyme. Since the tyrosinases thus far characterized