DISCUSSION

ANGIOTONIN OR HYPERTENSIN

IN a letter to SCIENCE, Page, Helmer, Plentl, Kohlstaedt and Corcoran[1] suggest the term "renin substrate" (α 2 globulin) for hypertensinogen or renin-activator. Uniformity of terminology would be desirable, as it has become rather confusing, due to the fact that some substances have several names as follows:

Buenos Aires group	*Indianapolis group*	*Lewis and Goldblatt*[4]
Hypertensin	Angiotonin	Hypertensin
Hypertensinogen	Renin-activator	Hypertensinogen
Hipertensinase	Angiotonase[2]	Hypertensinase
No equivaent	Angiotonin-activator[3] Angiotonin-inhibitor[3] Renin-inhibitor[3]	No equivalent

The last three terms have no equivalent in the Buenos Aires group terminology because the existence of the substances or actions implied have not been conclusively proved.

As to which term should be used, angiotonin or hypertensin, it is a matter of personal judgment. No priority can be claimed by either group, as the discovery of this substance was practically simultaneous.

The objection against hypertensin because it "implies a participation in hypertension and an effectiveness in hypotension" would perhaps be valid for commercial use, a point which we have never considered. The term hypertensin appropriately describes its action of increasing blood pressure and, as Lewis and Goldblatt[4] point out, "if it is eventually proved" to be the "cause of the elevated blood pressure, then the specific term hypertensin . . . will be more pertinent than the non-specific term angiotonin." That it has a definite and important participation in renal experimental hypertension is, we believe, unquestionable.

The terminology of the Buenos Aires group "in which renin the enzyme acts on hypertensinogen . . . to liberate hypertensin(e) the vasoconstrictor (and pressor), which may be destroyed by hypertensinase, has a clarifying unity which, in a sense, is lacking to the parallel succession of renin, renin activator, angiotonin and angiotonin inhibitor."[5] To us it has the advantage of being simple, logical, of forming a homogeneous group and of describing the action or origin of the substances.

The term renin-activator should be abandoned because it conveys an erroneous idea. The term hypertensinogen is perfectly correct: in fact, the suffix "ogen" is used to denote "giving rise to" (glycogen gives glucose, fibrinogen, fibrin, caseinogen, casein, etc.). As to the new term proposed "renin substrate (α 2 globulin) it should be pointed out: (1) that the enzymatic nature of the reaction has not "been established beyond a doubt."[1] There are several facts which make it probable, as we have repeatedly pointed out. But the matter can only be settled by experimenting with known concentrations of the pure substances. The fact that reaction approximately follows the equation for a first order reaction[6] can not be taken as a proof. (2) Moreover, if renin is really an enzyme, it might act on more than one substrate. For instance, pepsin acts on many proteins and calling one of them pepsin substrate would not identify it. (3) Adding another term (α 2 globulin) which describes its electrophoretic behavior would not help much. Moreover, it is not yet known whether hypertensinogen is all or part of the α 2 globulin fraction of serum, or only accompanies this fraction, and it remains to be proved that this fraction always contains hypertensinogen.

The addition of a new long and not too happy term for a substance, which has already four, would hardly simplify the terminology.

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THE TRIPTANE PROCESS

TRIPTANE is the most powerful hydrocarbon known for use in internal combustion engines. Its antiknock properties are of such magnitude that no commercial engine has been built which is capable of utilizing the full power value of pure triptane. When used as a component of aviation gasoline, it greatly enhances the performance of present-day aircraft engines and makes possible the design of future engines of even greater power and efficiency.

Although its existence has been known for years and some of its physical properties have been determined, triptane has been a laboratory curiosity because the known methods of producing it involved the classical but impractical Grignard reaction, or zinc di-methyl as a reactant. Reported costs for producing triptane in very small amounts in the laboratory by

[1] I. H. Page, O. M. Helmer, A. A. Plentl, K. G. Kohlstaedt and A. C. Corcoran, SCIENCE, 98: 153, 1943.
[2] I. H. Page, O. M. Helmer, K. G. Kohlstaedt, G. F. Kempf, A. C. Corcoran and R. D. Taylor, *Ann. Int. Med.*, 18: 29, 1943.
[3] I. H. Page and O. M. Helmer, *Jour. Exp. Med.*, 71: 495, 1940.
[4] H. A. Lewis and H. Goldblatt, *Bull. N. Y. Acad. Med.*, 18: 459, 1942.
[5] Editorial. *Jour. Am. Med. Asn.*, 120: 923, 1942.
[6] A. A. Plentl and I. H. Page, *Jour. Biol. Chem.*, 147: 135, 1943.

these methods have run to such fantastic figures as over $3,000.00 per gallon. It has been reported that a batch of several hundred gallons of triptane was produced within the past two years for experimental purposes at a reported figure of $40.00 per gallon. Even if the cost did not preclude the use of triptane for war purposes, the consumption of critical materials needed to produce it by previously known methods would not justify its production.

The authors, working with materials at hand and available in quantity, made the discovery which makes possible the commercial production of this fuel. They, together with the technical staff of the Universal Oil Products Company, made possible the production of triptane at an estimated selling price of less than $1.00 per gallon.

The process consists of two steps. The second step of the process involves the formation of triptane from a selected charging stock produced in the first step. Based on the material charged to the second step, liquid recoveries of over 90 per cent. are obtained of which over 50 per cent. is triptane.

The process, when operated to make the largest quantity of triptane available as a blending agent, yields two other valuable hydrocarbons, in themselves of great value in aviation blends. These hydrocarbons, 2,3-dimethylbutane and 2,3-dimethylpentane, are superior to alkylate as blending agents for aviation gasoline.

Table 1 gives the physical properties of individual hydrocarbons produced by this process:

TABLE 1

Compound	B.P., °C.	M.P., °C.	Refractive index. nD^{20}	Specific gravity
2,3-dimethylbutane ..	58.0	−128.8	1.3750	0.6620
2,2,3-trimethylbutane (triptane) .	80.8	− 25.0	1.3894	0.6901
2,3-dimethylpentane ..	89.7	....	1.3920	0.6944

The relatively high freezing point of pure triptane does not preclude its use in aviation fuels. Blends containing up to about 85 per cent. triptane do not freeze above −78° C. (−108° F.).

The product of the reaction is saturated and free of impurities so that no additional refining treatment is necessary to permit its use in aviation fuels. The process has been operated to date for 300 hours in a pilot plant with no indication of decline of catalyst activity.

No new or unusual materials are needed for the reaction or process. The raw materials are condensable gases produced in petroleum refineries as by-products of catalytic and non-catalytic cracking or reforming of petroleum oils. The catalysts are readily available in large quantities. No special equipment or materials used in the process plant are necessary other than regular equipment employed in refineries. The temperatures and pressures employed are well within refinery experience.

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CONCERNING TRANSLATIONS OF GEOLOGICAL TEXTS FOR SOUTH AMERICAN STUDENTS

IN a recent issue of SCIENCE (September 3) there is a letter concerning the translation of American textbooks of geology for use in South America. It would be very fine to have two or three with which I am well acquainted translated, but I would make the suggestion that, if this were done, illustrations from South America be included. That means that some one from one of the South American universities should work in collaboration with the translator.

I also wish to call the attention of those who might be interested in this subject to the fact that there is a very excellent two-volume work on the geology of Argentina by Windhausen, in Spanish. I consider this an excellent book, and I doubt if the people in Argentina would prefer a translation of a North American text to this one.

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SCIENTIFIC BOOKS

CHEMICAL SPECTROSCOPY

Chemical Spectroscopy. By PROFESSOR WALLACE R. BRODE. Second edition. xi + 677 pp. Illustrated. New York: John Wiley & Sons. $6.50.

THE second edition of this book closely follows the general plan of the first. All phases of spectroscopy are considered, as the chapter headings show. The illustrations are very numerous, and some which were indistinct in the first edition are now very satisfactory; *e.g.*, Fig. 3.35, p. 64; Fig. 4.2, p. 71; Fig. 4.7, p. 86. Some of the photographs of apparatus, too, are clearer.

The valuable lists of references have been brought up to date; it is interesting that a total list of 259 references in the first edition is now expanded to 415.

The book will be of particular use to the practical man, and to him it can be warmly recommended. Theoretical discussions are less happily dealt with, however. At the opening of the chapter on "Resonance and Chemical Structure," a preliminary discussion of resonance is given which can convey but very little to those unacquainted with the subject, since no adequate definition or description of resonance is given. After a digression in which the electronic