THE expedition led by Dr. Cecil Madigan across the Simpson Desert in Australia has returned to Adelaide after an absence of three months. Dr. Madigan said, according to the London *Times*, that he could not hold out much hope that the desert country was capable of development as pasture land or for any other purpose, though he did not think that there was danger that the desert would increase in area.

THE Case School of Applied Science has received a grant from the National Advisory Committee for Aeronautics for a basic aerodynamic investigation of boundary layer control to study the effect of air upon the drag of airplane wings. Preliminary studies by Dr. John R. Weske have shown the possibility of reducing the wind resistance of airplanes through such a study.

FUNDS were appropriated in the third deficiency act for the investigation of strategic mineral deposits this year by the Geological Survey in accordance with the authorization, which had been previously passed by congress. These funds became available August 10, and the Geological Survey now has parties investigating strategic mineral deposits in several of the western states. These include manganese deposits in Montana, Washington, Oregon and New Mexico; chromite in Montana, Oregon and Wyoming; tungsten in Nevada; quicksilver in California, Oregon and Idaho; tin in Alaska, South Dakota and New Mexico; and nickel in Alaska. Investigation of certain tin and mica deposits in the southwestern states will begin shortly. Some of these investigations are essentially a continuation of those begun in the summer of 1938. The entire program is expected to continue for four years.

DISCUSSION

A SELF-LIMITING MECHANISM IN SYMPATHETIC HOMEOSTATIC ADJUSTMENT

IT has been shown that adrenaline exercises a specific inhibitory action on sympathetic synapses.[1, 2] This has been demonstrated by recording the decrease in action potentials in the post-ganglionic nerves of the superior cervical ganglion of cats and rabbits when adrenaline was either liberated from the adrenals by splanchnic stimulation or was injected intravenously in amounts comparable to those known to be secreted under stress.[3] In each case as the adrenaline was destroyed recovery from inhibition took place.

It may appear paradoxical that adrenaline, which promotes sympathetic activity, also inhibits it, but I wish to suggest that a beneficial effect, important to the body economy, is served by the opposed actions. The ganglionic inhibitory action of adrenaline may constitute a self-limiting mechanism capable of checking the wide-spread activity produced by sympathico-adrenal discharge when this has reached a high level. The attempt to preserve maximum efficiency in the face of environmental change, *i.e.*, to maintain homeostasis, calls forth a marked, diffuse increase in sympathetic activity. This initiates the following sequence of events: Adrenaline liberated by the augmented splanchnic impulses prolongs and greatly enhances sympathetic activity. If this tends to become excessive, thereby partially defeating its purpose, the concentration of adrenaline in the blood rises to a level sufficient to produce ganglionic inhibition, and thus decreases the sympathetic discharge by obstructing the passage of impulses from the pre- to the post-ganglionic neurones. It may be supposed that a block is also interposed at the neuroadrenal junction, since it is structurally and pharmacologically of a ganglionic nature. The output of adrenaline is thus curtailed. With the lowered concentration of circulating adrenaline ganglionic inhibition is removed. Then, if the need for homeostasis still persists, sympathetic activity is once more allowed full play, until again restrained by the self-limiting influence of the rising blood adrenaline. This automatic safeguard adds another means of adjustment to the regulation exercised by other compensatory mechanisms, such as the carotid sinus.

Additional support for this view is found in the work of Tournade and Chabrol,[4] who observed a restrictive effect on sympathetically controlled functions in adrenalectomized recipient dogs when adrenaline is injected into the donors to which they are joined by adrenojugular anastomosis. Similar and more extensive effects are obtained in the same type of experiment when adrenaline is introduced into the donor by slow, continued infusion.[5] The inhibitory effects of adrenaline on the pressor action of nicotine and on reflexly induced sympathetic responses, described by Hoskins and Rowley[6] in 1915, are susceptible in part to a similar interpretation. So are the results of more recent workers,[7, 8] who have studied the depression of reflex sympathetic phenomena by adrenaline.

[1] A. S. Marrazzi, *Jour. Pharmacol. and Exp. Therap.*, 65: 395, 1939.
[2] *Ibid.*, *Proc. Amer. Physiol. Soc.*, page 163, April, 1939.
[3] W. B. Cannon and D. Rapport, *Amer. Jour. Physiol.*, 58: 308, 1921.
[4] A. Tournade and M. Chabrol, *C.R. de la Soc. de biol.*, 94: 535, 1926.
[5] J. Malmejac, V. Donnet and E. Desanti, *C.R. de la Soc. de biol.*, 119: 1152, 1935.
[6] R. G. Hoskins and W. N. Rowley, *Amer. Jour. Physiol.*, 37: 471, 1915.
[7] L. W. Chu and F. Y. Hsu, *Quart. Jour. Exp. Physiol.*, 27: 307, 1938.

Were it not that the ganglionic nature of the neuro-adrenal junction prevents excitation of the adrenal by its own secretion,[9] adrenaline secretion once started might be self-perpetuating. Instead the nature of the junction introduces the possibility of self-limitation of adrenal discharge by the ganglionic inhibitory action of adrenaline. Work in progress is expected to yield data that will further test this view.

AMEDEO S. MARRAZZI

NEW YORK UNIVERSITY
COLLEGE OF MEDICINE

CHLORAZOL FAST PINK BKS

IN the April 14 issue of SCIENCE there is a communication from Dr. Walter Modell drawing attention to the valuable characteristics of the azo dye known as Chlorazol Fast Pink BKS, Color Index No. 353, as an anti-coagulant.

This dye has been prepared in a pure form under my direction for quite a number of years in order to save the biological laboratory the necessity of purification, and has been supplied free of cost, in small quantities, to institutions of learning. Dr. Charles E. King, of Vanderbilt University, states that the material, as furnished, is so little toxic that he is able to give a full dose in one injection, although the slight shock, when this is done, can be avoided by dividing the amount and giving it in three portions.

This communication is made to inform those interested that, if they are in need of very small quantities, they can obtain these without the necessity of doing their own purification.

R. E. ROSE

E. I. DU PONT DE NEMOURS AND COMPANY,
WILMINGTON, DEL.

"STARS" IN AMERICAN MEN OF SCIENCE

IN the "Distribution of the Younger Starred Scientists" by Professor S. S. Visher, which recently appeared in SCIENCE,[1] occurs the following statement: "Universities which had fewer starred men on their faculty in 1938 than in 1906 include Columbia, 60 in 1906, 39½ in 1938; Cornell 33, 25½; Dartmouth 6, 1; New York 9, 7; Clark 7, 1; Indiana 6, 3; Missouri 9, 1; Wesleyan 7, 4."

The casual reader would infer that these faculties had deteriorated or at least lost many of their most talented or creatively industrious members. A little further examination, however, reveals that the article contains no data as to actual numbers in 1938. In lieu of actual numbers for each institution, the article takes the total numbers of new names starred in 1921–1937 (third to sixth editions), mistakes them for totals on these faculties in 1938, and, comparing them with totals for 1906, finds in this particular group of institutions "fewer starred men" than in 1906.

As a simple and modest example, Dartmouth (which still prides itself on being a "liberal college" with no university aspirations) had in 1906 six starred members and actually six (rather than one as stated) in 1938. If an interested person should take the trouble to look up in the recent edition of American Men of Science the 1938 numbers for other institutions with diminishing returns, some of them, too, very likely would be removed from the black list.

A similar confusion appears in the two preceding paragraphs. The number of starred men included in the 1906 selection of 1,000 is compared with the total for each institution of selections in 1921, 1927, 1932 and 1937 (*ca.*, another 1,000). A list of institutions is given in which these total subsequent selections approximately equal the original selection for that institution: *e.g.*, Harvard 66 in 1906, compared with 69 (inadvertently identified with the unascertained number on the faculty in 1938).

Another list of institutions which have "gained notably" includes California, 27 in 1906 compared with 39, which is wrongly assumed to be the unascertained number on the faculty in 1938, but really is the total of the four selections made during the past 18 years.

If all the men and women starred in 1906 had died, or somehow become completely annihilated, before 1938, Professor Visher's statistical interpretation of the selections made during the last two decades would have been approximately correct.

J. H. G.

DARTMOUTH COLLEGE

THE portion of an article on this subject reprinted in the June 23 issue (89: 583–585) contains two inadequate statements. Although the study is concerned with the younger starred scientists, those starred in 1921–1937, and refers to the older group (those starred in 1903 or 1909) only for sake of comparison, a statement on the 1938 distribution of starred scientists does not make this limitation clear. What was meant was that certain institutions had in 1938 or earlier of the 1,101 scientists starred in 1921–1937 the numbers specified, which totals were greater or less than those institutions had of the 1,000 starred in 1903. A very few of these older men have not yet retired, whereas the quoted statements imply that they have all died or retired.

STEPHEN S. VISHER

THE PACIFIC ENTOMOLOGICAL SURVEY

A NOTE under this heading in SCIENCE for June 16, 1939, over several signatures from Hawaii, has been

[8] C. W. Darrow and E. Gellhorn, *Proc. Amer. Jour. Physiol.*, page 58, April, 1939.

[9] P. Trendelenburg, *Ergebn. der Physiologie*, 21: 549, 1923.

[1] SCIENCE, 89: 583–585, June 23, 1939, reprinted (abridged) from *American Journal of Science*, 237 (1): 48–65, January, 1939.