CORRESPONDENCE

Princeton in Trouble

SIR,—I think that your editorial "Princeton in Trouble" (*Nature*, **242**, 217; 1973) is highly damaging to the Institute of Advanced Study and the world of science in general.

First, I would point out the absurdity of the notion of social science. Science, as we all should know, consists foremost, of the application of the scientific method to the observation of natural phenomena. One of the essential requirements of scientific analysis is that it be possible to construct controlled experiments. In social studies of human beings, there is no possibility of constructing controlled experiments. Those who consider such a possibility should be strongly opposed. The second important requirement is that the experiments be repeatable. Since social situations are unique and cannot be repeated, social studies fail to meet the requirements of science on both counts. I would like to bring to your attention an excellent description of science in *Science is God*, by David F. Horrobin.

Next your suggestion "that there should be a better sense of moderation in this kind of scientific community" is immoral. If the standards of excellence and intellectual integrity are not maintained in such an academic community, then it is hard to conceive of any other place in the world where they would survive.

Your comment that "it is absurd for anybody at Princeton to suggest that a single appointment can entirely change the character of the faculty" is unfortunate and disputable. It is only single individuals that have been responsible for the course of human intellectual endeavour, to wit Socrates, Newton and Einstein.

Your comment that the dissident members' arguments are pernicious (the dictionary meaning of pernicious: extremely hurtful; wicked or mischievous) is slanderous. The faculty at Princeton does not possess such low qualities as you seem to do. It is editorials such as yours, and not their faculties that damage renowned institutions like the Institute of Advanced Study.

Yours faithfully,

S. MARATHE

Rice University,
Houston, Texas,
77001

β -Carotene

SIR,—In response to McDonagh's answer (*Nature*, **241**, 151; 1973) to our earlier communication (*Nature*, **240**, 59; 1972), we offer the following comments.

In the interests of brevity, we did not belabour the distinction between topical and systemic administration of carotene. Since the scope of the discussion has now been broadened, it should be noted that Kesten made the logical progression from validating the efficacy of topical carotene, to oral administration of the compound, and that although exposure of the untreated patient's skin to a 'Mazda' projection bulb produced a wheal, the response could not be elicited after two weeks of oral therapy.

Admittedly, Kesten did not have the benefit of our present knowledge of the aetiology of erythropoietic protoporphyria (EPP), the *in vitro* photosensitizing action of protoporphyrin via singlet oxygen, and the quenching ability of β -carotene. But, despite convincing "test tube" evidence, there appears to be no experimental data relating to the *in vivo* state in humans¹. McDonagh cited no evidence in support of his statement that the protective effect of β -carotene is enhanced when taken internally, and that the compound probably acts as an *in vivo* quencher of singlet oxygen as well as a light shield. On the contrary, the meagre information available suggests that oral β -carotene acts mainly (if not solely) as a screen to absorb harmful rays of the Sun, in a manner analogous to that of topically applied material. Thus, oral carotene does not provide photoprotection in EPP patients until serum concentrations reach massive levels² and the skin displays visible evidence of the presence of the carotenoid¹, which suggests to us that its mechanism of action is primarily that of a physical sunscreen. This conclusion is strengthened by the well-known observations that internally-administered carotene accumulates in the stratum corneum³.

It is unfortunate that the *in vivo* protective action of β -carotene is not strongly enhanced by quenching; the EPP patient whose situation is desperate enough to require massive carotene loading must pay the penalty of an unesthetic yellow colour in his skin. We have successfully treated EPP⁴ and other types of photosensitivity⁵ with topical application of dihydroxyacetone and

lawsone (2-hydroxy-1,4-naphthoquinone). This combination exhibits the property, shared by no other sunscreen, of binding chemically to the skin, and therefore does not require renewal during the patient's normal daily activities. The colour imparted to the skin is pleasing to the patients, and far more esthetic than the yellow hue of β -carotene.

Yours faithfully,

J. A. JOHNSON

R. M. FUSARO

University of Nebraska Medical Center,
Omaha, Nebraska 68105

¹ Mathews-Roth, M. M., Pathak, M. A., Fitzpatrick, T. B., Harber, L. C., and Kass, E. H., *New Eng. J. Med.*, **282**, 1231 (1970).

² Fitzpatrick, T. B., Pathak, M. A., Parrish, J. A., and Mathews-Roth, M., *Proc. Roy. Soc. Med.*, **64**, 861 (1971).

³ Ormsby, O. S., and Montgomery, H., *Diseases of the Skin*, 716 (Lea and Febiger, Philadelphia, 1954).

⁴ Fusaro, R. M., and Runge, W. J., *Brit. Med. J.*, **1**, 730 (1970).

⁵ Fusaro, R. M., Runge, W. J., and Johnson, J. A., *Intern. J. Dermatol.*, **11**, 67 (1972).

Ancient Egypt

SIR,—With regard to the recent paper by K. H. Hsu *et al.* (*Nature*, **242**, 240; 1973), I would like to point out that this theory has to some extent been anticipated by Herodotus (*circa* 485–425 BC) (Book II).

"They proved the truth of most of these assertions, and went on to tell me that the first man to rule Egypt was Min, in whose time the whole country, except the district around Thebes, was marsh, none of the land below Lake Moeris—seven days' voyage up river from the sea—then showing above the water. I have little doubt that they were right in this; for it is clear to any intelligent observer, even if he has no previous information on the subject, that the Egypt to which we sail nowadays is, as it were, the gift of the river and has come only recently into the possession of its inhabitants. The same is true of the country above the lake for the distance of a three days' voyage; the priests said nothing to me about it, but it is precisely the same type of country.

"Now, it is my belief that Egypt itself was originally some such arm of the sea—there were two gulfs, that is, one running from the Mediterranean southwards towards Ethiopia, and the other

northwards from the Indian Ocean towards Syria, and the two almost met at their extreme ends, leaving only a small stretch of country between them. Suppose, now, that the Nile should change its course and flow into this gulf—the Red Sea—what is to prevent it from being silted up by the stream within, say, twenty thousand years? Personally, I think even ten thousand would be enough. That being so, surely in the vast stretch of time which has passed before I was born, a much bigger gulf than this could have been turned into dry land by the silt and brought down by the Nile—for the Nile is a great river and does, in fact, work great changes. So I not only believe the people who gave me this account of Egypt, but my own conclusions strongly support what they said. I have observed for myself that Egypt at the Nile Delta projects into the sea beyond the coast on either side; I have seen shells on the hills and noticed how salt exudes from the soil to such an extent that it affects even the pyramids; I have noticed, too, that the only hill where there is sand is the hill above Memphis, and—a further point—that the soil of Egypt does not resemble that of the neighbouring country of Arabia, or of Libya, or even of Syria (the Mediterranean coast of Arabia is inhabited by Syrians), but is black and friable as one would expect of an alluvial soil formed of the silt brought down by the river from Ethiopia. The soil of Libya is, as we know, reddish and sandy, while in Arabia and Syria it has a larger proportion of stone and clay. I had from the priests another striking piece of evidence about the origin of the country: namely, that in the reign of Moeris the whole area below Memphis used to be flooded when the river rose only twelve feet—and when I got

the information Moeris had been dead for less than nine hundred years.”

Yours faithfully,

D. B. JAMES

*The Doctors' House,
Claremont Road,
Marlow,
Buckinghamshire*

Announcements

Miscellaneous

The following have been elected Foreign Members of the Royal Society.

Professor John Bardeen, *University of Illinois*; Professor Manfred Eigen, *Max-Planck Institute of Physical Chemistry, Göttingen*; Professor Francois Jacob, *Pasteur Institute, Paris*; Professor Ulf Svante Von Euler, *Karolinska Institute, Stockholm*.

The following have been elected Foreign Associates of the National Academy of Sciences, Washington.

Sune Bergstrom, *Karolinska Institutet, Stockholm*; Albert Eschenmoser, *Technische Hochschule, Zurich*; Vladimir A. Engelhardt, *Institute of Molecular Biology, Moscow*; Dennis Gabor, *Imperial College, London*; David V. Glass, *London School of Economics, London*; Jean Goguel, *Ecole des Mines, Paris*; Motto Kimura, *National Institute of Genetics, Japan*; George Klein, *Karolinska Institutet, Stockholm*; Ben Roy Mottelson, *Institute for Theoretical Atomic Physics, Copenhagen*; V. Ramalingaswami, *Institute of Medical Sciences,*

New Delhi; Andrei D. Sakharov, *Lebedev Institute of Physics, Moscow*; I. S. Shklovsky, *Institute of Space Research, Moscow*.

University News

Dr Fredos Papangelou, *University of Göttingen*, has been appointed to the *Chair of Mathematical Statistics* at the *University of Manchester*.

Dr Eric Craig Easson, *University of Glasgow*, has been appointed to the *Chair of Radiotherapy* at the *University of Manchester*.

Dr Peter Joseph Mittler, *Pembroke College, Cambridge*, has been appointed *Professor of the Education of the Mentally Handicapped*, at the *University of Manchester*.

International Meetings

May 25–26, *Stress in Farm Animals*. (Honorary Secretary, Veterinary Field Station, Easterbush, Roslin, Midlothian).

May 30–June 1, *Ducted Propellers*. (Secretary, Royal Institution of Naval Architects, 10 Upper Belgrave Street, London SW1X 8BQ).

June 7–8, *Symposium on The Biology of Hystricomorph Rodents*. (The Assistant Director of Science (UM), The Zoological Society of London, Regent's Park, London NW1 4RY).

June 13–15, *International Conference on Hydrostatic Extrusion*. (Conference Organizer, Birniehill Institute, National Engineering Laboratory, East Kilbride, Glasgow G75 0QU.)

HOW TO BUY NATURE

The cost of one year's subscription to NATURE is:

	UK & elsewhere	US & Canada
Nature (Friday)	£16	\$48
Nature & Nature Physical Science or Nature New Biology	£24	\$83
Nature New Biology or Nature Physical Science	£10	\$35
All three editions	£29.50	\$108

(Charges for delivery by air mail on application). Subscribers in North America may be able to claim a tax rebate against their NATURE subscription.

Editorial, Advertising and Publishing Offices of NATURE

MACMILLAN JOURNALS LIMITED
4 LITTLE ESSEX STREET, LONDON WC2R 3LF
Telephone Number: 01-836 6633. Telegrams: Phusis London WC2R 3LF
Telex 262024

MACMILLAN JOURNALS LIMITED
711 NATIONAL PRESS BUILDING
WASHINGTON DC 20004
Telephone Number: 202-737 2355. Telex 64280

International Advertisement Manager

PETER R. KAVANAGH
MACMILLAN JOURNALS LIMITED
4 LITTLE ESSEX STREET, LONDON WC2R 3LF
Telephone Numbers: UK 01-836 6633
USA 202-737 2355

Subscription Department

MACMILLAN JOURNALS LIMITED
BRUNEL ROAD, BASINGSTOKE, HANTS RG21 2XS
Telephone Number: Basingstoke 29242

Classified advertisements

T. G. SCOTT & SON, LIMITED
1 CLEMENT'S INN, LONDON WC2A 2ED
Telephone Number: 01-242 6264/01-405 4743
Telegrams: Textualist London WC2A 2ED

Registered as a newspaper at the Post Office

Copyright © Macmillan Journals Limited, May 18 1973