CORRESPONDENCE

Katchalsky Memorial Fund

SIR,—The senseless murder of Professor Aharon Katzir-Katchalsky at Lod Airport has deeply shocked the world. Wide circles, both scientific and non-scientific, have conveyed their outrage and sorrow to the people of Israel and the Weizmann Institute of Science. We have received a flood of letters and cables all expressing a profound sense of loss at the tragic death of a scientist whose personality and impact were, literally, unique.

Many of these letters and cables have indicated a desire to participate in the creation of a memorial worthy of Aharon Katzir. We are all most deeply moved by this response. While we have not yet been able to make any detailed plans for a suitable way of commemorating Professor Katzir, we are clear on one point: the wish, at one and the same time, to perpetuate his memory on this campus and to further those fields of endeavour that were closest to his heart.

In order to make possible some kind of coordinated action, an international committee is being formed, and a Katzir Memorial Fund has been established at the Weizmann Institute of Science.

Ideas and offers of help will be gratefully received.

Yours faithfully,

I. DOSTROVSKY

Vice-President,
Weizmann Institute of Science,
Rehovot

Katchalsky Memorial Symposium

SIR,—Many scientists from around the world have had the privilege of knowing Professor Aharon Katchalsky, his brilliant scientific work, his extraordinary faculty to communicate science, and his warm personality. Those who have worked with him, were his students, or merely heard him lecture will carry equally the intellectual excitement which Aharon Katchalsky could invoke.

On May 30, 1972, Professor Aharon Katchalsky, returning to Israel from one of his frequent trips abroad devoted to international scientific cooperation, was gunned down at the Tel Aviv airport along with Puerto Rican pilgrims and other innocent bystanders in a vicious and senseless terrorist attack.

We have requested that a suitable *Memorium* symposium be held at the forthcoming Fourth International Congress of Biophysics sponsored by the IUPAB and due to begin in Moscow on August 7. Professor Katchalsky was a past president of this organization and an honorary vice president at the time of his demise. Because so many of his friends, students and scientific colleagues will gather in Moscow for this meeting, we feel that it is a unique opportunity to honour Professor Katchalsky's scientific and intellectual accomplishments, and would be an especially significant and fitting tribute to this outstanding international scientist. Indeed, his leadership and example in international scientific cooperation have played a major part in making such international meetings possible.

Realizing the difficulty of making late changes in a carefully prepared programme, we hope the organizing committee of the Fourth International Congress of Biophysics will see fit so to honour Professor Katchalsky with a memorial symposium.

We ask our colleagues throughout the international scientific community to express the appropriateness of such a memorial symposium, and appreciation to the organizing committee for their efforts in arranging the tribute.

Yours faithfully,

JAMES F. DANIELLI
JOHN C. ECCLES
ROBERT REIN
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Science in India

SIR,—The suicide by Dr V. H. Shah (*Nature*, May 19, 1972) is not the only case in New Delhi. In the late 1950s Dr Joseph also committed suicide in similar circumstances. Many young scientists in India run into such problems but consider it wise to emigrate.

Scientific methods require proper management to produce results. The partnership between management on one hand and science on the other is an absolute necessity if improvement is to be expected in developing countries. Dr Homi Bhaba, the late Indian nuclear physicist, was probably referring to this problem, I believe, when he said in his last speech, "It is my personal view . . . that the general absence of the proper administration for science is a bigger obstacle to the rapid growth of science and technology than paucity of scientists and technologists because we are less effective through the lack of right type of administrative support."

Will the Government of India do something about the problem? It remains a big question.

Yours faithfully,

G. R. SAINI

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Science Criticism

SIR,—For a long time it has been the accepted prerogative of every newspaper to criticize the policies and attitudes of any government; any art medium has a following of eager critics willing to distinguish between the good, the bad and the ugly; and what has science got? Nothing.

For some reason science is sacred. It has always been considered bad form to criticize scientific papers without, at least, providing an alternative argument on the same subject. But why is this so? Presumably the quality of scientific work is, unlike everything else, self-evident. Or perhaps the pride of the average scientist is more tender than that of, for example, the average film producer. Or perhaps scientists are simply above criticism. None of these explanations is really satisfactory. And when one discovers how much poor work is being done in the name of science and being published without a whisper of complaint from anyone, one goes on wondering why this is so.

It seems to me that a reasonable case could be made for devoting some energy to the serious art of scientific criticism.

Yours faithfully,

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Space Tribology

SIR,—In a report entitled "Base for Britain" published on May 26 (*Nature*, **237**, 189; 1972), it was stated that the contract for the European Space Tri-

bology Laboratory at Risley had been awarded for four years "because ESRO's financial future after 1975 is uncertain". The initial period of financing was determined by budget release policy and not by any uncertainty as to the availability of funds after 1975.

Last December the ESRO Council unanimously approved not only the Organization's 1972–74 budget but also a substantially increased provisional total level of resources of $110 million a year for the three-year period 1975–77. The Council authorized ESRO to spend not less than $70 million a year on application satellites alone during the period 1974–80.

Yours faithfully,

P. M. BROWN

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Knuckle Walking

SIR,—The delightful ambiguities that can be produced by simple combinations of English (British/American) words and phrases are never-ending. A case in point is found in the recent correspondence (*Nature,* **236**, 472; 1972) from Mr Tiratsoo referring to the knuckle walking article earlier (*Nature,* **236**, 34; 1972). Mr Tiratsoo, obviously reared in the realm of British football, confuses the authors' expression ". . . football linesmen" . . . as meaning the official who in British-style football prances about (handsomely attired!), waving his little flag and (sometimes?) clutching a stop-watch. What the authors meant, and what must be obvious to an American reader, is the American football lineman—a tackle, guard, or centre who assumes a tripodal stance, cleated feet dug in, one hand in a semi-fist, crouched and ready for the mayhem of scrimmage. In this stance the fingers are knuckled under, pressing into the turf (artificial?) before the snap of the ball from centre. The fingers are knuckled under to avoid the extremely painful injury that can result from having the opposing lineman (275 lb and up) step on outspread fingers. Most American football linemen bandage the hands so that only the knuckle stance is possible. Phrases, like landscapes, are always comprehended with respect to the point-of-view!

Yours faithfully,

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Obituary

Professor J. S. Griffith

THE death of Professor John Stanley Griffith at Cambridge on April 23, 1972, at the early age of 43, has brought to an end a remarkably varied career. The fact that his father was a distinguished bacteriologist and his mother a graduate in mathematics and physics may have encouraged him to think widely and discard traditional limitations in his research. In 1948 at Trinity College, Cambridge, he obtained a brilliant first-class in the mathematical tripos. This led to a Rouse Ball studentship, also at Trinity, and the opportunity to take Parts I and II of the biochemistry tripos. His early research was with Sir John Lennard-Jones at Cambridge, and then with Professor C. A. Coulson at Oxford. During this time he was a Senior Demy at Magdalen College. A year of national service at the Admiralty Research Laboratory studying the formation of droplets and the magnetic properties of certain materials was followed by the Stokes Studentship at Cambridge, the Berry-Ramsey Fellowship in Mathematics at King's College, Cambridge, and a series of chairs, first in chemistry at the University of Pennsylvania, then in mathematics at the Manchester College of Science and Technology, and at Bedford College, London. This finally led to a chair of chemistry at Bloomington, Indiana, and—for the last few months of his life—membership of the Institute of Immunology at Basle.

This varied professional career showed itself in his research. His early work was in theoretical chemistry, where he made useful contributions to the newly-developed free-electron model for conjugated molecules, and to the spatial correlation of electrons in atoms. But by 1954 he had begun to turn his attention towards inorganic chemistry. The astonishing upsurge of interest in ligand-field theory which occurred in the late 1950s was in no small measure due to John Griffith and Leslie Orgel. Orgel concentrated on the more pictorial and descriptive aspects, Griffith on the basic principles. His immense book *The Theory of Transition Metal Ions* (1961) was a magnificent piece of work, and for the first time really established the subject on a solid theoretical basis. In it he rationalized the magnetic and optical properties of molecular complexes, taking proper account of temperature effects and spin-orbit interaction. Ten years later it still remains the definitive work in this field. This phase of his life was rounded off by a second book, *The Irreducible Tensor Method for Molecular Symmetry Groups* (1962).

By this time he was getting deeply interested in biological matters. The connecting link was the magnetic property of the combination of oxygen with haemoglobin. How could ligand-field theory account for the newly observed electron-spin resonance spectrum of ferric haem in myoglobin, with peaks at $g=6$? What was the electronic structure of the bond between oxygen and ferrous ion? One fact which had to be explained was that oxyhaemoglobin was diamagnetic, while oxygen itself is paramagnetic. Griffith showed that there were two possible answers. The one, which he preferred, was completely original, and postulated a symmetrical structure, with the iron-oxygen bond perpendicular to the oxygen-oxygen bond. The other was a reinterpretation of Pauling's bent bond structure, translated into molecular-orbital terms. Griffith's interpretation of the electron-spin resonance spectra was immediately accepted, and proved most valuable. His symmetrical model for oxygen binding now seems less likely to be correct, but the question remains open. Recent work on the structure and spectra of haem compounds, including cobalt haemoglobin, suggests that molecular oxygen binds as a superoxide ion, and that many of Griffith's ideas are still relevant.

It was also in the early sixties that he became progressively more interested in the possible contributions that mathematicians could make to studies of the central nervous system. A few of his colleagues tried to dissuade him from moving into this field, but he persisted and was indeed to be followed by some of them. He left Philadelphia and returned to Cambridge to begin his work in earnest. First he studied the statistical properties of spontaneous impulse activity in cortical cells and the way in which activity in a neurone influences the excitability of an adjacent neurone. This work was closely tied to experimental observations.

At the same time he developed a field theory for predicting the overall be-