

CORRESPONDENCE

Scientists' Salaries

SIR,—There is already an attitude among administrators that because Fulton is beginning to have an effect professional staff (scientists and the like) can expect their highest rewards by transferring from their basic class to the administrative posts which may become available. (Four of the eight recently appointed Regional Managers in the Ministry of Agriculture were from the professional ranks.) This is surely to be deplored and resisted in that the most valuable scientists and technologists often have more to contribute in their professional work than in any transfer to administrative duties and should expect parity with their administrative colleagues which will now be lost if the present pay award is not altered by arbitration.

Secondly, I must mention a particularly mean action which is being proposed and so far has not been altered by negotiation. It affects a relatively few senior members of the former National Agricultural Advisory Service who transferred from colleges and county councils in 1946 to form the then newly formed service. They were given an undertaking that their retirement age would remain at 65 and this would thus partially compensate them for the loss of pension rights which they suffered in the transfer. (The years of employment prior to 1946 are only counting as half the years in calculating their retirement pensions.)

In the arrangements for the unfortunate reduction in the size of the service, those under 60 are being offered redundancy payments but those over 60 are to retire at once and are thus likely to lose up to five years of salary and 5/80 of their pension payments. The Ministry and, I understand, the Civil Service Department are saying that the undertaking given to these officers when they transferred from their former employment is not legally binding and that they will not therefore provide any redundancy payments for those compelled to retire between the ages of 60 and 65.

(Our correspondent wishes to remain anonymous.)

Baffling Brevity

SIR,—I refer to the conclusion of a letter about mercury pollution¹: "We thank Dr Walter Olszewski, Buffalo General Hospital, for supplying the human brains."

Usually I would fully support your strictures² about superfluous acknowledgments, but here I feel that your readers

must be left baffled by brevity. Are we to believe that Dr Olszewski has made a noble sacrifice to the cause of environmental improvement?—in which case the acknowledgments should surely be bolstered by the George Cross at the very least? Or is it that the authors of the letter are themselves not humans but computers?—a feat of programming for which Dr Olszewski might expect a large award from some electronics firm to supplement the meagre "we thank . . ." from his own creations.

Yours faithfully,

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¹ Glomski, C. A., Brody, H., and Pillay, S. K. K., *Nature*, **232**, 201 (1971).

² Leading article, *Nature*, **232**, 75 (1971).

Micrometeoroid Muddle

SIR,—I was very pleased to see our work on lunar microcraters and erosion phenomena mentioned (*Nature*, **231**, 492; 1971). Unfortunately, your geomagnetism correspondent fell victim to our unclear terminology. In addition, we were somewhat misquoted.

The terminology in question is the usage of the words "cosmic particles". Unfortunately, this term is in usage by workers in the field of "cosmic dust", "micrometeoroids", etc., as well as by people interested in cosmic and galactic particle tracks. No clear definition exists. In the first case it refers to *solid particles* of minute size. Particles in the 10^{-6} – 10^{-13} g range of extraterrestrial or extralunar origin were described by many workers. In a broader sense the term refers to any solid matter of small grain size in space and therefore the term "cosmic particles" comes into usage. It is synonymous with "cosmic dust", "micrometeoroids", etc.

In the second case the term "cosmic particles" refers to particles on an atomic scale, consisting of high energy radiation of solar or galactic origin, which are more commonly called "cosmic rays".

Over the past 6 months we have become increasingly aware of this problem of terminology and have recently decided to abandon the term "cosmic particles" completely in our work. Instead we use "micrometeoroids" and thus hope to avoid future misunderstandings.

In essence the difference is that of absolute size and/or mass coupled with

vastly different flight velocities. Upon impact on a target, the "micrometeoroids" produce a minute impact crater and the "cosmic rays", due to their increased energy per mass unit, are capable of penetrating solid matter leaving characteristic tracks, *i.e.* lattice defects, etc. Thus both particle types are capable of doing damage to solid matter and are capable of mass removal. Both types of "particle" thus are lunar erosion agents. The quoted paper deals in an indirect way with the effectiveness of the two erosion mechanisms.

Our investigations quoted refer exclusively to phenomena of micrometeoroid impact. We have no data on cosmic rays, nor did we mention their effect on cosmic erosion. At the time of writing (August 1970), no such data were available. The main conclusion at that time was that the prime agent of lunar erosion is the mass removal due to micrometeoroid impact. "Cosmic ray" erosion seemed to be insignificant. Your correspondent misunderstood our reasoning and completely reversed our main conclusion. By now (July 1971), we have a somewhat better feeling for effect of the two erosion agents, and our statements in the *Earth and Planetary Science Letters* paper are substantiated.

Yours faithfully,

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Our Geomagnetism Correspondent writes: Notwithstanding Dr Horz's willingness to take much of the responsibility for my misunderstanding, I must apologize to Dr Horz and his colleagues for making the error. My false sense of security was perhaps bolstered by their use of the term *primary* cosmic particles, for "primary" and "secondary" are, of course, adjectives used with specific meaning in cosmic ray studies. On the other hand, it is somewhat of an exaggeration to suggest that I reversed the main conclusion. The same ambiguity in the term "cosmic particles" also led me to suppose (wrongly) that Dr Horz and his colleagues were extending the term "micrometeorites" to cover cosmic rays. Nevertheless, in my interpretation of their conclusion I was careful to distinguish between "cosmic particles" (which I mistakenly called cosmic rays) and secondary ejecta from meteorite impacts—and this was surely the critical distinction, not that between the cosmic rays which were not considered by Dr Horz in the original paper and micrometeorites. Thus I do not think I misunderstood the authors' reasoning, only their terminology. In any event, this correspondence will have been useful if it leads to the avoidance of ambiguity in the future; and I am happy to have the record set straight.