Obituaries

Professor S. I. Tomkeieff

SERGEI IVANOVITCH TOMKEIEFF died in hospital at Newcastle upon Tyne on October 27, having been seriously injured when knocked down by a motor-cycle. His death ends forty-eight years of association with the Department of Geology at Newcastle, which he had so well served, ornamented and enlivened. He was born on October 21, 1892, at Vilna, the son of a Russian army officer, later a general. His early education was chiefly at Tiflis, and in 1909 he entered the Polytechnic Institute at St Petersburg. His teachers and colleagues included such famous petrologists and mineralogists as Loewinsson-Lessing, Fersman and Federov. During the First World War he saw service with the Russian Red Cross, was "blown up", shell-shocked and invalided, and later became a member of a buying mission in England, where he stayed after the October revolution. Meanwhile he had been a witness to the arrival of Lenin in Petrograd, and heard his first major speech.

He first worked in the Victoria University of Manchester, but in 1920 he followed the late George Hickling to Newcastle, where he became lecturer in geology; the tardy pattern of promotion of those times ensured that his readership in mineralogy (1948) and professorship of petrology (1957) were long overdue to a man of his attainments. Serge (as he was known to all) was a deep scholar with an all embracing width of outlook beyond his principal interests, and an unquenchable curiosity. He had a kind of vision, common to some children and very few adults (often artists), of seeing something new and significant beneath the dust that covers familiar things and ideas, and often a touch of inspired naïveté that profitably provoked and stimulated others; and on top of this a sincere kindliness and total absence of personal pretension.

His contributions, in many original papers, were chiefly to petrology (particularly the British–Carboniferous–Permian and Tertiary provinces), mineralogy and geochemistry; in the last he made a highly individual use of a spiral form of the periodic table of the elements to show geochemical relationships. These would have been enough in themselves to make a deep and lasting mark. But for decades he worked tirelessly, and purely as a service to science, to write innumerable abstracts and reviews of literature on petrology and mineralogy, particularly from Russian sources, for *Nature*, the *Mineralogical Abstracts* and so on, and was responsible for some notable translations into English of Russian books. He also found time, sometimes in collaboration with others, to compile dictionaries of terms used in geology, mineralogy and petrology, the last of which was all but completed when he was struck down.

In his prime, Tomkeieff was a tough and patient field worker, and his knowledge of many areas, particularly of Arran, was remarkably detailed. It was in Arran, in 1947, that he suffered a perforated appendix, and the results of this somewhat curtailed his field activities afterwards. But although his physical prowess naturally diminished in his later years, he remained busy and occupied to the end with his writing.

Tomkeieff was a good linguist, much in demand at conferences as an interpreter. English was a language he learned later than others, and his style and highly individual fluency gave much delight, for he was both good natured and witty. He was a member of many scientific societies, and had served on the councils and committees of several. His closest connexions were perhaps with the Mineralogical and the Geological Societies of London; he was elected FRSE in 1948. In 1966 the Geological Society of London awarded him the Lyell Medal; he deeply appreciated this, since Lyell's key position in the foundation of modern geology was so apt to Tomkeieff's deep interest in the history of his science—indeed, this became one of his major preoccupations.

Correspondence

One New President

SIR,—Your account of the nomination of Dr Phillip Handler to become president of the National Academy of Sciences in the issue of November 2 (*Nature*, **220**, 422; 1968) leaves the implication that the membership of the academy was called on to approve this nomination at the California Institute of Technology meeting.

According to present procedures, the choice of the nominating committee is approved by the council of the Academy (which took place on October 4) and thereupon the membership as a whole is invited to make additional nominations, requiring the signatures of fifty members. The deadline for such nominations is December 1. On December 15, a ballot containing the name of the council nominee, together with the names of any additional nominees so validated, will be sent to the membership for a vote. Ballots are due January 15. Election to the presidency requires a majority vote.

Yours faithfully,

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Kites in the Everglades

SIR,—Being directly concerned with the Florida population of the everglade kite, *Rostrhamus sociabilis plumbeus*, we were delighted at the attention you gave it in a recent number (*Nature*, **218**, 1006; 1968), but we wish to correct several points and add additional information based on more recent work. The present situation is somewhat more encouraging than your readers may judge. In late October 1967, Sykes found forty-seven kites in a survey of part of the known habitat and we believe fifty to sixty is a reasonable estimate of the population at that time. In the breeding season just past, seventeen young kites (three broods of three and four of two) fledged from twenty-four eggs laid in nine nests. A marsh fire destroyed one nest and frequent disturbance probably caused the failure of another that was built near a trail heavily used by airboats. These observations appear to be in conflict with the reported low hatching success of the Florida everglade kite. The prognosis for the everglade kite in Florida will improve if more dependable freshwater levels are provided for the marshes of the Everglades National Park and in the marshes of Lake Okeechobee and the three conservation areas. The park is secure from invasion by airboats, canals, roads and pipelines which potentially threaten most other parts of the range except Loxahatchee National Wildlife Refuge. Kites have not nested in the park in recent years, but they feed there on occasions and may reclaim former breeding range given more favourable year round water levels. The correct name of the snail on

which the everglade kite subsists in Florida is *Pomacea paludosa*, not *P. paludis*. The photograph captioned "The Everglades, Florida" is a view of mangrove swamp forest along the lower Shark River, a tideway of the Everglades estuary, near the Gulf of Mexico. This area is not typical of the Everglades, which is chiefly a freshwater marsh with small islands of trees, nor is it everglade kite habitat.

Yours faithfully,

PAUL W. SYKES, jun.

WILLIAM B. ROBERTSON, jun.

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The McCarthy Study

SIR,—The McCarthy Report recognizes from the outset that attempts to predict the absolute number of scientists and technologists required by the British economy are most likely to be unsuccessful and concentrates instead on attempting to predict the relative proportion of specialist scientists to generalist scientists. Unfortunately, the report does this by averaging over different disciplines in an inadmissible way. In fact, if one breaks the result down into different disciplines the result, including management in the research and development figures, is as follows:

Table 1. EMPLOYMENT OF SCIENTISTS AND ENGINEERS IN AMERICAN INDUSTRY BY DISCIPLINE FOR 1962 AND 1963*

1962	Total	Engineers	Physicists	Chemists	Mathns.
All industries	851,600	684,600	13,900	81,600	14,700
R&D ,,	303,800	220,900	11,800	45,500	7,800
Per cent	35	32	85	56	53
Manufacturing	630,400	489,800	11,400	69,300	9,800
R&D	267,200	194,600	9,700	40,500	6,100
Per cent	42	40	85	58	62
1963					
All industries	871,400	711,600	14,500	74,300	20,400
R&D ,,	344,900	260,900	12,500	43,800	10,900
Per cent	40	37	86	59	53
Manufacturing	653,500	521,600	11,000	65,800	12,600
R&D	300,800	230,300	9,600	39,100	7,500
Per cent	46	44	87	59	60

* Taken from *Statistical Abstracts of USA* 1964, 1966 quoting as source NSF US Department of Labour, Bureau of Labour Statistics.

From the table it can be seen that as far as physics is concerned, and to a lesser extent chemistry and mathematics, the great majority should be trained as specialists so that unless we are able to predict absolute numbers we are no further forward. The breakdown of the figures for the United Kingdom into various disciplines does not seem to be available, but as far as basic research is concerned perhaps one might find a clue by examining the sources of papers submitted to the *Physical Review* and to corresponding British journals— *Proceedings of the Physical Society* and *Philosophical Magazine*.

Table 2.

Classification	Educt. (1)	Govt. Lab (2)	Industry (3)	1+2	Joint 1+3	2+3
UK (*Proc. Phys. Soc.* and *Phil. Mag.*)%	77	14	2	4	0·6	—
USA (*Phys. Rev.*) %	67	9	17	2·3	3·7	0·5

Origin of papers in *Phys. Rev.* 164 and 165 compared with the same for *Phil. Mag.*, July 1967—October 1968 and *Proc. Phys. Soc.* May to December, 1967.

The results are set out in Table 2 for a more or less random sample of issues of the various journals. It may well be true that a major part of the contribution from American industry to the *Physical Review* represents prestige projects, but presumably this is intended to attract good physicists into industry and subsequently to interest them in more immediately profitable research. In conclusion, until some more satisfactory method is found for estimating future requirements of trained manpower, it would seem to be very unwise to reduce the number of specialist physicists in favour of generalists.

Yours faithfully,

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ERRATUM. A mistake occurred in the article "Spectral Properties of the X-Ray Objects *GX* 3+1, *GX* 354–5 and Sco *XR*-1" by G. Buselli *et al.* (*Nature*, **219**, 1124; 1968), because of an inadvertent alteration made in the *Nature* office to the original typescript. It was stated in the article that the spectra of *GX* 3+1, *GX* 354–5 and Sco *XR*-1 suggest that these three X-ray objects are similar to one another. The data are at variance with this statement, and in fact the authors' conclusion is that *GX* 3+1, Cyg *XR*-1 and Tau *XR*-1 possess similar spectra, and are probably due to similar celestial objects. One of the authors, K. G. McCracken, has written to stress how this conclusion was reached:

"Our measurements of *GX* 3+1 above 20 keV show a good fit to a power law photon number spectrum given by

$$\frac{dN}{dE} = 3{\cdot}4\ E^{-2{\cdot}0\pm0{\cdot}2}\ \text{photons cm}^{-2}\ \text{s}^{-1}\ \text{keV}^{-1}$$

which, when extrapolated to lower energies, is in reasonable agreement with the results of Gursky *et al.* (*Ap. J.*, **150**, L75; 1967) and Bradt *et al.* (*Ap. J.*, **152**, 1005; 1968). Furthermore, we note that other workers have obtained power law photon number spectra for Tau *XR*-1 and Cyg *XR*-1; for example, Peterson *et al.* (Proc. Tenth Intern. Conf. Cosmic Rays, Calgary; 1968) quote

$$\frac{dN}{dE} = \begin{cases} 3{\cdot}50\ E^{-1{\cdot}91} & \text{Tau } XR\text{-1} \\ 3{\cdot}58\ E^{-1{\cdot}93\pm0{\cdot}2} & \text{Cyg } XR\text{-1} \end{cases}$$

The spectral exponents in the spectra of *GX* 3+1, Tau *XR*-1 and Cyg *XR*-1 are statistically identical, while there are other objects known to exhibit markedly different spectral characteristics (our paper shows that Sco *XR*-1, for example, has $\frac{dN}{dE} \sim E^{-2{\cdot}8\pm0{\cdot}4}$ above 20 keV). This suggests that the three X-ray objects *GX* 3+1, Tau *XR*-1 and Cyg *XR*-1 are physically similar to one another. The fact that Tau *XR*-1 is known to be a supernova remnant, the spectral shape itself suggesting that the X-ray emission from Tau *XR*-1 may be due to magnetic bremsstrahlung, suggests a similar explanation for *GX* 3+1 and Cyg *XR*-1".

CORRIGENDUM. The last paragraph of the article "Surface Forces: Direct Measurement of Normal and Retarded van der Waals Forces" by D. Tabor and R. H. S. Winterton (*Nature*, **219**, 1120; 1968) should read: We thank Professor F. P. Bowden for his constant interest in this work, which was carried out with the valuable support of the Gas Council. One of us (R.H.S.W.) thanks the SRC for his research studentship.