NEWS AND VIEWS

Can Science Afford Scientists?

PROFESSOR DEREK DE SOLLA PRICE has been back at his computer and has come up with yet another yardstick for taking the measure of science. Recently he devised a system for measuring the scientific prowess of nations, based on what he called "National Brownie Points". These marks of esteem were merited by the number of times a country's nationals featured in those latterday domesday books *Chemical Abstracts* and *Physics Abstracts*. Now Dr Price has created an even more invidious system of comparison (*Proceedings of the Israel Academy of Sciences and Humanities*, **4**, 98; 1969). Ever in search of his philosopher's stone, he has laboured mightily with pestle and alembic and brought forth a homunculus, known as the Publishing Scientist, to which, like Procrustes, he will cut all comers to measure.

Who is this creature, the Publishing Scientist? What miserable exigencies of the academic ladder has he been conjured forth to parody? Truth to tell, he is no abstract personification of scientific logorrhoea. He may be you or me or Dr Price, for the world holds 126,055 of him. To unveil the mystery, the Publishing Scientist is defined as "the name of each scientist whose name was placed first among the authors of papers listed in *Current Contents* during the year 1967".

Having distilled this portent from the turbulent liquor of *Current Contents*, Dr Price puts it to work as the measure of all things. He can rank the nations in terms of the number of Publishing Scientists they possess, and even elaborate a *Guide Michelin* to the major scientific publishing cities of the world. In the three star class come Moscow, with a stupendous 4,982 Publishing Scientists, followed not too closely by London (2,915), New York (2,783), Paris (1,804), Tokyo (1,681), Washington (1,506), Boston (1,453) and sundry other cities down to Cambridge, Massachusetts, which has barely a thousand Publishing Scientists to its name. At the nadir of this elitist hierarchy come such off-the-map places as Leeds (only 249 Publishing Scientists), Gif-sur-Yvette (248), Minsk (231), La Jolla (231) and Salt Lake City (203).

Dr Price has more mileage yet to get out of the Publishing Scientist. The world league is topped by the United States with 52,195 Publishing Scientists, Britain (13,103) and the Soviet Union (which fields a miserable 10,505) and runs down to Monaco and Lichtenstein with 4 apiece and the Virgin Islands which support only a pair. Dr Price has discovered that a country's standing in the world league is related not to the size of its population but to its material assets. From a plot of Publishing Scientists against gross national product it appears that "the most scientifically developed nations, from the biggest to the smallest, cluster along a line which corresponds to one author on the International Index for every $10 million of GNP". Every first named author in *Current Contents* will be proud to hear that he is so substantial an emblem of Mammon. Dr Price proceeds to calculate that if most nations can be assumed to spend one per cent of their GNP on scientific research and if each Publishing Scientist does duty for three of his unpublished colleagues, then each country is spending about $25,000 per scientist to cover his salary and apparatus.

Dr Price is unexpectedly generous in laying bare the mysteries of his alchemical craft. The purpose of raising the Publishing Scientist is not to set editorial spines shuddering with frissons of despair; rather, the spectre has arisen because of Dr Price's belief that "we are getting to the point where there must arise a fairly hard, respectable and useful academic discipline that will do for science what economics does for the economic life of nations. We need . . . a Keynesian type of theory . . . to understand the machinery that makes science act the way it does and grow the way it grows". Is the Publishing Scientist really to be the Atlas of this new world? Apparently he is, because the *bona fide* scientist has not the sinews to support the hard, respectable and useful academic discipline that must ensue. "In the atomic and space era, science," Dr Price confides, "is rapidly becoming far too important to be left to the scientists".

PULSARS

Stirrings in the Crab

AT the end of last year there were several reports confirming that the frequency of the pulsar in the Crab Nebula (NP 0532) had changed towards the end of September 1969 by $\frac{\Delta\omega}{\omega} \sim 2{\cdot}5 \times 10^{-9}$. J. D. Scargle and E. A. Harlan have reported recently that the wisps close to the position of NP 0532 near the centre of the Crab have since undergone definite changes, the cause apparently originating at the time of the "spin-up" event (*Astrophys. J. Lett.*, **159**, L143; 1970). Scargle's previous work on the activity of wisps in the nebula has led him to conclude that the energy stored in them is about 10^{41} ergs, while it is known that the observed spin-up corresponds to an increase in rotational energy of the hypothetical neutron star associated with this source of the same order of magnitude. There is thus good cause for accepting that the variations seen in the wisps are physically related to the spin-up phenomenon and are not coincidental.

The variations described by Scargle and Harlan take two forms, involving both an increase in brightness of the so-called thin wisp and wisp 1 in the series just to the north-west of the pulsar, and also changes in the shapes of these wisps combined with an outward movement away from the position of the pulsar. The time elapsed between the spin-up event and the observation of the commencement of this sequence of disturbances seems consistent with a disturbance