

logy and agriculture are the work of groups led by K. A. Chowdhury, J. L. Bhaduri and S. P. Raychaudhuri respectively. Broadly speaking, the work concentrates, quite reasonably, on the Sanskrit and Tamil literatures and traditions, but the Arabic and Persian influences are not neglected, for M. Z. Siddiqi writes on the Unani-Tibb medical system (Hellenistic-Arabic), and K. A. Chowdhury on the mediaeval botany of Urdu culture.

The general structure of the work is as follows. It opens with a chapter entitled "Survey of Source Materials" by S. N. Sen, a contribution of capital importance, since the history of science and technology in India has long been bedevilled by the great difficulty of dating ancient and mediaeval texts. Even now they can often only be fixed to within a century or so, but some progress in this fundamental philological endeavour has been made, and the introduction seems fully objective, giving adequate warning of differences of opinion where they exist. Armed with this yardstick the reader can fearlessly follow the succeeding eight chapters which deal with the sciences and technologies topic by topic. At the end comes a résumé chapter, by B. V. Subbarayappa; this is nearly fifty pages long, including a chronological table, and summarizes the results of the previous 567 pages.

A research tool of this magnitude has to be judged in part by its apparatus, and the present volume measures up to that ideal quite well. There are tables of standard abbreviations for journal references quoted, and, more interestingly, for the titles of the original primary sources in Sanskrit, Tamil, Arabic and Persian. A good bibliography of these follows, with indications of translations into Western languages if any such exist. Here it would have been rather helpful to have given a brief dating in each case, or at least a cross-reference to the page in the introductory chapter where that dating is discussed. After this comes the bibliography of secondary sources, sufficient up to a point, but with some curious deficiencies; for example, (a) one would have expected more than just a single reference to the outstanding work of David Pingree on Indian astronomy, (b) the name of Abdul Rahman does not appear at all, though one might well have expected to find him among the collaborators for the Arabic-Persian sector, (c) S. Mahdihassan, repetitive but occasionally inspired, is omitted from the bibliography, and (d) apart from Mikami Yoshio's old work on East Asian mathematics there seems to have been no use of modern Japanese studies of Indian science such as those of Yano Michio. Lastly, there is an index of twenty-eight pages; had it been twice as long, such a fine work as this

would have been twice as useful. Entries of major importance are missing, and an entry with but one page ought to have had a dozen or so. For example, there should have been such entries as follows (I add the pages since readers may like to note them): alloys (304, 308), *amrta* (285), brass (299), bronze (304, 306), distillation (306, 333), elements, five, see *pancabhūta*, flux (302), fuller's earth (337), "intentional language" (338), stirrups (611), and so on and so on.

In general, the book is highly factual, with abundant provision of terminology and nomenclature, and there is little speculation. When this does come in, it is mostly in connexion with relations with other cultures, with influences and transmissions. In mathematics and astronomy the questions of interchange with the Hellenistic world and China are naturally prominent; in alchemy Chinese and Arabic culture are to the fore, and here the interesting suggestion is made (page 589) that the introduction of salt by Paracelsus into his *tria prima* alchemy of Tamilnadu, one exponent of which, Ramadevar, is known to have visited the Arabic culture area and taught the doctrine there. But on the whole this notable handbook will be used primarily for its factual content, and though it does not replace earlier guides such as the valued work of Renou and Filliozat, it is wholly devoted to science as theirs was not, and it will be an indispensable addition to the armamentarium of all scholars interested in this noble subject.

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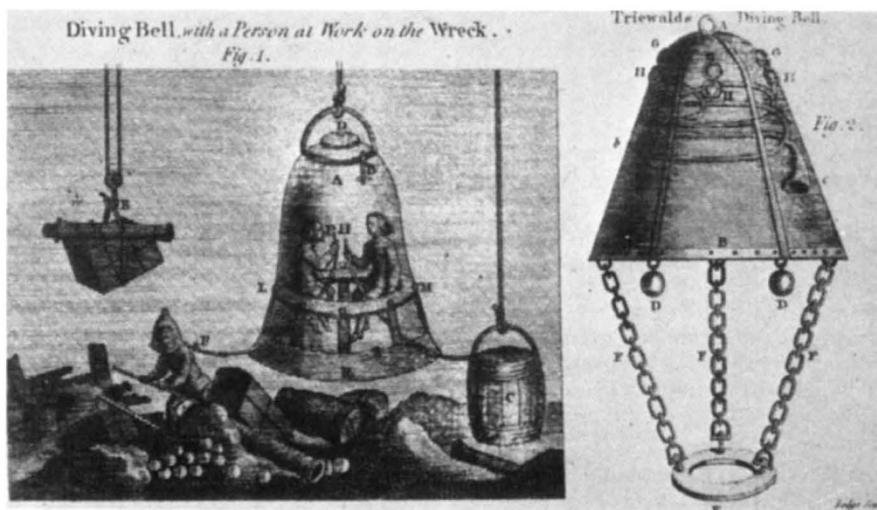
## Pedigrees of Words

*Pedigree: Essays on the Etymology of Words from Nature.* (The New Naturalist.) By Stephen Potter and Laurens Sargent. Pp. 322. (Collins: London, September 1973.) £3.25.

JUSTIFIABLY, the Oxford English Dictionary (OED) usually stops when it has traced a word to a source or root in one of the innumerable languages that we have raided in constructing our language. At that point the lexicographer feels that his job has been done. The OED sometimes unbends a little and, in small type, discusses the source. Potter and Sargent excel in this supplementary role. They concentrate on biological words; especially on the names of birds. For about half the words they do not add anything to what is in the OED. But they present the material in a handy form, and add colour and many anecdotes. Both sources agree, for example, that pedigree comes from *ped de grue*, because a crane's foot resembles a mark used in genealogical tables; that grow, green and grass have a common origin; that groundsel has an intrusive r and was originally *gund* (=pus) swallower; and that "to curry favour" was originally "to curry favel"—Favel was the name of an imposing horse in a fourteenth century French story.

Going beyond the OED, they relate hybrid with hubris: the combination "hybrid vigour" is therefore tautological. They derive elephant from its Sanskrit name *ibha* and the Semitic article *el*. They derive dupe from the French for a hoopoe—a supposedly stupid bird, so that anyone behaving in

## Diving Device



Diving bell invented by the astronomer Edmund Halley in 1720. Divers received a continuous air supply through tubes attached to a cask lowered from the surface. From the chapter on the early history of diving by Robert E. Marx in *Oceanography*, edited by R. Gordon Pirie (Oxford University: London, New York and Toronto, July 1973; boards £5.25; paper covers £2.70).