

'Before we can consider the possibilities of life on worlds chemically very different from ours we must give some thought to three basic requirements, without which life could not exist. First, any living organism must have some chemical system for the rapid exchange of energy. Many such systems exist, even on this world; the simplest of them depend on those chemical elements which can exist in two readily interconvertible states, like the oxidized and reduced forms of iron or copper. We might expect to find on an alien world that our alien creatures were less dependent on iron and more dependent on something else; but the important thing is that a wide variety of systems is available.

'Our second—and most vital—requirement is some compound which is sufficiently complex and ordered to carry hereditary information and which can easily be duplicated. On earth only one such mechanism is known—the nucleic acid system which underlies all life. . . . We do not know if other systems would do the job, but we can conceive of some that *might* do it. . . . But whatever chain we postulate, we immediately get involved with our third requirement—which is simply that there must be some fluid in which reactions can take place. On earth this is water.

'Would our own nucleic acid system work in any other medium? It would almost certainly work in liquid ammonia on a planet like Jupiter; and it is at least chemically conceivable that in those cold seas there may be swimming intelligent animals with an internal chemistry very like our own.

'Three worlds in which acids would not serve turn up occasionally in the literature: the chlorine world, the silicon world and the world to whose inhabitants oxygen is toxic. We can accommodate these within our previous speculations, although in every case the author has got them slightly wrong. Speculations of this sort cannot be made one at a time—one off-beat chemical speculation implies a whole lot of ancillary requirements. For this reason chemically alien worlds tend to be implausible.

'Authors have more usually considered the possibility, on substantially earth-type planets, of quite alien life forms. The commonest of these is the colonial organism, individually made up of microscopic or sub-microscopic units, but collectively of great intelligence. I believe that this entire concept is based on a fallacy. For intelligence requires memory, and for memory there must be some permanent, ordered structure to which each of the individual units is uniquely linked. This seems to have been intuitively realized by the authors, for in every case they have made their colony telepathic; but for this to solve the problem the colony mind must in some sense exist as a permanent, ordered structure of its own. The problem is related to that of the disembodied mind, whose most familiar examples are due to Arthur Clarke. I believe that exactly the same difficulty underlies the idea of the free-space alien, and I am far from happy about Hoyle's Black Cloud.

'So life ultimately depends on the existence of very complex chemical molecules with very special properties, and we simply do not know how many such molecules do, or even can, exist. From experience on earth the prospects are not very hopeful; we have no alternative to the nucleic acid system. If there is indeed no other molecule which meets all the requirements, then in the whole of the universe there is only one road that leads to life. Those sf writers who simply postulate earth-type planets on which space travellers meet bizarre creatures, sometimes of great intelligence, are often thought of as being unsophisticated; but our present scientific knowledge suggests that it is their prophecies which are the most plausible, and their aliens the type we are most likely to meet.'

WANTED AND FOR SALE

MR L. A. TILBY, 67 Pond House, Pond Place, Chelsea, London, S.W.3, has for sale the following SFBC past titles: Nos. 9, 12-65 and 68-83.

Miss J. F. Harris, 9 Kingsholm Square, Gloucester, would like to obtain the following books by A. E. Van Vogt, in either paperback or hard-cover editions: *The Weapon Shops of Isher*, *The Weapon Makers*, *The Pawns of Null A* and *The House that Stood Still*.

Both these members should, of course, be contacted direct.

THIS MONTH'S CHOICE IS
NINE TOMORROWS by Isaac Asimov
(Dobson 15s; SFBC 6s)

NEXT MONTH'S CHOICE IS
THE AIRS OF EARTH
by Brian W. Aldiss
(Faber 18s; SFBC 6s)

THE NEW PLAN

A Reminder

AS MEMBERS will know from last month's *SF News*, the whole Readers Union range of Optional books is now available to them. Here we will just give brief details of the Optional titles for January and February, and remind you that it is always wise to order as quickly as possible. Fuller details of the books below are, of course, in the Supplement sent out with the November *SF News*:

THE JANUARY ADDITIONAL IS
TRADITION AND DREAM by Walter Allen
(Phoenix House 30s; RU 19s 3d, post free)

THE JANUARY SUPPLEMENTARY TITLES ARE
GREAT AGES OF WORLD ARCHITECTURE
Vols. XI and XII
(Prentice-Hall 30s each; RU 17s 6d each, post free)

THE FEBRUARY EXTRA IS
HISTORY OF MANKIND—Vol. I: Prehistory and the Beginnings of Civilization
by Jacquetta Hawkes and Sir Leonard Woolley
(Allen & Unwin 75s; RU 46s, post free)

THE FEBRUARY SPECIAL IS
FLY AND THE FLY BOTTLE by Ved Mehta
(Weidenfeld & Nicolson 25s; RU 16s, post free)