EXCHANGE OF BIOLOGICAL PUBLICATIONS WITH CHINA

THERE are 35 natural history societies co-operating closely with The Academia Sinica, which is the Central Scientific Organisation in China, and forming a combination with other scientific societies, known as the All-China Federation of Scientific Societies (headquarters at the Academia Sinica). These societies publish 42 journals concerned with the natural sciences of which 5 are issued at Federation level.

The *Acta Academia Sinica* is a journal of general science, containing many biological papers, mostly in English, French and Russian. The papers are translations of important contributions to specialised journals printed in Chinese. Thus, the intention of the *Acta Academia Sinica* is to provide "a window on the progress of Chinese science". There are besides specialised journals in Chinese, but the papers usually have long abstracts in English or French—sometimes in Russian. The principal journals in the natural sciences are: (1) *Acta Zoologica Sinica,* (2) *Acta Entomologica Sinica,* (3) *Acta Phytotaxonomica Sinica,* (4) *Acta Botanica Sinica,* (5) *Acta Geologica Sinica,* (6) *Acta Palæontologica Sinica,* and (7) *The Chinese Journal of Experimental Biology*. There is also the monographic *Palæontologica Sinica.*

The Academia Sinica publishes annual abstracts in Chinese of foreign biological papers and reprints for the purpose are welcomed. Moreover, it hopes in the near future to publish annual volumes of classified abstracts in the principal foreign languages of scientific papers printed in Chinese; and this prospect needs encouragement.

Exchanges are welcomed and all arrangements can be made through Dr. Tsao Jih-chang, Secretary-General, Academia Sinica, Peking, China. In making new exchanges the Academy is eager to acquire back-numbers as well, so that it can have full sets as far as possible. It would be grateful, too, for information on pre-1950 numbers of most scientific journals which are available for sale or exchange. as the periodicals in most Chinese libraries were seriously neglected between 1937 and 1949. Lists of standard books published during this period and offered for sale would be equally appreciated. Dr. Hsiang Ta, Chief Librarian, Peking University, Peking, appeals for similar information.

STEPS TOWARDS SYNTHESIS OF FOODSTUFF

A GROUP of plant physiologists at the University of California, headed by Professor Daniel L. Arnon, have announced the extraction of chloroplasts intact from the green plant cells, taking their chlorophyll with them, and their use for the production of sugar from water and carbon dioxide in laboratory vessels. It was a direct chemical synthesis without the aid of the green leaf or any living part of it. It was a duplication, without life, of what only life has hitherto been able to achieve.

Success came to the California research team after they had discovered the role played by adenosine triphosphate (ATP) in the process. ATP is a compound of phosphorus, present in every living cell, and has been known for a long time as essential to the cell's nutrition.

The present discovery has revealed that ATP and the vitamins such as riboflavin and ascorbic acid also play an essential role in plant life. The use of sunlight by plants involves four steps. First, the chlorophyll absorbs the light energy from sunshine. Second, the chloroplast uses that energy to decompose water into hydrogen and oxygen. Third, the active hydrogen is taken up by the ATP. Fourth, the ATP carries the hydrogen to the carbon dioxide and uses its energy to combine the hydrogen with the carbon dioxide. The result is the formation of a simple sugar and the liberation of oxygen.

This simple explanation of how plants achieve this process also reveals why phosphates are so necessary in plant fertilizers. Without phosphate the plant cannot make ATP and this cannot grow Furthermore, it is now clear why green vegetables are necessary in human nutrition For their own purposes they contain the ATP and the vitamins which the human body also needs for its growth and life.

Contrary to the common impression, plants are not efficient in the use of sunlight. Less than 1% of the sun's energy which falls on a field of grass, grain or vegetables is what is actually used in producing food. All the rest is absorbed by the soil, is used in evaporating water, or is dissipated as heat. But if a synthetic food factory could use as little as 2% of the available sunshine it would represent an enormous increase in the world's food production. This is a modest goal. Five per cent. efficiency is not too much to expect. Under the circumstances, Dr. Arnon's phrase "a new era of unlimited abundance" expresses a hope that is perhaps well justified.—UNESCO.