Vaucheriaceæ. By G. S. Venkataraman. (Indian Council of Agricultural Research, New Delhi), 1961. Pp. v + 112. Price (not given).

International Series of Monographs on Nuclear Energy-Reactor Safegaurds. (Pergamon Press, Headington Hill Hall, Oxford); 1962. Pp. ix + 390. Price 80 *sh.*

Advances in X-Ray Analysis (Vol. 5). Edited by W. M. Mueller. (Plenum Press, Inc., 227; West 17th Street, New York-11), 1962. Pp. xi + 564. Price $ 17.50.

The Universe and Man. By Paul Bergsoe. (Methuen and Co., London W.C. 2), 1962. Pp. x + 234. Price 36 *sh.*

Advances in Computers (Vol. 3). By F. L. Alt and M. Rubinoff. (Academic Press, New York and London), 1962. Pp. xiii + 361. Price $ 12.00.

Symposium of the International Society for Cell Biology. (Vol. I)—*The Interpretation of Ultrastructure.* Edited by R. J. C. Harris. (Academic Press, New York), 1962. Pp. x + 438. Price $ 14.00.

Symposium of the Society for Experimental Biology No. XVI—*Biological Receptor Mechanisms.* (Cambridge University Press, London N.W. 1), 1962. Pp. vi + 372. Price 50 *sh.*

The Biology of Cilia and Flagella. By M. A. Sleigh. (Pergamon Press, Headington Hill Hall, Oxford), 1962. Pp. xiii + 242. Price 70 *sh.*

Adsorption and Collective Paramagnetism. By P. M. Selwood. (Academic Press, New York and London), 1962. Pp. ix + 189. Price $ 7.50.

Practical Chemistry an Integrated Course. By J. W. Buttle and D. J. Daniels. (Butterworths, London W.C. 2), 1962. Pp. xi + 294. Price 21 *sh*

SCIENCE NOTES AND NEWS

Award of Research Degree

Andhra University has awarded the D.Sc. degree in Geophysics to Shri P. Jaganmohana Rao for his thesis entitled "Studies on Local Heat Balance at Waltair".

Indian Journal of Pharmacy—Silver Jubilee Year

The Indian Journal of Pharmacy was started in 1939 at Benares as "a quarterly Journal devoted to the science and practice of Pharmacy in all its branches". It became the official publication of the Indian Pharmaceutical Association in the next year. The publication offices were transferred to Bombay in 1946. The Journal was converted into a bimonthly in 1949 and from the following year it has been appearing as a monthly periodical.

The Journal has successuflly served as a medium for the publication of the results of researches carried out in the various branches of pharmacy both in academic institutions and in pharmaceutical industry. Other features of the Journal are Technical Notes, Hospital Pharmacy, New Products and Equipment and Forensic Notes.

The Indian Journal of Pharmacy enters the Silver Jubilee Year—the 25th year—of its publication and proposes to celebrate it by publishing enlarged issues featuring a number of special articles.

"*Discovery*" to Join the Indian Ocean Expedition

Britain's research ship, the *Discovery*, will leave London shortly for an 18-month voyage as part of the international Indian Ocean expedition. The *Discovery*, which is one of the best equipped research vessels will carry a team of 20 scientists and is to join two other British survey vessels already taking part.

Among the many problems to be investigated by scientists on board the *Discovery* in the Indian Ocean are those relating to the manganese nodules known to be present at the bottom of the ocean, and meteorological and oceanographic conditions affecting marine life in this virtually unknown sea. The scientists hope to make a full assessment of the extent of the nodule deposits and their economic value to neighbouring lands. They will also use underwater equipment for detecting concentrations of fish and marine animals.

Natural Triploid in Brinjal (*Solanum melongena*, Linn.)

Messrs. V. M. Chavan, D. G. Bhapkar and D. P. Bhore of the Agricultural College, Poona, write: During the hot weather season of 1961-62, a very vigorous plant was observed in a brinjal (variety *manjri-gota*) plot at the Agricultural College Farm, Poona. It showed peculiarities in flower, all the flowers being long styled which

is not common in the above variety. Cytological investigations showed that the haploid number of chromosomes in this plant was eighteen, containing very often 17 bivalents and two univalents, thus showing a triploid origin since normal (diploid) has the haploid number of twelve.

Inheritance of Some Seed Characters in Broad Beans (*Vicia faba* Linn.)

Shri R. D. Goyal, Government Research Farm, P.O. Nawabganj, Kanpur (U.P.), writes: Reciprocal crosses made between two widely different varieties of Broad Beans, a 'local' and an imported 'windsor', revealed that the characters for shape, colour and dimpled nature of the seed behaved independent of one another and had no linkage among the genes determining them. 'Rectangular seed with rounded ends' is dominant over 'oval' seed. Similarly, 'dark blackish-brown seed with light brown patches' is dominant over 'yellow' seed. 'Dimpled' seed is dominant over 'non-dimpled' seed. Segregation studies in F. 2 for each character studied separately expressed a typical mono-hybrid ratio of 3 : 1 in each case.

Oldest Fossils

In 1954, Barghoorn and Tyler discovered the fossil remains of a group of fungi and algæ in a Precambrian formation near Schreiber, a town in Central Ontario, near Lake Superior. The fossils include two primitive species of fungus, probably belonging to the calcareous flagellates and two types of blue-green alga, the last resembling species still living. Barghoorn and Tyler put the age of the fossils as two billion years old on geological grounds.

Hurley and his associates of M.I.T. have recently reported in the *Journal of Geology*, the results of their radioactive dating of the Schreiber fossils. Using potassium-argon and strontium-rubidium techniques they have dated these fossils as being 1·7 to 2·1 billion years old.

Stimulated Raman Scattering from Organic Liquids

When a liquid laser is operated in conjunction with a ruby laser it has been observed that the spectrum of the light emission from the liquid contains simultaneously with the ruby line 6943 Å (14402 cm.$^{-1}$), other lines which are shifted from it by amounts which coincide closely with the intense Raman shifts characteristic of the liquid. The results of this stimulated Raman scattering observed with twenty organic liquid lasers are reported by Woodbury *et al.* in a recent issue of the *Physical Review Letters* (1962, 9, 455). Among the liquids investigated are benzene, nitrobenzene toluene, bromonaphthalene, pyridine, cyclohexane and deuterated benzene C_6D_6.

One notable feature in the observation on stimulated Raman scattering is that the emission shifts in certain liquids correspond not only to the fundamental Raman shifts but also to their first and second harmonics.

X-Rays from Sources Outside the Solar System

Data of a rocket experiment carried out to study fluorescence X-rays of solar origin from the moon and the night sky have given evidence of soft X-rays coming from sources outside the solar system. The experiment was conducted with an Aerobee rocket equipped with sensitive X-ray counters, launched at midnight on June 18, 1962 from the White Sands Missile Range, New Mexico. The rocket's payload consisted of Geiger counters fitted with lampblacked (to shut off ultra-violet light transmission) mica windows 20 cm.^{2} area and thicknesses varying from 0·2 mil. to 1·0 mil. The counters were designed to detect soft X-rays in the wavelength range 2–8 Å. The rocket reached a maximum altitude of 225 km. and was above 80 km. for a total of 350 seconds.

A graphical analysis of the total counts obtained during the entire flight showed a peak intensity which could be interpreted as due to a well-collimated beam of radiation coming from space against a diffuse background. It was also clear that the observed radiation could not be corpuscular but only electromagnetic in nature. The inference drawn is that the bulk of the radiation is due to a source emitting X-rays of wavelength about 3 Å, and lying outside the solar system. Synchrotron radiation by cosmic electrons is a possible mechanism for the production of these X-rays.—(*Phys. Rev. Letters*, 1962, 9, 439.)

Extreme High Vacuum Chamber

The National Research Corporation of Cambridge, Massachusetts, has announced the development of an extremely high vacuum chamber capable of reaching pressures even lower than those experienced in interplanetary space. The NRC Extreme High Vacuum chamber has reached pressures as low as 10^{-15} torr—a pressure lower than that estimated to be found in interplanetary space, or millions of miles from earth. This is some 10,000 times lower pressure than that reached by the best chambers available for

space simulation in the aerospace industry which go down to 10^{-11} torr, comparable to 800 miles above earth.

At 10^{-15} torr, the environment is so free of gases that in space a molecule would travel an average of 30 million miles before colliding with another molecule. At this pressure there would be only 30 molecules per c.c. compared to $2{\cdot}5 \times 10^{19}$ molecules per c.c. at nirmal sea-level pressure.

The entire system of the NRC chamber is 7 ft. long and 3 ft. in diameter. The working region in which the extreme high vacuum is achieved is about half of this size. The pumping system uses oil diffusion pumps with cold caps and liquid nitrogen cooled baffles which eliminate backstreaming. On a test run the chamber reached the 10^{-15} torr range in 30 hours. Typical experiments readily possible in the new facility include studies of gauges, surfaces, friction, cryogenics and pumping.—(*Jour. Frank. Inst.*, 1962, 274, 418.)

Data from Mars Probe

The Soviet interplanetary station Mars-I was launched on November 1, 1962. The Tass statement of January 26, 1963 says that in its about three months flight the station has covered a distance of about 230 million kilometres and is 43 million km. away from the earth. The speed of the station's movement away from earth is growing constantly. When the station was leaving the sphere of the earth's influence its speed was about 4 km./sec. Now it has grown to 10·2 km./sec.

Regular and stable radio communications are being maintained with the station. Telemetric data received on earth indicate that the temperature and pressure on board the station are maintained at the pre-set range: temperature from 10 to 15° C. and pressure 850 mm. Exposure to light has diminished considerably because the distance between the sun and the probe has increased. Therefore, according to the flight programme, on January 5 the groups of elements of the solar batteries were switched into a parallel circuit.

Over 50 radio sessions with the probe have been conducted from the beginning of the flight. Over 1000 commands have been transmitted to the ship. From preliminary data it has been established that the intensity of cosmic rays in outer space increased by several tens of per cent. as compared with the measurements made in 1959. This is explained by the lesser solar activity at present. Growing intensity of cosmic radiation has also been noticed during the flight of the station which, apparently, can be explained by the drawing off of the probe from the sun.

Investigations of plasma in the near-earth zones of space has confirmed that the ionized gas envelope of the earth extends to altitudes of some 20,000 km. The existence of the highest belt of charged particles has been confirmed again. It has been found that in this belt the total number of particles captured by the geomagnetic field and their concentrations are greater than in the radiation belts situated closer to the earth.

For the first time vast data have been received on the streams of solar plasma in that part of space which is more distant from the sun than the earth. Registration of meteor particles, with masses greater than 1000 millionth part of a gram, showed a relatively high density of meteor matter at distances of up to 40-50 thousand km. from the earth. It has been found that the number of particles of such a mass decreases at greater distances.—(*Soviet News.*)

120–63. Printed at The Bangalore Press, Bangalore City, by T. K. Balakrishnan, Superintendent, and Published by S. R. S. Sastry, for the Current Science Association, Bangalore.
All material intended for publication and books for review should be addressed to the Editor, *Current Science*, Raman Research Institute, Bangalore-6.
Business correspondence, remittances, subscriptions, advertisements, exchange journals, etc., should be addressed to the Manager, Current Science Association, Bangalore-6.
Subscription Rates : India : Rs. 12–00. Foreign : Rs. 16–00 ; £ 1–4–0 ; $ 4.00.