

OLD WORLD

Bringing Back the Lunar Bacon

from our Soviet Correspondent

LUNA 20 has arrived back from the Moon with samples of rock from the lunar mountains. Although these samples can weigh only a few grams—compared with the many pounds of lunar material returned to Earth by the Apollo programme—they may be of crucial significance to astronomers concerned with the age and origin of the Moon. Indeed, many planetary scientists would willingly trade the bulk of the Apollo Moon samples, which seem to be chiefly young material, for a small amount of rock from the mountains, where it is believed that the rocks are the oldest on the Moon—some 4.5×10^9 years old, according to current theories.

The snag has been, from the American point of view, that it is simply too dangerous to attempt to land a manned spacecraft in the lunar mountains. The fate of Luna 18, which apparently failed to carry out a similar task to that now successfully accomplished by Luna 20, highlights this; of all the tasks which the Russians could have chosen, this mission perhaps most clearly shows the advantages of unmanned exploration. This is not to say that manned projects are to be avoided—there is room for both manned and unmanned missions in the scientific exploration of space. It would, however, be foolhardy to suggest that NASA has any prospect of obtaining rocks from the lunar mountains, just as it would be foolhardy to suggest that the Russians have any hope of landing men on the Moon in the near future.

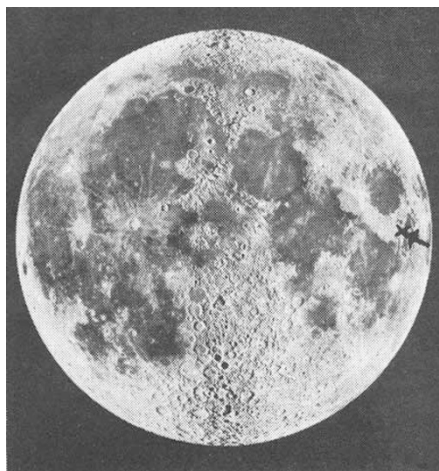
Luna 20 is the latest in a series of Russian missions which have proved strikingly successful. Luna 16 returned the first automatically gathered samples of Moon rock in September 1970; Luna 17 carried the first Lunokhod, which operated for many months in the Sea of Rains; Luna 18 failed to carry out the mission which Luna 20 has now accomplished; and Luna 19 has been orbiting the Moon since September 1971, apparently taking photographs and studying gravitational and magnetic anomalies, possibly so that Luna 20 might succeed where Luna 18 failed.

The landing site of Luna 20 was some 120 km north of the region from which Luna 16 recovered specimens (see figure). Whereas Luna 16 landed in typical mid-mare terrain, the highland area where Luna 20 touched down was

described by Soviet selenologists in *Pravda* last week as representing “the most ancient pre-geological stage of development of the Moon—the stage of condensation of lunar matter from the primary protoplanetary gas-dust cloud”. The unprecedented announcement of the failure of Luna 18 (in the past unsuccessful probes have been announced as having “completed their mission”) reflects the grave disappointment felt by the Soviet selenologists when results were not available.

Luna 20, therefore, seems almost certainly to be a second attempt at the programme planned for Luna 18. Further confirmation of the similarity of the two missions is provided from Jodrell Bank, where the touchdown of Luna 20 was monitored at 1919 GMT on February 21. The signals received were of the same general type as those from Luna 16.

Before landing, the spacecraft spent 105 hours in lunar orbit to allow fine corrections to be made to ensure a successful descent. A specimen recovery was carried out under remote control from Earth. After descent the onboard television cameras were switched on to enable the best sites to be chosen for the drilling operation. Unlike Luna 16, which used a long tube to obtain a stratified core, Luna 20, which was intended to deal with harder material, used a shock rotary annular drill. The rock samples obtained were collected, packed and sealed into containers by special manipulators. From the description



Landing site of Luna 20, close to the crater Apollonius C in the mountainous region between the Sea of Fertility (south of Apollonius) and the Sea of Crises (north of Apollonius). North is at the top of this photograph, a composite of photographs taken at first and third quarters.

issued so far of this operation, it seems unlikely that it will be possible to relate the specimens to their original depths in the ground—as was possible with Luna 16. With the specimens safe on board and using the descent stage as a launch platform in the manner of the Apollo modules, the return capsule blasted off at 2258 GMT on February 22. Re-entry was controlled by aerodynamic braking and parachutes. The descent rockets developed for the ZOND probes do not appear to have been incorporated into Luna 20. Touchdown was at 1912 GMT on February 25.

The first reported trouble arose at this stage. The capsule descended into what were described as “exceptionally unfavourable meteorological conditions”—strong winds, low cloud cover and a blinding snowstorm. An approach was made to Jodrell Bank for their latest information on the capsule. The recovery team finally located it 40 kilometres south-west of Dzhezkazgan in the Kazakh SSR, and the capsule is now on its way to the Space Research Centre of the Soviet Academy of Sciences.

PHARMACEUTICALS

Putting on a Hex

THE warning issued by Sir Keith Joseph recently on the possible dangers of using hexachlorophene has caused considerable disquiet in some medical circles. Hexachlorophene has been in use in hospitals around the world for more than twenty years, and there has been considerable disbelief that a chemical so widely used for so long can really be dangerous. Hexachlorophene is used in concentrations of about 0.2 and 0.3 per cent in many cosmetic soaps and talcum powders, and is also used medically in concentrations up to 3 per cent.

The three chief uses of hexachlorophene in hospitals are for hand washing by doctors and nurses between treatments of patients, for bathing patients with chronic skin infections (in which case it is considerably diluted), and for bathing babies in maternity units. It is these last two uses to which the warning chiefly relates.

The warning is the result of work published in both Britain and the United States, and follows a ban on the use of hexachlorophene by the Food and Drug Administration in the United States last December.

In studies undertaken by the FDA,