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OTHER AIRCRAFT The Czechoslovak-built L-410M has made a proving flight on the Belgorod - Voronezh - Tambov route. The L-410M flies at three times the speed of the An-2, which it is to replace on short-haul service. (Moscow I 0830 gmt 28 Oct 77)

The Yak-42 at present undergoing test flights, has new, economical engines. It is to replace the Tu-134 and Il-18 on short-haul flights and the An-24 on local services. (Moscow II 0900 gmt 28 Oct 77)

SERVICES A Tu-154 airliner has inaugurated a new, regular, passenger service between Alma-Ata and Arkalyk. (Moscow II 0730 gmt 30 Oct 77)

A Tu-154 has made the first proving flight from the new airport in Grozny. Next year it will provide a regular, direct service to Moscow. Today Grozny has air links with almost 30 large towns in the RSFSR, the Ukraine, Kazakhstan, Turkmenia and Moldavia. (Moscow II 1630 gmt 30 Oct 77)

An An-24 has inaugurated a new air service between Ulan-Ude and Nizhneangarsk. (Moscow II 2230 gmt 3 Nov 77)

NEW AIRPORT FACILITIES A new terminal building capable of handling up to 2,000,000 passengers a year has been opened in Rostov-on-Don. After reconstruction of the runway, the airport has started taking Tu-154 aircraft. (Moscow II 1130 gmt 6 Nov 77)

Construction of a new airport has begun in Tallinn. The first passengers to arrive will be competitors and officials of the Olympic sailing regatta to be held there in 1980. The new airport will handle 700 passengers an hour. (Tass in Russian for abroad 1335 gmt 4 Nov 77)

SCIENCE AND TECHNOLOGY

✓ **NEW RESEARCH REACTORS** Construction of a new, experimental fast-neutron pulse reactor, designated IBR-2, has been completed at the Joint Nuclear Research Institute in Dubna, near Moscow. The IBR-2 will be used to study the structure and properties of matter by means of neutrons. It is one of the biggest of its kind in the world and is 200 times more powerful than the unit being used at present in Dubna. Institutes and enterprises in Moscow, Leningrad and Obninsk co-operated in designing and building the reactor, and the shield control system was built in Poland. Scientists from 11 socialist countries will take part in research using the reactor. (Moscow II 1000 gmt 1 Nov 77)

Construction of a 100 MW reactor which will be one of the biggest and most advanced of its kind in the world has started at the Konstantinov Institute of Nuclear Physics in Gatchina, Leningrad Oblast. It will be used for fundamental research in the fields of elementary particle physics, nuclear physics, solid state physics, biophysics and biology, and also for dealing with practical tasks. More than 200 enterprises, scientific organizations and design offices are taking part in the project. According to Nazarenko, deputy director of the institute, the energy saturation in the active zone of the reactor will reach the record level of several thousand kW in one litre. This will provide a more intensive source of fast neutrons than can be obtained on existing reactors. A unique system of neutron conductors will make it possible to work with neutron beams of differing energy on dozens of physical installations simultaneously. Thus the new reactor, which has been given the name (?PIK), will significantly increase research possibilities. Scientists in the USSR and the other socialist countries have been invited to propose experiments to be conducted with the help of the new installation. (Moscow II 0800 gmt 4 Nov 77)

NEW MATERIALS TO REPLACE METALS SUBJECT TO CORROSION The Union Institute for the Protection of Metals from Corrosion has found that much metal which would otherwise become corroded can be saved if large-capacity industrial discharge conduits and containers are made of special acid-proof concretes developed at the

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institute. These concretes are already in use at power-engineering enterprises and chemical works. The institute has also developed a polymer carbon material for use in making electrolytic cells up to 3 m long, pipes up to 3 m in diameter and components for centrifugal pumps. This material has already been used in industry to good effect. Another material developed by the institute, non-woven carbon fibre, was used to make the rotor of a centrifugal pump which has been in operation at Voskresensk chemical complex (Moscow Oblast) for two years. The rotors used previously were made of metal and had a life of only two or three months. The present rotor is still as good as new and could well give several more years of service. (Moscow I 0830 gmt 17 Oct 77; talk by deputy director of the institute)

NEW EXPLANATION OF "TUNGUSKA ENIGMA" According to an article in the latest issue of the Moscow magazine "Turist", it is possible that the famous Tunguska meteorite, which exploded over the Siberian taiga in 1908 with an energy yield equivalent to that of 2,000 atomic bombs, was an artificial body from other worlds of the universe. The article reports the view of Aleksey Zolotov, a physicist and mathematician and well-known researcher into the "Tunguska enigma", that the explosion of the body from space was accompanied by nuclear reactions. He says that this is proved by the anomalous radioactivity in the annual rings of trees for that year. According to his calculations, the light energy of the explosion amounted to about 30% of the total energy released by the occurrence, and this, he says, is also evidence of its nuclear character. A comparison of eyewitness accounts of the flight of the meteorite suggests that the body changed its luminosity, height, speed and even trajectory; this, too, might indicate artificial origin. Zolotov has calculated that the exploding body was about 550 m long and about 60 m wide. (Tass in Russian for abroad 0517 gmt and in English 1026 gmt 4 Nov 77)

HYDROMETEOROLOGICAL RESEARCH IN INDIAN AND PACIFIC OCEANS The hydrometeorological research vessel Akademik Shirshov, of the Far Eastern Line, has left Vladivostok for the Indian Ocean. Scientists on board the ship will continue work on the problems of forecasting weather for the Far East, and 35 meteorological rockets will be launched. A few days earlier the scientific vessels Okean, Volna and Priboy left Vladivostok to work on the "Shelf" and "Dawn" programmes. The Okean will work with the USSR Academy of Sciences to study the spread of pollution, particularly oil, in the oceans. Under the "Dawn" programme, the Okean will release an oil slick and information on the spread of this slick will be obtained from observations by aircraft and satellites, including US satellites. The findings of the expedition are to be published after processing. The "Shelf" programme consists of studying the Pacific shelf zone of the USSR. (Vladivostok 0215 gmt 27 Oct 77)

NEW ZEOLITE CATALYSTS A State prize for 1977 has been awarded to a group of Soviet scientists who have developed new zeolite catalysts which accelerate the process of reaction several hundred times. According to Vadim Garanin, one of the scientists involved, the new catalytic compounds have already found application in industrial enterprises; for example, they are particularly effective in the production of motor vehicle fuels on a large scale. (Tass in English 1248 gmt 6 Nov 77)

AIR PURIFICATION BY TREES Experiments by Soviet biochemists have shown that certain types of trees, shrubs and even herbaceous plants can absorb harmful nitrogen oxides contained in motor vehicle exhaust gases. The scientists recommend that pines, maples, ash and cedars be planted in towns where there is particularly heavy traffic and a concentration of enterprises of the chemical industry. The poisonous compounds are absorbed mainly through the leaves, from where they spread through the plant in the form of organic amino-acids. It was previously thought that nitrogen oxide was harmful to trees. (Tass in Russian for abroad 0902 gmt 3 Nov 77)

SOVIET-US CO-OPERATION IN MEDICAL RESEARCH The Soviet-US programme for co-operation in medical research includes 75 joint projects. Among the fields covered are cardio-vascular diseases, the creation of an artificial heart, cancer and protection of the environment. In the past five years 550 US medical experts have visited the USSR and 400 Soviet experts have visited the USA. Exchanges of information, biological materials, chemical preparations and equipment are made. As a result of joint projects already conducted, almost 300 scientific publications and several monographs have appeared. Under a joint programme, Soviet and US physicians are to examine almost 40,000 persons in a search for the causes of arteriosclerosis. (Tass in English 1458 gmt 4 Nov 77; interview with Prof Dmitriy Venediktov, USSR Deputy Minister of Health)

NEW HIGH-CURRENT ELECTRONICS INSTITUTE A new high-current electronics research institute has been set up in Tomsk academic township. It will study the properties of intensively-charged particle fluxes and work on solving the problems of using electron beams in lasers. (Moscow I 1530 gmt 29 Oct 77)