INTERNATIONAL ATOMIC LABORATORY

Some thirty kilometres to the south-east of Vienna, a small placid village is being turned into a major centre of scientific activity. This is the village of Seibersdorf where the Austrian Society for Atomic Energy Studies (Studiengesellschaft für Atomenergie) is installing its reactor and laboratories. And it is in this village, close to the Austrian installations, that the International Atomic Energy Agency will have its functional laboratory, the first atomic laboratory to be built by peaceful world-wide co-operation.

The idea of such a laboratory was considered as early as the Agency's creation in 1957. The Preparatory Commission of the Agency, in its report, stated: "At the start of its operations the only course open to the Agency will be to contract out all its laboratory work; but the nature of some of this work will make it desirable for the Agency to carry it out in its own facilities". It would have been impossible and unnecessary for the Agency to start its operations with a full-fledged laboratory of its own, but it was realized that as its programme developed it would be useful for it to have independent arrangements for some of its scientific work, particularly in connexion with the establishment of international standards and procedures. Such facilities would also be useful for specific analyses and measurements to be undertaken on behalf of Member States which do not possess adequate facilities of their own.

The view that for the effective discharge of its varied statutory functions involving scientific analysis, measurements and testing the Agency should have its own laboratory was endorsed by its General Conference last year. Subsequently, the Secretariat prepared detailed plans which have now been approved by the Board of Governors, and construction work is expected to start soon.

The building is expected to be completed around the middle of 1960 and the scientific installations will start immediately thereafter. The staff (14 Professional and 24 of the General Service category) for the laboratory are also expected to be engaged at that time and it should be possible to start operating the laboratory in the last quarter of 1960. It is estimated that the construction work will cost about US $400 000 and the total equipment will be worth between $200 000 and $300 000. The United States Government is donating $600 000 for this purpose. The operating costs during 1961, the first full year of operation, will be a little over $240 000.

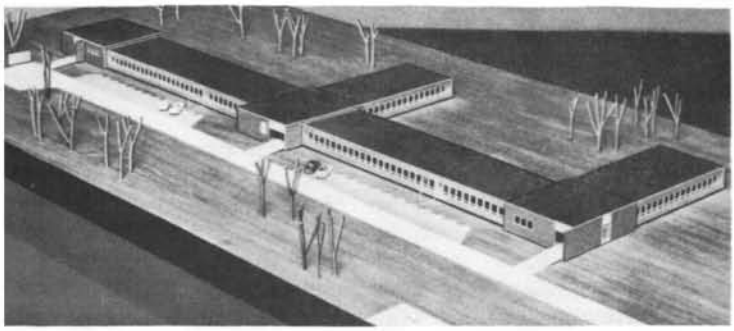
Functions of the Laboratory

The General Conference recommended that the scope of the laboratory should be limited to certain broad functions. The maximum functions envisaged were: (a) standardization of isotopes and preparation of radioactive standards; (b) calibration and adaptation of measuring equipment; (c) quality control of special materials for nuclear technology; (d) measurements and analysis in connexion with the Agency's safeguards and health and safety programme; and (e) services for Member States which can be undertaken with the facilities needed for the former activities.

The idea behind this recommendation will be clear if it is remembered that the research functions of the Agency are governed mostly by its other activities, by its Statutory obligation to encourage and assist peaceful atomic energy work in Member States and establish standards for health and safety and for safeguards against military use.

At the same time, it is not possible to determine in advance the precise nature of all work that will have to be performed in the laboratory; that will depend largely on the manner in which the other substantive activities of the Agency actually develop. The Agency's Scientific Advisory Committee expressed

The Director General, Mr. Sterling Cole, and the Deputy General for Research and Isotopes, Dr. Henry Seligman (in white coats), looking at construction plans during a visit to the site for the laboratory at Seibersdorf. With them are some members of delegations to the Agency and Austrian officials. In the background, Austrian atomic laboratories and reactor under construction



Model of the laboratory

the view that it would be unwise for the Agency at present to set up a highly specialized laboratory in which only a limited number of specific functions could be carried out. Instead, the character of the laboratory should be as flexible as possible, so as to make it suitable for varied work. Accordingly, the laboratory has been so planned that it will be possible to undertake in it a fairly wide variety of work. All this work, however, is strictly related to the functions recommended by the General Conference.

One of the possible types of work is connected with the establishment of standards relating to radioactive sources and measuring equipment. The preparation and calibration of standardized radioactive sources and the establishment of international standards for measurement techniques are among the functions envisaged in this connexion.

The establishment of health and safety standards for all peaceful atomic energy activities is one of the tasks that can be fruitfully carried out by the Agency and the laboratory has been so designed that it will be possible to carry out in it the necessary research and experiments. The work that may be done for this purpose includes the calibration of monitoring instruments of different countries, analysis of contaminated materials and development of techniques for the measurement of radioactive concentrations in the human body as a whole.

Another function envisaged is the quantitative and qualitative chemical analysis of ores and fuel elements as well as other materials used in nuclear reactors. This will be useful not only in connexion with the supply of nuclear materials by the Agency, but also in relation to the safeguards procedures that the Agency is trying to establish. It will also be possible to undertake work on the determination of impurities in fuel materials and moderators and on the isotope analysis of heavy water, uranium and uranium compounds. Besides, the laboratory will contain facilities for the checking of electronic equipment before despatch to Member States and for the storage of equipment to be distributed.

All these functions, however, are not proposed to be taken in hand at the same time. When the laboratory is nearly complete, it will be necessary to decide on the relative emphasis to be given initially to the various tasks envisaged.

Construction Plans

The laboratory will occupy a working floor area of 1 600 sq. metres. Apart from general facilities, it will have five main units; a workshop, a chemical unit, an electronics unit, a health physics unit and a radioisotope standards unit. The construction plan is based on a compromise between blocks and detached buildings, all of which will be single-storeyed.

The Agency has accepted an offer from the Austrian authorities of a site for this laboratory close to the reactor and the laboratories now being built by the Austrian Studiengesellschaft für Atomenergie. While chosing this site, the Agency considered the possibility that the radiation background in the immediate vicinity of the Austrian reactor might be high enough to interfere with measurements to be carried out in the laboratory. A major consideration against building the laboratory some distance away from the Austrian installations was that it would increase the building costs considerably because of the need to bring essential services to the laboratory over a distance. As for the possibility of interference, the Austrian authorities have also considered the problem in connexion with their own laboratories, and have, as a solution, decided to shield the reactor to an extent that is one hundred times greater than is normally necessary for a reactor of this type. This has been done so that work on low background radiation can be performed in the Austrian laboratories which are situated very close to the reactor site. As a result of the shielding, the radiation background in the Agency's laboratory will not be high enough to cause any serious interference. If additional protection is considered necessary, there should be no difficulty in shielding the few rooms in which counting of low background radiation will be undertaken.