must have a high transmissivity. Glass can meet these requirements and is widely used.

To prevent unacceptable attenuation of the laser signals, the glass fibre must be of extremely high purity. The starting materials from which the glass is made must also therefore be of the highest purity, particularly with respect to the presence of transition metals which can cause the maximum attenuation at minimum levels with the particular wavelengths used. With starting materials of very high purity it is essential to ensure that this is not degraded on contact with the walls of the apparatus used in the manufacture of optical fibres.

Until recently the purest grades of platinum available for the fabrication of apparatus, while being extremely pure by commercial standards have contained very minor quantities of other elements, sufficient to cause some contamination of these high purity glasses.

To meet this new need a high purity grade of platinum is now available that is suitable for the fabrication of apparatus to be used for the production of these high purity glasses. The total maximum permitted metallic impurity content of this Fibre Optic grade of platinum is 10 p.p.m., with combined iron and copper content limited to a maximum of 5 p.p.m., and zinc, lead, tin and nickel to less than 1 p.p.m. each.

Optical quality glass fibres have been satisfactorily produced by melting and drawing the glass in apparatus fabricated from this high purity platinum and, because of the workability of platinum, there are almost no limits to the designs of apparatus and plant that can be built from this new high purity grade.

It is essential that the manufacturing processes used in the fabrication of such apparatus complement the purity of the platinum and, accordingly, these processes are designed to ensure that the minimum of contact with base metal occurs. As a final safeguard, all apparatus produced from this high purity platinum is, on completion, given a hot chemical etch to remove any traces of base metal that might have been picked up during manufacture despite all precautions.

Apparatus produced from this high purity grade of platinum ensures the successful, consistent and economic production of ultra high purity glasses and enables development of this technology to proceed, overcoming what might otherwise have been a major obstacle to progress.

Palladium Coating on Niobium

CHEMICAL DEPOSITION OF THIN FILMS

The protection afforded to refractory metals by coating them with thin layers of platinum metals is well known. Platinised titanium electrodes are used extensively in industrial electrochemical processes and platinised niobium is equally useful for cathodic protection, particularly of submarine structures.

Russian scientists have been active in this field and there now comes a report of palladium films applied to niobium by a chemical method (*Izv. Vyssh. Ucheb. Zaved., Khim. Khim. Tekhnol.*, 1972, **15**, (9), 1419–1420). A. A. Ivanov and his associates at the Peoples Friendship University named for Lumumba, Moscow, deposited palladium films 1 to 1.5 μ thick on niobium by immersion at 70°C in a bath of palladium chloride dissolved in 25 per cent ammonia solution containing the disodium salt of EDTA and $N_2H_4H_2SO_4$. The niobium was first etched cathodically in caustic soda solution containing chlorine to remove oxide and was then annealed at 1200°C. Thicker films applied in one operation peeled off but 3 to 4 μ films were obtained in two stages by annealing the niobium in vacuum after the first palladium layer had been deposited.