(3) RESEARCH MATERIAL: For research and comparison, representatives of many species are needed. Only 455 species are still represented. Some of the most expensive research equipment has been saved.

(4) MINERALOGICAL LIBRARY: A number of periodicals have been saved. All the books and the large collection of reprints were lost.

PLATINUM CRUCIBLE SUBSTITUTES UNDER WAR LIMITATIONS

A. R. V. Arellano,
Mexico City, Mexico.

The establishment of a small mineralogical laboratory under war conditions presented innumerable problems, of which the most formidable one appeared to be the acquisition of a platinum crucible for sodium carbonate fusions and silica determinations.

Platinum has an official price of $35 per ounce troy (31.1 grams) and since a suitable crucible need not weigh much over 40 grams, there apparently should not be a prohibitive expense involved. However, platinum is absent from the free market, so that jewelers in Mexico City are glad to pay 35 pesos (about $7) per gram. A 40 gram crucible would thus cost about $300, well beyond the means of a small laboratory.

Accordingly, at the suggestion of Dr. W. F. Foshag, it was determined to make a gold crucible thick enough to permit handling. Fine gold, 99% or better, is sold by the bank of Mexico for industrial uses for about $1 per gram. The crucible, with cover, weighed 65 grams and cost close to 350 pesos. It proved to be very satisfactory for hydrofluoric acid evaporations, as two successive blank runs showed no appreciable loss in weight. After many carbonate fusions and HF evaporations and blastings the loss in weight was only 13 milligrams.

Careless blasting during a carbonate fusion perforated the crucible, which was taken to the goldsmith for repairs. While there a small amount of palladium became available. Tests run on this material[1] indicated that it was pure enough so that the main mass of it was merely scorified with boric acid and potassium nitrate. During these tests it was found that the more accessible texts and hand-books of chemistry and assaying contain very little precise data on the solubility of palladium in sulfuric acid, therefore it may be of interest to note that 80% H_2SO_4 at temperatures up to 160°C. does not appreciably dissolve palladium, either pure or in a silver alloy.

The palladium was then alloyed with four times its weight of gold and from this a 23 ml. palau crucible was prepared. It weighed 47 grams with cover. The crucible lost only about 0.5 mg. per double HF evaporation. Palau crucibles have proven very satisfactory for sodium carbonate fusions.[2] The higher melting point, almost 1400°C., is an advantage over gold and the carbonate cake is more readily freed from palau than from platinum or platinum-iridium. Washington found a 32 g. palau crucible to lose an average of 0.2 mg. per run during 47 carbonate fusions.

The cost of this palau crucible was 350 pesos (palladium @ 9.50 and gold @ 5.50 pesos per gram), which is actually less than a pure gold crucible would have cost, because of the smaller weight necessary to give sufficient rigidity for handling.

[1] Courtesy of Societé Affinage de Metaux, MM. Antoine Pagés, Director and Paul Tapie, Assayer.

[2] Washington, H. S., Note on crucibles used in rock analysis. *Jour. Wash. Acad. Sci.*, **11,** 9–13 (1921).

HOLLOW PRISM FOR GONIOMETRIC CALIBRATION OF REFRACTIVE INDEX MEDIA

Richard F. Cogswell,
Petrographic Laboratory, AC Spark Plug Division, General Motors Corporation, Flint, Michigan.

The speed with which refractive indices of media over 1.710 can be determined using an ordinary spectrometer depends largely upon the hollow prism. Several types of prisms have been tried in this laboratory and the one shown in the accompanying sketch has proven the most satisfactory.

The fixture is made of brass, excepting the spring which is of steel; the stock should be of sufficient thickness to insure rigidity. The top brace bar (*A*), the right prism wall (*B*), and the base (*C*) are held together by a $\frac{1}{8}''$ pin of $1\frac{1}{2}''$ length. The left prism wall (*D*) is similarly pinned to the top brace bar and the base, but in a manner to allow outward swing of the prism wall so that the prism glasses (*E*) may be readily cleaned. The spring anchor (*F*) is placed at an angle to the prism wall (*D*), so that when the wall is swung back the spring passes the maximum extension point and holds the wall open.

A hole through the fixed prism wall (*B*) near the base, is tapped to accommodate an adjusting screw. An accurate 30° prism angle can be obtained with the minute adjustments afforded by this screw whose end abuts against the inner surface of the pivoted prism wall (*D*).

A standard 26×45 mm. microscope slide, chosen with parallel faces, is cut lengthwise to form the two faces of the hollow prism, between