

β -Gold. M. HANRIOT and F. RAOULT. (*Bull. Soc. Chim.*, xiii, 260.)—Finely-divided annealed gold is found to be appreciably attacked by boiling nitric acid; 0.076 gramme of metal is dissolved from 5 grammes of gold by 100 c.c. of monohydrated acid in two hours; and brown gold is still more soluble, 1.54 grammes being dissolved under the same conditions. Brown gold is dissolved more readily than yellow gold by a solution of auric chloride in the presence of hydrochloric acid, giving a solution which on cooling yields a crystalline deposit of metallic gold. A study of the magnetic susceptibilities of the original brown gold, the crystalline gold obtained by solution, and the residual gold leads to the conclusion that from brown gold, which is regarded as a mixture of α - and β -gold, pure β -gold (crystalline gold) may be prepared by treatment with a solution of gold chloride, α -gold being left as a residue.

The Future of Motor Spirit. V. B. LEWES. (*Chem. World*, ii, 111.)—The imports of petrol into Great Britain have increased from 18,000,000 gallons in 1905 to 80,000,000 gallons in 1912, while the world's production of crude oil has only increased from 28,500,000 to 50,000,000 tons. The principal sources of petrol imported in 1912 were the Dutch East Indies and America, which sent 46,000,000 and 16,000,000 gallons respectively. The surplus available for export from America is decreasing, and the excess of demand over supply has raised the price of crude oil at the oil fields. There are methods available for increasing the yield of petrol from crude oil. By compressing the gas which escapes from the oil wells a light spirit is recovered which may be mixed with the fractions of higher boiling-point. The petrol used for motor spirit has a specific gravity of 0.72 or higher, as compared with 0.68 when the supply was greater than the demand. The heavier fractions of crude oil may be converted into light oils by distillation in contact with catalysts such as nickel, or by "cracking." One process consists in spraying "solar oil" (a heavy fraction from American petroleum) with water into long iron retorts packed with iron filings and heated to 600° C. and condensing the vapors obtained fractionally; 100 gallons of "solar oil" yield 39 gallons of petrol, 13 gallons of solvent spirit, and 13 gallons of "varnish." Crude oil cannot be a lasting source of supply of motor spirit. The quantity of motor spirit (benzol, etc.) available from gas works in England at present is only 50,000 gallons per annum, and 8,000,000 gallons of benzol are recovered in coke-oven plants, which only treat 42 per cent. of the coal used for making metallurgical coke. The Scotch shale oil industry yields about 600,000 gallons of motor spirit annually. The motor spirit of the future will probably be alcohol, mixed with about 10 per cent. of benzol.