the latter on heating gives a mixture of Sr2Hg5 and SrHg6, and on distillation an amalgam passes over, and not the metal. It is a silver-white ductile metal (of specific gravity 2·54) which melts at 8oo°. It oxidizes rapidly when exposed to air, and burns when heated in air, oxygen, chlorine, bromine or sulphur vapour. With dry ammonia at 60° the metal forms strontium ammonium, which slowly decomposes in a vacuum at 20° giving Sr(NH3)2 ; with carbon monoxide it gives Sr(CO)2; with oxygen it forms the monoxide and peroxide, and with nitric oxide it gives the hyponitrite (Roederer, *Bull. soc. chim.,* 1906 [iii.], 35,p. 715).

The *hydride,* SrH2, was obtained by Guntz on heating strontium amalgam in a current of hydrogen. It is a white solid, which readily decomposes water in the cold and behaves as a strong reducing agent. It dissociates when heated to a high temperature and is not affected by oxygen. The *monoxide* or strontia, SrO,is formed by strongly heating the nitrate, or commercially by heat­ing the sulphide or carbonate in superheated steam (at about 500-600° C.). It is a white amorphous powder which resembles lime in its general character. By heating the amorphous form in the electric furnace H. Moissan succeeded in obtaining a crystalline variety. The amorphous form readily slakes with water, and the aqueous solution yields a crystalline hydrated hydroxide approxi­mating in composition to Sr(OH)2∙8H2O or Sr(OH)2∙9H2O, which on standing in vacuo loses some of its water of crystallization, leaving the monohydrated hydroxide, Sr(OH)2Η2O. The ordinary hydrated variety forms quadratic crystals and behaves as a strong base. It is used in the extraction of sugar from molasses, since it combines with the sugar to form a soluble saccharate, which is removed and then decomposed by carbon dioxide. A hydrated *dioxide,* approximating in composition to SrO2·8H2O, is formed as a crystalline precipitate when hydrogen peroxide is added to an aqueous solution of strontium hydroxide.

*Strontium fluoride,* SrF2, is obtained by the action of hydro­fluoric acid on the carbonate, or by the addition of potassium fluoride to strontium chloride solution. It may be obtained crystalline by fusing the anhydrous chloride with a large excess of potassium hydrogen fluoride or by heating the amorphous variety to redness with an excess of an alkaline. chloride. *Strontium chloride,* SrCl2∙6H2O, is obtained by dissolving the carbonate in hydrochloric acid, or by fusing the carbonate with calcium chloride and extracting the melt with water. It crystallizes in small colour­less needles and is easily soluble in water; the concentrated aqueous solution dissolves bromine and iodine readily. By concentrating the aqueous solution between 90-130° C., or by passing hydrochloric acid gas into a saturated aqueous solution, a second hydrated form of composition, SrCl2·2H2O, is obtained. The anhydrous chloride is formed by heating strontium or its monoxide in chlorine, or by heating the hydrated chloride in a current of hydrochloric acid gas. It is a white solid, which combines with gaseous ammonia to form SrCl2∙8NH3, and when heated in superheated steam it decomposes with evolution of hydrochloric acid.

*Strontium sulphide,* SrS, is formed when the carbonate is heated to redness in a stream of sulphuretted hydrogen. It phosphoresces very slightly when pure. *Strontium sulphate,* SrSO4, found in the mineral kingdom as celestine, is formed when sulphuric acid or a soluble sulphate is added to a solution of a strontium salt. It is a colourless, amorphous solid, which is almost insoluble in water, its solubility diminishing with increasing temperature; it is appre­ciably soluble in concentrated sulphuric acid. When boiled with alkaline carbonates it is converted into strontium carbonate.

*Strontium nitride,* Sr3N2, is formed when strontium amalgam is heated to redness in a stream of nitrogen or by igniting the oxide with magnesium (H. R. Ellis, *Chem. News,* 1909, 99, p. 4). It is readily decomposed by water, with liberation of ammonia. *Strontium nitrate,* Sr(NO3)2, is obtained by dissolving the carbonate in dilute nitric acid. It crystallizes from water (in which it is very soluble) in monoclinic prisms which approximate in composition to Sr(NO3)2∙4H2O or Sr(NO3)2∙5H2O. When heated it fuses in its own water of crystallization and becomes anhydrous at 110°. C. It is used in pyrotechny for the manufacture of red-fire. A *strontium boride,* SrBβ, was obtained as a black crystalline powder by H. Moissan and P. Williams *(Comptes rendus,* 1897, 123, p. 633) by reducing the borate with aluminium in the electric furnace.

*Strontium carbide,* SrC2, is obtained by heating strontium car­bonate with carbon in the electric furnace. It resembles calcium carbide, decomposing rapidly with water, giving acetylene. *Stron­tium carbonate,* SrCO3, found in the mineral kingdom as strontianite, is formed when a solution of a carbonate is added to one of a stron­tium salt. It is an amorphous solid, insoluble in water, but its solubility is increased in the presence of ammonium nitrate. It loses carbon dioxide when heated to high temperature.

Strontium salts may be recognized by the characteristic crimson colour they impart to the flame of the Bunsen burner and by the precipitation of the insoluble sulphate. On the preparation of pure strontium salts, see Adrian and Bougarel, *Journ. pharm. chem.,* 1892 (5), p. 345; and S. P. L. Soerenoen, *Zeit, anorg. chem.,* 1895, 11, p. 305. Recent determinations of the atomic weight of strontium are due to T. W. Richards *(Zeil, anorg. Chem.,* 1905, 47, p. 145), who, by estimating the ratios of strontium bromide and chloride to silver, obtained the values 87∙663 and 87∙661.

**STROPHANTHUS,** a genus of plants of the natural order Apocynaceae, deriving its name from the long twisted thread­like segments of the corolla, which in one species attain a length of 12 or 14 inches. The genus comprises about 30 species, mainly tropical African, extending into South Africa, with a few species in Asia, from farther India to the Philippines and China. Several of the African species furnish the natives with the principal ingredient in their arrow poisons. The inée or onaye poison of the Gaboon, the kombé of equatorial North Africa, the arquah of the banks of the Niger and the wanika of Zanzibar are all derived from members of this genus. The exact species used in each case cannot be said to be accurately known. There is no doubt, however, that S. *hispidus* and S. *kombé* are those most frequently employed.

Both 5. *hispidus* and S. *kombé* have hairy seeds with a slender thread-like appendage, terminating in a feathery tuft of long silken hairs, the seeds of the former being coated with short appressed brown hairs, and those of the latter with white hairs; but in the species used at Delagoa Bay and called “umtsuli” the thread-like appendage of the seed is absent. The natives pound the seeds into an oily mass, which assumes a red colour, portions of this mass being smeared on the arrow immediately behind the barb.

Under the name of *strophanti semina,* the dried ripe seeds of *Strophanthus kombé,* freed from awns, are official in the British and many other pharmacopeias. The seeds must be mature. They are about 3/5 in. long, 1/6 in. broad, greenish fawn, covered with flattened silky hairs, and oval-acuminate in shape. They are almost odourless, but have an intensely bitter taste. The chief constituent is a white microcrystalline glucoside, known as Stro­phanthin, freely soluble in water and alcohol, but not in chloroform or ether, and melting at about 173° C. It constitutes about 50% of the mature cotyledons of the seed, the proportion rising as matur­ity's reached. It is very similar to, but not identical with, onabaïn. It is split up by acids into strophanthidin and a methyl-ether of a peculiar sugar. The seeds also contain an active principle, *inein,* a body known as kombic acid, fat, resin and starch. The resin is contained in the husk, and occurs in the alcoholic tincture of strophanthus, its presence tending to cause digestive disturbance and diarrhoea. When the seeds are treated with sulphuric acid and heat is applied, a violet-coloration is produced.. A section of the seed yields a green colour with cold sulphuric acid.

The British Pharmacopeia contains two preparations of this important and valuable drug, a dry extract and a tincture. The former is hardly ever prescribed. The official tincture is much inferior to that originally recommended by Sir Thomas Fraser, who introduced the drug into medical practice, in being much too weak, and in being prepared with alcohol instead of ether, which differs from alcohol in not dissolving the resin contained in the husks. It is therefore advisable to order the tincture of the British Pharma­copeia of 1885, or to prescribe the current tincture in double the official dose and combined with cardamoms, ginger or capsicum, in order to counteract the irritant properties of the resin which it contains.

Strophanthin itself may be injected hypodermically in doses of 1/300 to 1/60 grain. Unfortunately the injections usually cause some temporary local irritation.. This method of exhibiting strophanthus is the only one of any avail when a result is wanted at once or even within several hours. Precisely the same observation applies to digitalis, the other great cardiac tonic.

*Pharmacology.—*The drug has no external actions. Taken in­ternally it tends, after the repetition of large doses, to produce some gastric irritation. This is unquestionably less, however, than that produced by digitalis, and is probably due not at all to the active principle but entirely to the resin contained in the seed-husk. As ordinarily administered, the drug acts on the heart before influencing any other organ or tissue. Often indeed no other action can be observed. This is readily explained by the fact that the drug is. carried by the coronary arteries to the cardiac muscle before it reaches any other part of the systemic circulation.

It is almost certain that strophanthus acts directly on no other cardiac structure than the muscle-fibre. No action can certainly be demonstrated either upon the terminals of the vagus nerves nor upon the intra-cardiac nervous ganglia. The muscular force is increased in a very marked degree. A secondary consequence of