which to employ it. The commercial metal contains 98 per cent of calcium.

Preparation of Hydrogen from Water.—When wrapped in iron gauze and introduced into a pneumatic trough containing water, in the usual way, hydrogen is evolved quietly, and may be collected readily in any desired quantity. At the same time, the water of the trough becomes turbid owing to floating particles of calcium hydroxide. The reaction is so much more moderate and more easily controlled than that with sodium and water, that it is suggested that in schools it be substituted for the latter. Moreover, it is an additional advantage that both products of the reaction, the gas and the solid hydroxide, are observed at once.

Synthesis of Calcium Compounds: Oxide, Chloride, Sulphide, Phosphide.—Calcium turnings are placed in the bulb of a hard-glass tube, with a central bulb, in the case of the oxide and chloride experiments. In those of the sulphide and phosphide, tubes with two bulbs are employed, and the second bulb is charged with sulphur and phosphorus respectively, and the end next to it closed with a cork. In every case the metal is first heated to low redness, and then the dried gas is led over it, or the solid is distilled over it. The oxide, sulphide, and chloride form at once with brilliant incandescence, but the phosphide is obtained only in small proportions. The light emitted in the oxide and sulphide synthesis affects a photographic plate to about the same extent as the burning of the same quantity of magnesium.

Other Applications.—Calcium, burning in air, and then plunged into carbon dioxide, like magnesium, removes the oxygen and liberates carbon. Calcium heated to redness, appears to have no action on dried ammonia gas.—*School World.*

E. H. Sargent & Co., Chicago, will import this Calcium for any one.

Pursuing his studies on the presence of methyl aldehyde in smoke, in the course of which he has established the fact that it is found in all usual combustions, M. Trillatt has comunicated to the Academie des Sciences these conclusions: Formic aldehyde exists in the soot of our chimneys and in the air of cities. It is found in noticeable quantities in the combustion of sugar, juniper berries, sweet roots, benzoin; in particular, when the combustion occurs in contact with hot metallic surfaces, whose catalytic effect intervenes to increase the yield. The constant presence of formic aldehyde in the gaseous or solid part of fumes explains their disinfecting action, in which the good effects of formic aldehyde were utilized long before they were known or studied. —*Scientific American.*

The results of the geological surveys that were carried out by Mr. H. H. Hayden, of the Geological Survey of India, who was attached to the recent British expedition to Lhasa, have been published. From his investigations the country is strikingly poor in minerals of economic value, the only one found *in situ* being gold, which is obtainable in very small quantities from the coarse gravel beds of the Tsangpo. The largest yield obtained by panning was only at the rate of 28 grains of gold per ton of gravel. Concentrates were found to contain, in addition to much magnetite and zircon, a small quantity of rutile and hercynite, and probably uraninite. During his sojourn at Lhasa the geologist purchased varied samples of the gem stones employed by the local jewelers, among them being turquoise, ruby, tourmaline, emerald, and sapphire. The jewelers stated that all these stones were brought from a considerable distance, some coming from Ladak and Mongolia, and others from India. Mr. Hayden could obtain no trustworthy information as to the existence of any native sources of gems, and concludes that turquoise is practically the only native gem stone. He also succeeded in disproving the general belief that coal is to be found at Lhasa.—*Scientific American.*

A NEW INCANDESCENT LAMP.

A new incandescent lamp with a zirconium filament is announced in Germany. Professor Wedding, the well-known physicist, recently presented a lamp of this kind to the Electro-technical Society of Cologne. The details of the process are as follows: To obtain the filament he submits oxides of zirconium and magnesium at a high temperature to the action of hydrogen, which gives an alloy of a more or less constant composition. This body is then pulverized, and by adding a cellulose solution it is transformed into a plastic and homogeneous mass. It is from this mass that the filaments are drawn. The latter are carbonized in an atmosphere which is free from all traces of oxygen, and then present a metallic appearance. It is said that one pound of zirconium will furnish 50,000 filaments. The new lamp is to be placed on the market at the price of $0.37. Under regular working, the zirconium filament consumes a current of 2 watts per candle-power, which is less than for the usual carbon filament. The zirconium lamps are made at present to run with a current of 37 volts, and three of them can be conveniently placed in series across the usual 110-volt circuit. Another type uses 44 volts, and five lamps are connected upon a 220-volt circuit. To obtain a high candle-power lamp they place several filaments in the same bulb and the lamp is then connected directly upon a 110-volt circuit. Experiments which have been made with the lamp shows that it has a life of 700 to 1,000 hours.—*Scientific American.*