be afterwards exposed to a stream of hydrogen gas, the gold will be revived and the substance will appear gilt. Ribbons may be gilt in this manner. Sulphurous acid gas revives the gold in the same manner.

Lime and magnesia precipitate gold from its solution in the form of a yellowish powder. Alkalies do the same, but an excess of alkali re-dissolves the precipitate. The precipitate obtained by means of a fixed alkali appears to be a true oxide; it is taken up by the sulphuric, nitric and muriatic acids, but separates by standing with crystallizing. The precipitate by gallic acid is of a reddish color, and very soluble in the nitric acid, to which it communicates a blue color.

Gold precipitated from its yellow solution by ammoniac, forms a powder called *fulminating gold;* this dangerous compound detonates by friction, or a very gentle heat. It cannot be prepared or preserved without great risk. Macquer gives an instance of a person who lost both eyes by the bursting of a bottle containing some of it; and which exploded by the friction of the glass stopper against an unobserved grain of it in the neck of the bottle.

Green sulphate of iron precipitates gold of a brown color; but this soon changes to the color of gold.

The alkaline sulphurets precipitate gold from its solution; the alkali unites with the acid, and the gold falls down combined with the sulphur. The sulphur may be expelled by heat.

The alkaline sulphurets will also dissolve *gold.* Thus, if equal parts of sulphur and potass, with one-eighth of their joint weight of gold in leaves, be fused together, the mixture, when poured out and pulverized, will dissolve in hot water, to which it gives a yellowish green hue. Stahl wrote a dissertation to prove that Moses dissolved the golden calf in this manner.

Sulphur alone has no effect on gold. The process called dry-parting is founded upon this circumstance. This is used for separating a small quantity of gold from a large quantity of silver. The alloy is fused, and flowers of sulphur are thrown upon its surface; the sulphur reduces the greater part of the silver to a black scoria. The small remainder of the silver may now be separated by solution in nitric acid. The advantage of the operation consists in saving the large quantity of nitric acid which would have been required to dissolve the silver of the alloy in its original state.

The heat produced by the electro-galvanic discharge reduces gold to a state of a purple oxide.—*Jewelers Journal.*

WATCH OIL—CARE TO BE USED IN ITS APPLICATION.

Among the substances used by the watchmaker, oil is one occupying a first rank, being of the greatest importance. No matter how carefully has been the construction of a time-piece, its functions are subordinate to the continuous presence of a fatty body introduced into all the parts where friction occurs; without this precaution, the organs in contact would very soon be subject to early wear and destruction, thus producing the stoppage of the mechanism; the same would equally result if the oil employed were to loose its fluidity, and by its solidification seriously interfere with the rate. It is true that there exists no lubricating agent which indefinitely preserves its primitive conditions; all change with the lapse of time. The duration of the correct rate of a clock or watch is consequently limited by the time until the lubricator degenerates; clocks which possess a large motor and small resistance preserve their oil longer. Cases are not wanting in which they kept correct rate for ten or fifteen years, but as for watches, whose motive power is small, the least thickening of the oil in the last moveable parts, occasions a resistance which soon is impossible to overcome, and the watch stops. The timepiece must be taken asunder, cleaned and fresh oil applied. Its duration does not last beyond one and one-half or two years at most, and these little mechanisms are only in good order when in conditions of having been cleaned at short intervals, so imperfect is the agent used by the watchmaker for lubricating.

It will be seen that a judicious choice of oil must be all-important to him. Watchmakers and chemists have occupied themselves with the question, and more than once the results have, at least in theory, led to the anticipations that the grand desideratum was discovered at last, but practical experience very soon destroyed all hopes—no oil prepared by any new processes has as yet resulted in anything permanent.

Choice of Oil.—We will quote M. H. Robert by saying that the best watch oil is made of olives. Some prefer animal oils, notwithstanding its greater viscidity; they find it to withstand the influences of the sea better than that from olives. Experiments have been tried with neats', mutton, even ducks' foot oil, and all, with due care, have given good results.

Animal oils are submitted to a pretty high temperature, for extracting, while those from olives should not be heated beyond 50°.

There exists no other means, actually, than a sufficiently long experience for distinguishing good or bad oils. The watchmaker, consequently, is reduced to confidence when purchasing it. The good faith and renown of the manufacturer are his only guarantees. These remarks are specially applicable to olive oil.

It is believed that certain indications will betray the quality, from the manner in which it behaves when brought into contact with brass for several days. It would not be prudent to put too much faith in the presumptions, as they may occasion mistakes.

A good watch oil should have the following qualifications: 1. It must preserve its primitive fluidity for a long time; 2. It must not attack the brass with which it is brought into contact; 3. Possess a good fluidity; 4. It must not thicken on exposure to cold; 5. It be absolutely free from all glutinous or resinous substances.

Of all these qualifications, the preservation of its fluidity is the most important; of course, no oil preserves it *forever, all thicken and solidify with* time, and it may be expected that a retardation of rate will commence with the change. Oils prepared by the watchmaker himself may last for three years, and clocks may still continue to preserve a good rate for longer time. Astronomical clocks will go as long as twelve years before requiring a cleaning, but chronometers should never be let go more than three years; watches require to be cleaned every eighteen months at longest.

Brass oxidizes more or less in contact with oil this will even eat into it, and it assumes a clear green, and at times a black color. If these symptoms appear in a pronounced manner, at the end of a short time, the oil had better be thrown one side as unfit.

A fluidity more or less great is of no importance, but it is utterly indispensable