extensively used for the purposes named is eliminated from mixtures of chlorate of potassa and manganese, and all chemists are aware that the operation goes on with great rapidity. They accordingly provide apparatuses of sufficient strength to resist sudden pressure, and they are especially careful in apportioning the material correctly. If two much manganese be employed rapid fusion ensues, and the fused mass, driven by the evolving gas, quickly chokes the conducting tube, shuts up the safety valve as it were, and an explosion necessarily follows, as it would in a steam boiler under parallel circumstances. The proper proportions in which chlorate of potassa and manganese should be mixed are, a quarter of a pound of the former to a quarter of ounce of the latter. The manganese really undergoes scarcely any chemical change, but acts principally by catalysis. This combination, if heated slowly over a gas flame, which, from the power we have of regulating its volume, is by far the best medium for effecting elimination, evolves oxygen gas, at first slowly, but soon with much rapidity; finally, the mass ignites, or rather glows into a red heat, and the oxygen is then given off with violence. These facts assuredly lead to the conclusion that under no circumstances should an ordinary fire be used for the elimination, or manufacture, as it is sometimes absurdly termed, of oxygen gas, from chlorate of potassa and manganese. It is safer to use glass vessels than those of any other material, because, if an explosion unfortunately happens in spite of all precautions, the damage done to life and limb will then inevitably be comparatively small.

For eliminating oxygen on a small scale, a Florence oil-flask will answer as a retort exceedingly well, but, for extensive operations, an iron bottle, and the employment of black oxide of manganese as a catalysis, will be found advantageous and safe.

Of course, it would be better that chemical operations should be conducted exclusively by chemists, wherever danger may ensue from carelessness; but as this is not likely to be the case, we can only put unskilled operators on their guard, for the safety of others as well as that of themselves, and teach them that it is absurd to place a stopped-up gas retort on a kitchen fire, as it would be to place a charged powder flask on the parlour stove, during a Christmas revel, for the purpose of creating a sensation.—*Mechanic's Magazine.*

Melting Wrought Iron by Electricity.

By invitation of Professor Ogden Doremus, a few days ago, we (*Scientific American*) went into the Free Academy to see the great galvanic battery which he uses to illustrate his lectures on electricity. The cups hold one gallon each, and at the time of our visit 360 were filled and in operation. Standing in close rows, they nearly covered the floor of a long room. This enormous battery enables Professor Doremus to exhibit the various effects of galvanism to his classes on the greatest scale. The light produced by the carbon points is far in excess of that resulting from the heating of lime by the oxyhydrogen blowpipe. This is demonstrated by employing the two in the solar microscope. By this electric light crystals of uric acid not larger than the head of a small pin are magnified to the size of ten feet, with perfect definition of outlines and structure.

Among the effects of the battery which Professor Doremus exhibited was the decomposition of potash by the current. To direct the current into the cup of potash the pole was terminated by a wrought iron rod about the size of a lead pencil, and in the course of a few seconds the end of this rod was melted, a drop slowly gathering and finally dropping off, when it is scattered in a hundred sparks. A common class experiment with this battery is the volatilization of gold. A quarter of eagle gold piece is placed on a carbon support and the current directed upon it, when the gold rises like a yellow vapour. If a silver cup is held over it, the cup is gilded by the deposit of the golden fumes.

A New Brunswick built ship.

The connoisseurs in nautical matters have during the last week or two, says the *Liverpool Mercury*, been greatly interested in the "Portlaw," a new vessel just arrived from St. John's N. B., and which is considered to be the handsomest vessel ever built on the "Merrimac," while many competent judges declare that she is one of the finest wooden vessels, which have yet appeared in the Mersey. She has been built by Mr. Eben Manson, of Newburyport, for Mr. John Malcomson, of Liverpool, and is commanded by Captain John Curtis. She is intended for the Bombay trade, and has been built specially with that view, to replace the ship "Windsor Forest." Without going into unnecessary details we may safely declare that we never saw a vessel in which so many ingenious mechanical contrivances were adopted—and these, for the most part, suggested or carried out by the captain—to secure the rapid and handy working of the ship, the safety of the cargo, and the comfort of those on board, not forgetting the sailors. The "Portlaw" is a vessel of 1,183 tons, and made the passage from St. John's, N.B., to Liverpool in eighteen days, and on the voyage her sea and sailing qualities were fully and satisfactorily tested.

A Fire Extinguisher.

An apothecary of Nantes has just discovered by the merest accident that ammonia will put out fires. He happened to have about 70 litres of benzine in his cellar, and his boy, in going down carelessly with a light, had set fire to it. Assistance was speedily at hand, and pail after pail of water was being poured into the cellar without producing any effect, when the apothecary himself took up a pail which was standing neglected in a corner, and emptied the contents into the cellar. To his astonishment the flames were quenched as if by magic, and upon examination he found that the pail, which belonged to his laboratory, had contained a quantity of liquid ammonia. The result is easy to explain on scientific principles—for ammonia, which consists of 82 parts of nitrogen and 18 of hydrogen, is easily decomposed by heat, and the nitrogen, thus set free in the midst of a conflagration, must infallibly put out the flames. A large supply of liquid ammonia properly administered would be the promptest fire extinguisher ever imagined.