parts of the Continent; but even it does not circulate —no more than Napoleons will circulate in England. Although the coins of one country will not circulate in another, gold and silver are recognized as the raw material of money all over Europe and America, and are valued accordingly; but paper money out of its own country, may be said to carry no value at all. Bank of England notes, indeed, which have the same prestige over all other kinds of paper money which the sovereign has over other coins, may be used without difficulty in Paris, and at no greater charge than is made for converting sovereigns and half-crowns into French money. But even in the same country there is often a limitation to the circulation of some kinds of money. The sovereign, though a legal tender and readily accepted when offered in payment, hardly circulates in Scotland—the Scotch preferring paper money, as the most safe and convenient form of currency, and also as the cheapest. Scotch bank-notes, again, are not a legal tender in other parts of the kingdom. In England, too, there are many provincial banks, the notes of each of which circulate readily in the districts where the issuing banks are situated, but are looked upon with suspicion elsewhere; they will not circulate widely, simply because they are a kind of money with which the public at large are not familiar, and in which, accordingly, they have no confidence.

The English provincial banks are very much like the State banks in America. Of all forms of money silver is the most widely recognized, and, therefore, holds the first place in the currency of the world. It is the standard money of China, with a population of 400,000,000, and of India, with a population of 160,000,000. It is also recognized as money all over Europe and America. Gold, at present, holds the second place in the currency of the world. But unless new silver mines are found, the recent discovery of the gold deposits in California and Australia will make gold more abundant and more cheap, and tend to wrest all supremacy from silver and give it to gold—by inducing the European and American States to make all the necessary additions to the metallic portion of their currency in the latter metal. Next in amount of circulation to gold and silver money, comes paper, issued under legal restrictions. In England, France, Austria and Russia, the amount of paper money in circulation is very large, but not so large in proportion, at present, as in the United States. Paper money has the widest range in value of all kinds of money. It is also the cheapest and most portable. In the form of bills of exchange—which, however, are not a legal tender—paper money plays the most important part of all, in carrying on the commerce of the world. It may also be used as a substitute for all kind of money—if under proper restrictions, with perfect safety and great economy. And in modern times it has always been had recourse to, with more or less prudence and advantage, by nations who in exceptional times find themselves in a temporary deficiency of metallic money. It should never be forgotten that money is a mere medium for the exchange of useful and necessary products.

REBEL SUBMARINE BATTERY.

The rebels have built a new submarine vessel at Mobile, with the intention of sinking and destroying any of our ships that may be lying there. The battery contains nothing new in its construction or principle, but is the same thing that has been used here several times for more peaceful purposes. Many years ago a submarine vessel, similar in all respects except the shape, to the rebel affair, was built at one of the iron-works on the East river, this city. The rebel battery sinks by letting water into certain compartments, and rises again by pumping it out; she has a horizontal projecting flange at the bow; which can be turned up or down so as to deflect the course of the vessel to the surface or the bottom of the channel; and she has also pumps for compressing air, so that the crew can remain below the surface for some time. The battery is also to carry torpedoes united by a chain, which are to be carried under the ship to be destroyed and there set free, when it is supposed they will be light enough to rise to the surface and hug the ship to be blown up—a most transparent absurdity. The rebel vessel has also a screw, which is driven by an engine as usual. This ship may accomplish the destruction of some of our vessels, and is in any case a disagreeable customer which should be got rid of as soon as possible.

OF PRECIOUS STONES.

From time immemorial jewels have been in request for all purposes, but principally for personal adornment. For some, diamonds have superior attractions: to others the gems of lesser note, such as sapphire, ruby, emerald, beryl, topaz, &c., have charms which cannot be excelled. In this, as in most other matters of similar importance, individual taste is probably the guide in selection; and while a love of display may incite some to become the possessors of costly stones, there are more who are attracted solely by the intrinsic beauty and fire of the particular jewels they affect.

It is well known that diamonds of extraordinary size and water are highly valued, chiefly in proportion to their colorlessness and freedom from specks or flaws; some of these stones—the first of all jewels—are in the possession of royal families, and are handed down in regular succession to the occupants of the thrones. Diamonds are the hardest of all known substances; they are the adamant spoken of in Scripture, and possess a brilliancy and luster unapproachable by other jewels. So much has already been made public concerning diamonds that we do not propose to pursue the subject further, but will say a few words upon some other less valuable but yet beautiful gems.

The bright red stone so much worn of late years, "carbuncle," is in fact a garnet, or a variety of that stone. To the ancients this stone was well known, and from them it received the name of "carbunculus;" it has been found in rivers abroad and is cut in various styles. The color is blood, cherry, or brownish-red, but has often a bluish or violet tinge; the red garnet can be attacked by a file. It becomes electric with friction and grows darker when heated, but resumes its color when cool. Under the blow-pipe it fuses into a black pebble. Its chemical constituents are silica, alumina and the protoxides of iron and manganese. Different names are given to the various shades of color seen in this stone, such as the Syrian garnet, when the gem is of a blood-red hue; Ceylonese garnet, when of a wine-red or orange-yellow; and Vermeille, when of a deep shade of orange-yellow. The precious garnet is of a brownish-red color, and transparent; it is found in Brazil, India, Greenland, Sweden, Norway and Spain; and nearer home, in North Carolina, Massachusetts, Georgia and New Hampshire; also in the Tahgonic range, Berkshire county, Mass.; it has likewise been found in Marlborough and Chesterfield, Mass. The garnet is cut on a leaden disk, like the face-plate of a lathe, either by the aid of emery or its ow powder, and is polished with rotten stone and the oil of vitriol, on a block-tin plate. The technical name of the oval form in which the garnet is cut, is called "cabochon." The stone is also cut like a brilliant—that is, with angles or facets on its face and bottom. Very often garnets are excavated or hollowed out on the bottom: in this way they are rendered much more brilliant; they are also backed with gold or violet foil, in order to highten their beauty. Small garnets are worked up on a large scale in factories; they are sometimes drilled with a diamond at the rate of one hundred and fifty per day. One man can cut about thirty garnets "brilliant" in a day; the polishing is done by women and children. The garnet is usually set in rings, necklaces, pins, &c., and even snuff-boxes are made from large and fine specimens, obtained in Greenland, Syria, &c. The value of the stone is determined by the size and color, as also the degree of perfection belonging to it. On account of its deep color it must be cut thin, and any stone of this variety which retains its high color without being cut too thin is valued highly and ranks with the sapphire. They are generally sold at wholesale by the pound, at from $8 to $10, containing from sixty to four hundred stones; a set of one thousand of the best selected garnets being worth about $60.

THE FORTHCOMING SANITARY FAIR.

The good work which the loyal people of the country have taken in hand—recruiting the finances of the Sanitary Commission by a series of magnificent fairs—is progressing rapidly in this city and Brooklyn; it having been determined to get up one in each city, which shall surpass all previous efforts of the kind made elsewhere. The principal objects of attraction are contributed free of cost, and are to be sold at the highest cash price possible to obtain. A patriotic inventor, who has one of the neatest clothes-dryers we have seen in a long time, and which is shortly to be illustrated in the Scientific American, has suggested that he intends to give half a dozen of his dryers to the fair; and he thinks that we should call the attention of inventors generally to the subject, so that all who feel disposed might send in their contributions in time. We do so, cheerfully; and we suggest that those of our readers who have articles to donate for the benefit of this most laudable object should forward them to this office (*charges prepaid*, and marked "For the Sanitary Fair"), whence they will be delivered to the proper authorities at the right time. Machines and utensils of whatever nature will be received; but those intended for domestic use or household purposes are highly desirable. We hope to see a hearty response to this appeal.

NATURE OF SUBSTANCES FOR GIVING LIGHT.

All the most common substances which are employed for producing artificial light are called hydrocarbons, being chiefly composed of hydrogen and carbon. In wax, tallow, olive and sperm oils these two substances exist in such harmonious proportions that they may be burned as tapers, or in common lamps and yield a very beautiful light. These are usually called natural agents of illumination, because they are not manufactured products. Spirit fluids, coal oil, and gas are manufactured products, because they are the result of chemical processes. In making gas from coal or oil, the hydrogen in these substances is very volatile, and is driven off by heat, but at its moment of liberation it lifts some carbon with it, and the gas thus yielded is carburetted hydrogen, its chief illuminating principle being called olefiant gas. When bituminous coal is roasted in a retort, its volatile products, afterbeing purified from sulphur and ammonia, form the gas which is conveyed through pipes in our streets and houses. Coal is employed exclusively in all our large cities for making gas, but upon a small scale, for villages, and single buildings, such as factories, petroleum may be more convenient, and equally as cheap, but this can only be determined by experience, and we have very little of this to guide us in coming to a just conclusion respecting its employment for such purposes. There is one peculiarity connected with artificial light which is not very generally known. The white light of gas is produced by the combustion of solid particles of carbon. This is noticeable in burning common gas, which is composed of hydrogen and carbon. The former produces intense heat with a blue flame and feeble light. It simply raises the temperature of the minute particles of carbon in the gas to a glowing white heat, and these produce the light. In burning wax, tallow, common oil and petroleum, the very same phenomena take place—the highly heated particles of carbon in there substances produce the white light. The electric light, which is the most brilliant known, next to the sun, is produced by the power of an electric current raising carbon points to a most intense white heat. The Drummond light is produced by burning hydrogen and oxygen gases upon some substance, such as a piece of fine chalk, which being raised to a glowing white heat, reflects it in light.

Extraordinary Ocean Steaming.—The late extraordinary passage of the *City of New York*, Captain Kennedy, has created quite a sensation in nautical circles, and the abstract of her log, which was posted in the Exchange Newsroom yesterday, was a continual source of interest. The distances traversed each day were so great, and withal so regular, that we consider them worthy to be placed before our readers. From the day she left Sandy Hook (the 12th) until noon the following day, she steamed 254 miles; on the 14th, 330 miles; 15th, 320 miles; 16th, 306 miles; 17th, 311 miles; 18th, 321 miles; 19th, 321 miles; 20th, 318 miles; 21st, to Fastnel Rock, 254 miles, arriving at Queenstown at 11:30 in the morning of that day. The mean time of the run from New York to Queenstown is eight days nineteen hours, being the fastest ever made by any screw steamer. Great interest exists as to what time the *Scotia* will be reported off Queenstown; and many confident opinions were expressed that she would arrive there in the course of Thursday (to-morrow).—*Liverpool Mercury, Dec. 23.*