

of October in Nicaragua, and in the beginning of November in Costa Rica and Panama. In Guatemala they blow from the middle of October until the end of April, in Costa Rica from the beginning of November until the end of March. At the end of this season, calms prevail for two or three weeks; then the south-westerly monsoon sets in, and tropical thunder-storms with heavy rains occur every day. This period begins in Panama and Costa Rica in April, in Nicaragua in May, and in Guatemala in June.

It is difficult to estimate the traffic that would make use of a canal through the American isthmus, as its opening would result in a complete revolution of trade. The route through the Suez Canal is taken by about two-thirds of the ships plying between Europe and Asia. According to C. Eggert the whole traffic of Europe with India, East Asia, and Australia, in 1883, required 5,707 ships of 7,773,658 tonnage.

From May 1, 1882, to April 30, 1883, 3,154 steamships, of 4,889,928 tons, and from May 1, 1883, to April 30, 1884, 3,407 steamships, of 5,585,504 tons, passed through the canal. Therefore it will be safe to suppose that in the beginning about two-thirds of the whole traffic which might avail itself of the American canal would make use of it. It may be that the figure will be a little lower, as some seamen will object to the locks of the canal, but this objection will readily be overcome. According to statements furnished by the Bureau of Statistics, the number and tonnage of vessels that could use a canal through Central America, amounted, in 1879, to 2,647 vessels, of 2,671,886 tons; in 1885, to 4,139 vessels, of 4,252,434 tons. From data furnished by the Statistical Bureau of Hamburg, the same traffic amounted, in 1883, to 2,404 vessels, of 2,337,346 tons. In these compilations the figures for the trade between the United States and foreign ports fairly agree, as the following table will show. The first line refers to vessels entered at and cleared from Atlantic coast ports of the United States in trade with foreign countries west of Cape Horn; the second, to vessels entered at and cleared from Pacific coast ports of the United States in trade with foreign countries east of Cape Horn. The first and third columns are according to the Bureau of Statistics of the Treasury Department; the second, from the Hamburg Bureau of Statistics.

	1879.		1883.		1885.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1	273	247,567	462	462,767	721	734,236
2	455	551,929	629	792,180	714	957,784

The figures showing the trade between European ports and foreign countries other than the United States, and using the route around Cape Horn, do not agree as well:—

1879.		1883.		1885.	
Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
1,644	1,462,897	1,313	1,082,393	2,473	2,210,675

In the figures compiled from the data of the Hamburg Bureau the traffic between the Pacific and Atlantic ports of North America is not included; but there can be no doubt that this trade will rapidly develop after the opening of the canal, and that it will form one of the most important items of income of the canal. The United States Bureau of Statistics states that vessels of 4,252,434 tons might have passed the canal in 1885. If the increase should continue at the same rate, 6,506,214 tons might use the canal when opened, on Jan. 1, 1893. The Suez Canal route is used by two-thirds of the whole traffic; but it must be considered, that, on account of the winds of the Red Sea, sailing-ships cannot make use of the canal, while on the coast of Nicaragua the winds are more favorable. But, even if we suppose that from 70 to 80 per cent of the whole traffic will take this route, the income will be very considerable. Taking 70 per cent of the whole probable traffic of 1893 passing the canal, not less than about 4,700,000 tons would

take this route. But to this must be added the trade between the interior of the United States and eastern Asia, the greater part of which takes now the route of San Francisco, and part of the trans-continental trade: therefore it is probable that the figure is too low rather than too high.

The figures given above show that the tonnage of the vessels which will use this canal averages about 1,000 tons. Therefore the traffic would amount to about 3,500 vessels annually. The average tonnage, however, will rapidly increase after the canal is once open to navigation, as was the case with vessels passing the Suez Canal. The average tonnage of vessels passing that canal is given here:—

Years...	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883
Tons...	898	995	1,073	1,166	1,290	1,345	1,377	1,419	1,425	1,533	1,510	1,517	1,587	1,747

This increase is due to the increase in the number of large steamers trading between Europe and Asia. The same will be the case after the opening of the Central American Canal. Though the navigation of the neighboring seas by sailing-vessels is not so difficult as that of the Red Sea, steamers will more and more monopolize the trade.

It is hardly possible to say which country will be most benefited by the opening of a canal through Central America. For the United States it is of the greatest importance, as it will open a new and important route from the Atlantic to the Pacific ports, as well as to the west coast of South America and to the islands and west shore of the Pacific Ocean.

DR. FRANZ BOAS.

SEARCH FOR GEMS AND PRECIOUS STONES.

THE insatiate desire for ornaments and articles to decorate the person, and hence the race for the acquisition of wealth, gives employment to thousands of persons in different parts of the world, who are kept busily engaged in searching for gems and precious stones; and in this aspect Prof. P. L. Simmonds considers it in a recent number of the *Journal of the Society of Arts*. It is somewhat difficult to know where the line of demarcation as to 'gems and precious stones' is to be drawn, and what properly come within this category; for tastes differ materially, and fashions change from time to time. About one or two, however, there can be no doubt as to classification. Diamonds and pearls have always been highly esteemed and appreciated, and the demand for these is universal. But there are some stones and substances that have value chiefly in special localities: such, for instance, as jade among the Chinese and Pacific Islanders, from its hardness and rarity; amber among the Chinese, Turks, and Russians; and coral among the East Indians, Chinese, and Africans. The African race appreciate the artificial Venetian beads above any valuable gem, because they have long been familiar to them, and are the fashion.

Precious stones have been prized in all ages for their portability, and high intrinsic value in a small compass. In Christopher Marlowe's celebrated play, 'The Rich Jew of Malta,' the merchant is represented as having before him

"Bags of fiery opals, sapphires, amethysts;
Jacinths, hard topaz, grass green emeralds,
Beauteous rubies, sparkling diamonds,
And sold seen costly stones of so great price,
As one of them, indifferently rated,
And of a carat of this quality,
May serve, in peril of calamity,
To ransom great kings from captivity.
This is the ware wherein consists my wealth!"

A glance over the various regions of the globe will show us men of all races, in large companies, delving in the ground or diving in the sea for this commercial wealth. Indeed, scarcely a sea or a river but has its fleet of boats at certain seasons laden with men eagerly searching for pearls, although it is chiefly in the tropics that these boats congregate. It may prove interesting to gather a few facts connected with this important quest, taking the searchers on land first, and then investigating the rich produce gathered from the sea.

In the Indian Empire there is a great commerce carried on in gems and precious stones, although no reliable data are available,

as they are so portable, and there is no absolute necessity for records being kept. The Indian trade-returns of the last three years give the value of the imports at an average of £200,000. A large trade is carried on in them to Sewistan, Kashmir, Ladakh, Thibet, Nepal, Sikkim, Upper Burma, Siam, and Karennee. There is no doubt that through private sources four or five times the reputed values are brought in, and also exported each year to Europe.

There are in India three extensive tracts, widely separated from one another, in which the diamond has been sought for. The name of Golconda, originally applied to a capital town (now a deserted fort in the neighborhood of Hyderabad), seems to have been used for a whole kingdom; but the town itself is many miles distant from the nearest diamond-mines, and it was only the mart where the precious stones were bought and sold. The second great tract occupies an immense area between the Mahanuda and the Godavary Rivers; and the third great tract is situated in Bundelcund, near the capital of which — Punnah — some of the mines are found. For those content with a slowly paying occupation, and a hard life involving close supervision of the workers, diamond-mining will pay, provided such persons possess capital sufficient to last them a few years. The diamonds now are usually brought from Parताल, close to the southern portion of the Nizam's dominions. The deepest pits are not more than twelve feet. The matrix of the diamond in those localities is a conglomerate sandstone. The appliances of modern machinery for excavation, etc., directed by men of science, may possibly bring to light gems that have not been discovered by the rude native processes of search.

It would be curious to ascertain the yield of diamonds in the East from those mines in the last three hundred and fifty years, and of Brazil in the last one hundred and fifty years since the discovery there; but no such data are obtainable, nor indeed can any reliable estimate be formed of the value of the diamonds owned in different countries. In the United States, diamonds to the value of £1,700,000 were imported in 1886. Two million and a half carats of diamonds are cut yearly in Amsterdam. Precious stones being free of duty in the chief European countries, no records are obtainable. The Brazilian mines are said to yield about £800,000 of diamonds, and India, Borneo, and Australia, £200,000; but these sums are insignificant now, in comparison with the South African yield of about £4,000,000 yearly.

The only Indian mines now worked for diamonds are the northern ones in Bundelcund. The produce, between £40,000 and £60,000, is sold locally, and only about 100 carats are sent to Europe. Diamonds have been found in Sumatra and Celebes, but Borneo alone now produces a regular supply, sending, it is computed, about 3,000 carats annually into the European market. The discovery of Cape diamonds has reduced the Brazilian mining to a minimum of about 24,000 carats. And here it may be desirable to explain what this fanciful diamond weight is. The diamond grain is equal to about four-fifths of a troy grain, hence four diamond grains are equal to one carat, or 3.174 troy grains. But, as half the rough stone has to be cut away in polishing, to estimate the value of a rough diamond we must ascertain its weight in carats, double that weight, and multiply the square of this product by £2, which may be taken as the average price of rough diamonds that are worth cutting. Formerly, indeed, the price of diamonds was as the square of their weight; but this rule no longer holds good, as their value mainly depends upon quality.

From the four principal mines in Griqualand (which all lie within a circle with a diameter of three miles), calculating the amount of diamondiferous ground removed, and the known average yield per load in each, it is found that not less than 33,000,000 carats of diamonds (or more than 6½ tons weight) must have been extracted since the first discovery; realizing, in round numbers, £40,000,000 sterling.

The yield of diamonds from the Kimberley mine alone, from the opening in 1871 to the end of 1885, is stated to have exceeded 17,500,000 carats, equal to 3½ tons weight of precious stones, in value about £20,000,000.

To obtain this, as many thousand tons of reef and ground have had to be excavated. The mine is 450 feet deep, and the cubical contents of this huge cavity measures about 9,000,000 cubic yards. Four thousand Kaffirs are employed at this mine, and more than

20,000 natives of Africa arrive yearly at the mines in search of work; so that the employment of native labor and the development of native trade are incidental benefits conferred on South Africa by the discovery of the diamond-fields.

The Dutch Government are the owners of the diamond-mines in Borneo, which are situated in the district of Landak, in the territory of Ponteyanak: they are worked by Dyaks and Malays, but with far superior skill by the Chinese. The gems are found in a yellow-colored gravel, at depths ranging to 60 feet. Advances are made to the miners, who are bound to deliver all stones at 20 per cent below their market-value.

Diamond-mining in New South Wales is likely to become of much importance, and the colonists are sanguine of being able to compete with South Africa in this trade. Twelve thousand diamonds have been obtained up to the present time, chiefly from the tertiary gravels and recent drifts in the Bingera, Inverell, and Chit-tagong districts. The largest diamond yet found weighed 16.2 grains, or about 5½ carats. They are of good color and quality. Companies with large capital are forming to buy up and work the extensive diamond-fields in Bingera. Other gem stones found in that colony are garnets, the common emerald (green beryl), Oriental emerald (green sapphire), royal blue sapphire, white and pale-blue topaz, and agates.

The ruby-mines of Burma, when scientifically worked, are destined to yield a vastly increased quantity of this precious stone. There has been lately a sharp competition for the lease of these mines from the British Government, and it is believed that Messrs. Streeter have secured the right for £40,000. It is creditable to England that they have such enterprising firms of jewellers, seeking the produce at the very sources of production, as is evidenced by their explorations in South Africa, their employment of fleets of boats and divers for pearl-fishing round the Australian shores, and competition against Indian and Continental firms for the Burma ruby-mines. Rubies are of various reds, and the red sapphire or Oriental ruby is next in value to the diamond.

It has been well observed that digging for gems, like all gambling speculations, is but too attractive, and great numbers of the rural population in Ceylon and elsewhere neglect the safer pursuits of agriculture for the speculative profits of the gem-pits.

Ceylon has always had a reputation for its richness in precious stones. Inferior kinds, such as the moonstone and the garnet, are found in the beds of streams about Kandy, Newara Eleya, Badulla, and some of the small rivers of the south; but the more precious stones, such as the ruby, the blue sapphire, the Oriental topaz of various yellows, the Alexandrite, and the cat's eye, must be sought within a radius of thirty or forty miles from Ratnapura, the city of gems.

The Ceylon ruby is more frequently of a rich rose color, having considerably more light and life than its Pegu rival, and is preferred by many Orientals to the pigeon-blood ruby, which, although the more costly stone, is invariably less brilliant than the Ceylon one.

The search for gem stones is carried on in the most primitive manner in Ceylon. The soil supposed to be rich in precious stones is rented for an annual sum from the government. Coolies are set to work to dig the earth, which is heaped up on one side, and then washed through a trough with variously sized perforated zinc stops, which retain all stones, according to their sizes. These are placed on a table or flat surface, and the gems are easily distinguished and picked out. The proportion of gems capable of being cut and really marketable is not more than 1 per cent.

Of the siliceous gems, the amethyst, of a purplish violet hue, is the most valuable. The best amethysts are brought from Cam-bay in India, and from Siberia, Ceylon, and Persia, where they are found both lining the cavities of geodes and in rolled masses. The chief supply of the blue turquoise is drawn from the peninsula of Sinai, the great mining district of the ancient Egyptians.

Among the Moors, rubies and emeralds, generally uncut, are worn set in finger-rings and huge ear-rings, and necklaces of amber and coral are also prized. The Moors consider that the risk of fraud by imitation is lessened by not having precious stones submitted to the art of the lapidary. This taste for keeping gems in the rough also prevails among many of the Indian princes.

In 1879, thousands of British subjects from Burma passed through Bangkok on their way to the sapphire-mines of Siam. The unhealthy condition of the place proved fatal to numbers, and, although many realized great profits, the rush soon abated. No royalty was charged on the gems found, but a poll-tax of six shillings was levied at the mines. A sapphire weighing 370 carats in the rough, and 111 when cut, was the largest known to have been found. The ruby, onyx, and jade are also found in this district, but the quality of none of these is such as to make them very valuable.

Year by year great changes occur in the intrinsic value of precious stones from frequent plentiful discoveries. The great find of sapphires in Kashmir and Siam reduced their value some 50 per cent. The discovery of large deposits of amethysts in the interior of Brazil caused 7,000 diamond-washers to abandon their usual calling and flock to the neighborhood of the city of Caeté, but the prices dropped so rapidly that the shipments made did not pay. The diamond market has not been materially affected by any great fall in price from the enormous production in South Africa.

Art has much to do with the manufacture of gem stones. Chalcedony, when stained by metallic oxides, rises to the dignity of a gem stone, as sard, carnelian, chrysoprase, when uniformly tinted brown, yellow, or green; as agate, onyx, sardonyx, when the colors lie in bands or strata. The dull or latent colors are developed by heat or roasting. Black onyx, that is, black stones crossed by bands of pure white, are always artificial.

The precious opal was formerly in high repute, but has gone out of fashion from being considered unlucky, — 'misfortune's stone,' — and yet nothing can be more beautiful than the opals of Hungary and Queensland. The fine collection of the latter was much admired at the recent Colonial Exhibition. The area in which opals are met with in Queensland is large, but only in one or two localities are opals of any value obtained. They are remarkable for their brilliancy and variety of color, rivalling in that respect those of Hungary. The ultramarine blue color so finely shown in the Queensland specimens is rare even in Hungary. They are obtained of considerable size, and are of good value. Of other gems, there have been found in Queensland, diamonds, rubies, sapphires, topazes, etc., in the tin-bearing drift of Stanthorpe. Agates, which are also employed as burnishers, are met with in large quantities in the Agate Creek, Etheridge gold-field. There they can be procured in all colors and sizes by the hundredweight.

In the opal-mines of Dubreck, Hungary, about two miles of galleries are worked under government supervision, yielding a revenue of £1,200. The opal-bearing rock is not disposed in vein or bed form: on the contrary, the precious stone is found in nests, or pockets, and it not unfrequently happens that a considerable distance may be passed in the workings without showing a sign of an opal.

Like some of their more civilized brethren, the Maories of New Zealand are passionately fond of adorning their persons with trinkets and other ornaments, especially of jade. At the present day many of the decorations formerly used have been discontinued. Ear-ornaments are still in general use: they are worn by both sexes, and are of great variety. Those of greenstone, or nephrite, are the most highly prized. The amulet, or neck ornament, is generally of greenstone, carved into the resemblance of a human figure. The image is not unlike a Hindu idol, having an enormous face and badly shaped legs of disproportionate size. The ear pendants of greenstone vary in form: some are narrow pieces, from 3 to 5 inches in length, and others are round, thin, and flat. The color of jade varies from almost white to a dark green, but the lighter shades of green are the most highly prized. It is hunted for in the fissures of the precipices and in the streams of Chinese Tartary. Much of it is found in the rivers there by divers. These men work by moonlight, under an escort of soldiers, supervised by government officers appointed for the purpose, and by whom each piece, as found, is assayed and valued. The imperial jade is of a brilliant green, approaching the emerald in color.

There are jade-quarries in Burma, situated in the Mojaung district, at the head waters of the Churdwen, about 90 miles from Bhamo. They are leased to two companies for £6,000, and the trade is entirely in the hands of the Chinese.

The imports of jade into India are to the value of £30,000 to £40,000. In India jade vases are often ornamented with jewels, or carved and wrought so as to form elegant devices. The old Delhi work in cut and gem-incrusted jade is priceless. The Chinese had cut jade for ages, but never ornamented it except by sculpture; but, when it was introduced into India, the native jewellers, with their quick eye for color, at once saw what a perfect ground it afforded for mounting precious stones, and they were the first to incrust them on jade. The Indian Museum at South Kensington possesses the choicest and grandest specimens of this work known, of the best Mogol period (Sir G. Birdwood on 'The Industrial Arts of India').

Blocks of green stone, axes, meres, charms, and other articles of jade, were shown in the New Zealand Court of the late Colonial Exhibition, evidencing the patient skill of the Maoris in working this hard material, second in this respect to the diamond, although nevertheless somewhat fragile.

Passing now from land to sea, we shall find the busy search as actively carried on. In the coral-fishery of the Mediterranean nearly 600 boats are employed, manned by about 6,000 men, the number to a boat varying from 6 to 12 hands. They are sent out from Torra del Greco, Leghorn, Liguria, Sardinia, and the Algerian ports. It is a curious sight to see a fleet of these boats, ranging in size from 3 to 14 tons, employed on the banks with their wooden windlass amidships, hauling up what is termed the 'engine,' a kind of cross-shaped dredge for tearing off the branches of coral from the rocks. About 400,000 pounds of rough coral are brought in annually to Italy; and the shaping and working of this into the varied forms it assumes for commercial purposes, gives employment to hundreds in the chief cities. The value of the coral shipped from Europe used to reach about £600,000 annually; but with the change of fashion this has declined considerably. Not long ago there was quite a rage for the pale flesh-colored coral for jewelry. Coral ornaments may again come into fashion, even if they do not fetch the high prices at which they were formerly sold. Coral has the hardness and brilliancy of agate: it polishes like gems, and shines like garnet, with the tint of the ruby. In Russia, northern Africa, and India, coral is still much in demand. The imports into India last year were to the value of £20,000.

Amber was one of the most valuable jewels of antiquity. It was endowed with manifold sympathetic effects as a talisman against rheumatism, toothache, and other complaints. The Turks still believe it to be an infallible guard against the injurious effects of nicotine: hence its extensive use for the mouthpieces of pipes. Amber is esteemed for ornaments by many. The cloudy, or milk-white, and the opaque lemon-colored, are the varieties most valued by connoisseurs. The imports to this country are to the value of about £3,000 to £4,000, but it is largely shipped also to Austria, France, Turkey, and the Eastern nations. It is principally obtained on the Prussian coast of the Baltic, from Dantzic to Memel. At one establishment near Memel dredging is carried on day and night by 'shifts' of men, 400 being so engaged. At another, in Königsberg, 2,350 persons and nineteen steam-engines are employed. The pits are 300 feet deep, and 100 carts are employed on the works. In other localities divers are employed, two to each boat, with submarine clothing and air-pumps.

The fishing for pearls and mother-of-pearl shells is carried on in very many quarters: in Lower California, the coasts of Mexico, the Bay of Panama; in the Red Sea, the Persian Gulf, Ceylon, Borneo, New Guinea, the Sooloo Isles, Fiji, the Society and other of the Pacific Islands, and on the east and west coasts of Australia. The pearl-fisheries on the coasts of Central America furnish about £100,000 worth of pearls, and employ about 1,000 divers. Our imports of pearls average in value about £100,000: France receives about the same. The marketable value of pearls is much higher in Asiatic countries than elsewhere: hence the best are sent to Bombay, where fancy prices are often given for good pearls.

At the Bahrein fishery in the Persian Gulf, many hundred boats are employed, manned by from eight to twenty men, and the value of the pearls obtained is stated to average £1,000 yearly, but this amount of course varies. The larger and more valuable pearls are believed to be sold secretly. The men receive two-thirds of the catch, after deducting expenses, and for food, etc.

The great pearl-fishery of Ceylon is carried on at stated periods on the banks of the north-west coast of the island, at the entrance to the Gulf of Manaar. As it is a government monopoly, great care is now taken to give rest to the fishery, so as to allow the oysters to attain a maturity of five or six years, which will warrant a rich yield of pearls. There is a prospect of a good pearl-fishery in 1888; and it is confidently expected that as many as 300,000,000 oysters will be fished, requiring every boat and every diver procurable in Ceylon and southern India. The small, thin shells of this oyster (*Avicula fucata*), unlike the heavy, true mother-of-pearl oyster (*Meleagrina margaritifera*), have little or no commercial value, and are chiefly burnt for lime.

When a fishery is proclaimed, the arid sands at Arippe, on the north-west coast, become, as it were, a bustling town of tents, filled with people of varied races and occupations, including boatmen from the Coromandel coast, pearl-dealers from India, Malaya, and China, with the accompaniments of merchants and traders of all classes. The Ceylon Government takes as royalty two-thirds of the oysters gathered, which are sold by auction at the close of each day's fishing. Only a limited number of boats and divers are licensed to fish.

The fishing can be carried on only during the very calmest period of the north-east monsoon, — February to April. In these months the wind blows off the land during the night, and off the sea during the day, which enables the large fleet of fishing-boats to reach the pearl banks by daylight on each morning, returning with their cargoes shortly after noon. The boats, containing twenty men (half divers), are divided into two fleets, which go out to their work on alternate days. The price realized for the oysters varies from £2 to £7 the thousand, the value depending to a great extent on that of a sample of 5,000 lifted in the early part of the fishing. The contents of the mollusk being allowed to decay before the pearls can be obtained, the stench is horrible. The congregations of pearl-dealers, petty traders, official subordinates, and laborers on the shores, are enormous.

About the island of Borneo there is a good deal of fishing for pearls, which are found in a thin, flat, pinkish-shelled oyster, known locally as *salesiep*. This lives only in shallow brackish water at the mouths of rivers. Several boats rendezvous at the same time and place to frighten the crocodiles and sharks. Twenty or thirty persons will be in the water at once, diving, splashing, laughing, and shouting, and bringing up three or four shells at a time: extra yells from all hands salute a rather larger find than usual. Very few of the pearls obtained are of any value individually: they are chiefly seed-pearls, which are sent to China, where they are pounded up, made into powder, and this is swallowed by ladies who desire to improve their complexion; at least, such is the story. From British North Borneo the value of the pearls exported in a year is £500. Pearls of a very high price are not infrequently to be bought at Sandakar, but they come principally from the islands of the Sooloo Archipelago. The largest ever seen there was valued at £1,600.

The formation of pearls is not limited to the bivalves: they are produced on several univalves, especially on the *Strombs* and *Turbinellas*, but are more rare in these than in the bivalves. About the Bahamas group of islands and keys, the shells of the king, queen, and common conch were much sought after for sale to the cameo-cutter, but the fashion for cameo jewelry has passed away. The common conch is the ordinary pink-mouthed shell so frequently seen in milk-shops. It furnishes the rare pink pearls, so much appreciated, and these are exported from the Bahamas to the value of about £3,000 annually. Some fine collections of these pink pearls, set and unset, were shown at the Fisheries and Colonial Exhibitions in London.

It was once thought that no other pearls than those produced by the pearl oysters could obtain a rank among gems; but some of the river-pearls found in species of mussels (*Unios*) compete closely with those from the *Mollusca* of the ocean. These river-pearls are found widely diffused in France, Saxony, Bavaria, Bohemia, and Silesia, as well as in the lochs and rivers of Scotland, Ireland, and Wales. In China, the rivers of Manchuria furnish a good many. Delegates from the royal household look out for the best of these pearls there for the ladies of the imperial court.

In many of the Scotch rivers old men, women, and children may

be seen wading about the shallow fords; and, when they discover a collection of mussels, they thrust down long sticks split at the ends, and bring up the mussels wedged in the slots. In the shallow waters of the Dee, the boatmen look down into the water with a tin having a glass bottom, and when shells are discovered, they are brought up by a kind of dredge, or scoop, and frequently some fine pearls are obtained.

These pearl mussels are also found in most of the small streams of the Province of Quebec, and in the districts bordering on the lower St. Lawrence. The streams most abounding in pearl mussels are but little known, except to Indians and backwoodsmen, who are careful in guarding the secret of where these mollusks are found.

Occasionally a party of pearl-seekers may be seen paddling in a bark canoe, and portaging through a very wild region. After opening several thousand mussels, they will only succeed in securing a few good pearls. These vary in color from white to dark brown: the white are appreciated for their rarity, and the pink on account of their peculiar brilliancy. In form they are generally round or spherical, and have a hard skin with an iridescent or nacreous hue.

It would lead to too much detail to pass under review the various pearl-fisheries of the Australian coasts, the Eastern Archipelago, and the Pacific Islands, where the unclothed native divers have to brave the attacks of sharks, cephalopods, and other dangers. They especially dread the stings of the jelly-fish, which they say are speedy death to them. Enough has, however, been stated to show the importance of this wide-spreading industry of hunting for gems and precious stones. Fine collections of these are frequently brought before the public to feast their eyes on, as at the recent Colonial and Indian Exhibitions in London, and those at Amsterdam, Paris, and elsewhere.

At the Fisheries Exhibition in London, a firm of Parisian jewellers showed, among others, a very choice five-row necklace of 355 selected Oriental pearls, weighing 2,570 grains; a matchless and unique necklace and parure of Scotch pearls; a very important black pearl necklace, composed of 39 pearls, weighing 1,020 grains; a round pearl of 96 grains, being one of the finest pearls known, and worth £20 a grain; a very important collection of Oriental pearls, composed of 3,345 grains original, such as are most prized in Bombay, besides black, pink, yellow, and gray fancy pearls.

MENTAL SCIENCE.

Recent Observations in Hypnotism.

THE great attractiveness that the study of the varied and interesting phenomena of hypnotism possesses for the French physicians has been often noticed. Not a month passes without some new and often startling contribution. The leaders in this movement are eminent scientific specialists, and have been cautious about accepting all the strange doings of excitable subjects as perfectly genuine. They appreciate the readiness with which a shrewd patient can deceive the unsuspecting observer, and insist upon the most exacting tests, arranged with a full knowledge of the sources of error to be eliminated. Under such a scrutiny, many alleged marvels have taken on a less miraculous aspect, and many startling interpretations shown to lack validity. Amongst the oldest claimants to scientific recognition in this field is the statement that a magnet has a peculiar effect upon hypnotic subjects. Sometimes the application of a magnet causes trembling and tingling; again it is said to produce contractions of limbs, and cause such a contraction to pass from one side of the body to the other; and so on. Professor Delboeuf, a successful observer in this field, has very ingeniously tested these claims, and made much progress towards showing their falsity. He experimented upon a boy of fourteen, an experienced hypnotic subject susceptible to 'magnetic' influence. In the preliminary trials Professor Delboeuf had a true magnet and a wooden magnet made to look alike, and each fitting in a case alike for both magnets. He handed the boy the case containing the true magnet, but nothing happened: as soon as the magnet was drawn out, he developed a violent contracture, his usual symptom.