The principal of these woods are the following. The *sanglé* is a yellowish-brown wood, which gets darker with time. It is a rare and very dear wood, not decaying under water, very heavy, and susceptible of a good polish. It is frequently employed in the construction of the better class of junks, and is sold in the markets in logs sawn through the middle. This is done because the purchaser, paying a high price for this particular description of wood, insists upon seeing the condition of it throughout. This wood has no sap, and it frequently attains a height of 18 metres. The *yé* is a rose-colored wood, scented, and capable of a good polish. It is light, and is not attacked by ants. There are two varieties of this wood,—the *yé-baï*, or white; and the *ye van*, or yellow. The *ven* is a dark-yellow wood, becoming brown with age. It is light, and is fit for ordinary carpenters' work. The *gavï* is a yellowish-white wood, heavy, and with long fibres. It is sold in planks from 12 to 15 metres long, and is used for framework and in the construction of junks. The *tio* is a red, hard, and heavy wood, with a coarse grain; and the *tine* is a purple-colored wood, tender, and with very fine grain. The latter, says M. Thomé, might well be used for cabinet-making. The *goï* is a red colored wood, and the tree attains a height of from 10 to 13 metres. It is useful in carpenters' and cabinet-makers' work. The *bop* is a white wood, extremely light (very much resembling cork), polishes well, and would be useful to joiners. The *meucque* is a light, white wood, used for making *sabots* for the Annamites. The *goo* is a very fine, light, and well-veined wood, becoming black with age, scarce in Nghê-An, but abundant in Ha-tinh. It is used for inlaying work. The oak, thus named because it resembles the European oak, is a heavy wood of mahogany color, has a good polish, and is used in cabinet-work.

Among the other principal woods in which a considerable trade is carried on, may be mentioned the bamboo, rattans, *cunao*, *vang sao* (a parasite plant used in Chinese medicine, and very expensive), and cinnamon. From the clearings to the banks of the river, the logs and planks of wood are dragged by buffaloes. Rafts are then formed, which descend the stream from Nghê-An and Ha-tinh in all seasons except when the waters are exceptionally swollen. During the dry season the streams have always a sufficient amount of water to allow the rafts to go down to the sea. The province of Nghê is one of the richest in Annam from a forest point of view; and the Song-Ca and Song-Cong, streams which traverse the forest region, form excellent means of transport for articles so heavy and cumbersome as timber.

GEM-MINING IN SIAM.

THE region in which gems, including rubies and sapphires, have for the past ten years been found, lies situated on the western side of the Cambodian peninsula, about 240 miles south-east of Bangkok, and covers approximately an area of 100 square miles. The centre of that district is Chantabun, a seaport with a good harbor, connected with Bangkok by a line of three small steamers running at regular intervals. It is stated in a recent report to the foreign office that within three hours' walk from Bangkok, to the north-west, is Ban Kacha, where rubies of a very inferior kind are still sought after by the local inhabitants, both Siamese and Chinese. Tongsoos, or natives of Pegu, and Burmese, do not work there. Again, twelve hours distant from Chantabun are the mines of Müang Krung, with a mining population of about 100 in all, mostly Tongsoos, with a few native Siamese and Chinese. Two days' journey from Chantabun, in a southerly direction, is the district of Krat, with mines from which rubies are extracted, and but few sapphires. The Tongsoo workers there number about 3,000. On the eastern side of the hill range, and three days' journey due east from Chantabun, midway between that town and Battambong, are the Phailin mines, the most extensive and most frequented of all. Here there are between 4,000 and 5,000 gem-seekers. Rubies and sapphires are both found, the latter being more abundant. The rubies at these diggings, although more rarely met with, are said to be of higher value than those discovered at other places in Siam. A stream which rises in the hill ranges passes through the neighborhood of the mines on its way to the Thale Sap and the Cambodia River. All three of these localities—Krung, Krat, and Phailin—have been, or shortly will be, conceded on mining leases.

The method of obtaining the precious stones, as described in the *Journal of the Society of Arts*, London, is identical at all the diggings in the region of Bangkok, and is as follows: The intending digger, on entering the district, pays three ticals (5s. 3d) to the head man,—a Burmese British subject appointed by the British Legation, and responsible to the governors of Battambong and Chantabun, according as the fees received are derived from the Phailin or Krat mines. Beyond this tax there is no further fee exacted. The Siamese Government claim no right to pre-empt gems found, or to purchase at market value all stones above a certain carat weight, as was the case in Burmah. The Tongsoo digger's first object is to discover a layer of soft, yellowish sand, in which both rubies and sapphires are deposited. This stratum lies at depths varying from a few inches to twenty feet on a bed of subsoil, on which no precious stones are found. A pit is dug until this corundum is exhausted; and the soil removed is then taken to a neighboring canal or stream, one of which runs in the proximity of the mines both at Phailin and Krat, where it is mixed with water, and passed through an ordinary hand-sieve. In his search for this peculiar alluvial deposit, which is generally free from any admixture of clayey earth, the digger has often to penetrate into the jungle that grows thickly around, combining the work of clearing with the occupation of gem-digging.

The Tongsoos do not appear to form themselves into companies for mutual assistance or division of profits. They work principally in twos and threes; and, if chance lead them to discover a gem of any value, they either undertake a sea-voyage to Rangoon or Calcutta for the purpose of obtaining a good price for it themselves with the dealers in precious stones at these places, or consign their acquisitions to an agent, while they themselves continue to search for more. A process of migration is continually going on among the Tongsoos of the different mines, the workers passing from one to the other, according to the reputation of a particular mine at certain periods.

No artificial or mechanical processes for the washing of the soil have as yet been introduced, nor have gems been discovered in fissure veins of soft material embedded in crevices of hard rock or in crystal form. Rubies and sapphires are found at all the diggings, often deposited side by side in the same layer or stratum of sand. The ruby of "pigeons' blood" color is rarely, if ever, met with. The color of the Siam ruby is usually light red of a dull hue. The sapphire is of a dark, dull blue, without any of the silken gloss which is the distinctive mark of the Burmah and Ceylon stone. Stones resembling garnets rather than rubies are found in the dried beds of water courses at Raheng, two hundred miles north of Bangkok; and there is every reason to believe that rubies also equal, if not superior, to those discovered in the south-east, exist throughout the Raheng district. Those hitherto obtained are the result merely of surface scratchings by the Tongsoo seekers.

NOTES AND NEWS.

THE encouragement received in New York since April 1 by George L. English & Co., mineralogists, has been such as to lead them to the decision to concentrate their entire business in the metropolis. It is their purpose, therefore, to transfer their Philadelphia stock to New York on Jan. 1, 1891. For the present they will remain at 739 and 741 Broadway, where, with new fixtures, a greatly enlarged stock, and an increased corps of assistants, they hope to merit and receive a growing patronage.

—The production of kirschwasser in Switzerland is carried on in the cantons that produce the best cherries; namely, Basle-Campagne, Bern, Aargau, Freyburg, Grisons, St. Gall, Lucerne, Upper Unterwalden, Soleure, Schwytz, Valais, Vaud, Zug, and Zurich; that is to say, in fourteen cantons out of twenty-two. The United States consul at Lucerne says that the principal distilleries are in the following cantons: Basle, Lucerne, Schwytz, and Zug. The others are small concerns, consisting of one, two, or at most three, stills. The manufacture of kirschwasser is also carried on to a great extent by the farmers. For the distillation of kirschwasser,

both black and red cherries are used; but the former are preferable, as producing a spirit of finer quality, and in greater quantity. According to the *Journal of the Society of Arts* (London), there are no special methods of cultivation, the cherry-trees being generally in the same orchards with apple and pear trees; but, as this is the first fruit on which the farmers can realize money, they naturally pay great attention to their cherry-trees. The process of manufacture is as follows: The cherries are first carefully cleansed, great importance being attached to this point; the stems are then removed, and the fruit packed in very thick wooden casks, and left to ferment for a period of from five to eight weeks, according to the weather; after which it is ready for distillation. In large distilleries the stills contain from 220 to 264 gallons, while in the smallar ones the quantity varies from these figures to 11 gallons. The large distilleries, with one or two exceptions, make use of indirect steam as a means of heating, the stills being constructed with double bottoms, through which steam passes. The others employ naked fires, the fuel consisting of peat or the refuse of cherries and pears after distillation, which is compressed into bricks, and dried. Both methods of heating have numerous advocates, who each claim the superiority of their system. Kirschwasser is placed on the market in litre (1.76 pints) bottles, in carboys containing from 10 to 60 litres, and in casks. The wholesale market value of kirschwasser varies very much, according to good or bad crops, and consequently according to the price of fruit in good seasons; the price of new pure kirschwasser being sometimes as low as two francs per litre, while in bad seasons it is sometimes as high as four francs, the average being about three francs. All distilleries, it is said, even the best with one exception, adulterate their kirschwasser by the addition of cheap spirit of wine or spirit of potatoes (which is imported from Germany), according to the price offered by the buyer, the cheaper qualities consisting of about three parts of spirit to one part of kirschwasser. All distillers guarantee the purity if the full market price is paid. It is impossible to state with any accuracy what is the annual production. Different statements put down the average at from 300,000 to 500,000 quintals (a quintal is equal to 1.9 hundredweight). The principal markets for kirschwasser are North America, South America, and British India. France also imports a considerable proportion of the kirschwasser of Switzerland.

—Mr. William Hamilton Gilson, the well-known artist and illustrator, has accepted charge of the illustration class of the New York Institute for Artist Artisans.

—The efforts which have been made to open commercial communication between England and the heart of Siberia by way of the Arctic Seas have at last been successful, according to *Nature* of Nov. 27. A correspondent of the London *Times*, who signs himself, "One who knows all about it," explains the circumstances connected with this remarkable triumph of skill and energy. Two ships and a tug for river-work were despatched from London at the end of July and beginning of August. Owing to north-easterly winds, the Kara Sea was exceptionally full of ice, so that the ships were detained for some days among ice-floes. Nevertheless, in thirty-nine days the ships and tug reached Karaoul, 160 miles up the Yenisei, without accident. They remained there nineteen days, and took twenty-six days to return. They were thus only eighty-four days, or two months and twenty-three days, away from the London Docks. At Karaoul they met the river expedition, which "returned safe to Yeniseisk a few days ago, and is now landing and warehousing there the valuable cargo sent out from England." The same correspondent points out that the real *crux* of the expedition lay in the 160 miles of estuary between Golcheka, at the mouth of the Yenisei, and Karaoul, at the head of the estuary, which the Russian Government had assigned as the port of discharge. Last year the "Labrador" would not ascend to Karaoul, because Capt. Wiggins thought there would not be water enough to take him there, and had no steam-launch to enable him to feel his way up. On the other hand, the river-ship did not dare to descend on account of the gales that then prevailed. This year it was discovered that through the entire estuary there was a channel with sufficient water for ships of any draught, and the ships proceeded up the river to their destination without hinderance. It is unfortunate that Capt. Wiggins was accidentally prevented from completing the work with which his name has been so intimately associated; but it was he who showed the way, and to him, more than to any one, belongs the honor of having provided this new outlet for British commerce. That it may become an outlet of the highest importance is the conviction of no less an authority than Baron Nordenskiöld. In a letter congratulating the promoters of the undertaking, he says, "I am persuaded that its success will once be regarded as an event rivalling in importance the return to Portugal of the first fleet loaded with merchandise from India. Siberia surpasses the North American continent as to the extent of cultivable soil. The Siberian forests are the largest in the world. Its mineral resources are immense; its climate, excepting the *tundra* and the northernmost forest region, healthy, and as favorable for culture of cereals as any part of Europe." He goes so far as to say that the future of Siberia may be "comparable to the stupendous development which we at present see in the New World."

—The many instances of strange doings by excited men are matched by an incident said to have occurred recently in England during a run with the hounds of Sir Watkin Williams Wynn. In passing a cottage the fox suddenly found himself among a lot of fowls. Absolutely regardless of possible consequences, he snatched up one of the birds, and carried it in his mouth to the end of the run, and was killed with it in his mouth. This is given for what it is worth.

— A discovery which may lead to important results has been made by M. Chabrié during the course of his experiments upon the properties of the recently isolated gaseous fluorine substitution products of marsh-gas, as we learn from *Nature* of Nov. 27. The intimate relation between these bodies and chloroform, and the possibility of their possessing even greater physiological activity, led M. Chabrié to investigate the action of one of them, methylene fluoride (CH_2F_2), upon specific microbes, with the result, that, in the case of the particular bacillus experimented upon, the gas is found to absolutely destroy them. The bacteria in question, which have formed the subject of these first experiments, were those discovered by M. Bouchard, in 1879, in urine. Two eprouvettes of equal size were taken and filled with mercury over a mercury-trough. Equal small quantities of urine containing colonies of the bacteria were introduced into each, and afterwards a mixture of air and methylene fluoride admitted into one of the eprouvettes, and an equal volume of air alone into the other. The two vessels were both maintained at the temperature of the body, 35°, for twenty-four hours. At the end of this time a few drops of the urine from each of the vessels were introduced into separate flasks containing sterilized culture medium, and both maintained at the same stove temperature for twenty-four hours, and again for forty-eight hours. At the expiration of this period the urine which had stood in contact with air alone was found to have given rise to a flourishing colony of the bacteria, while that which had been in contact with the mixture of air and methylene fluoride had not given rise to a trace of a culture. According to MM. Albarran and Hallé, twelve hours are ample for the development of this bacillus, hence methylene fluoride had evidently been fatal to the germs. The experiment was again repeated without the use of mercury, in sealed tubes, but with the same result. It appears, therefore, that methylene fluoride possesses the property of destroying the urinary bacteria in question. M. Chabrié has made special experiments in order to determine whether the gas possesses any local irritant action; and the results, as far as they go, appear to be eminently satisfactory. He is now directing his experiments upon the microbe of the hour, that of tuberculosis, and his results will doubtless be watched with considerable interest. Methylene fluoride is easily prepared by heating silver fluoride with methylene chloride in a sealed tube. M. Chabrié has also succeeded in preparing the higher homologue, $C_2H_4F_2$ (ethylene fluoride), by the analogous re-action with ethylene chloride, and is extending his observations to the antiseptic properties of this latter gas.