

them much sought after by collectors, and have secured them prominent places in the cabinets of the world. Some of them are, indeed, from their stupendous size and rare perfection, more prized than even cut stones from other countries. The zircon crystals, for instance, individuals of which have been known to weigh fifteen pounds, and specimens of nearly a pound being not uncommon; the twin crystals of the same mineral, single and twin crystals of black titanite, which attain a weight of seventy pounds each; the abounding amethysts of Lake Superior; the green chrome garnets of Orford, and the white garnet crystals from near Wakefield, are among the most remarkable of these precious finds. Being esteemed for their mineralogical interest, these crystals have considerable commercial value. That some of them may be of service in the arts is almost certain. Mr. Kunz thinks that the rich green apatite crystal could be worked into ornaments such as are made out of fluorite, which it transcends in hardness. One apatite crystal was found to weigh more than five hundred pounds.

Some of our readers may recall the exhibit that our Survey prepared for the Centennial Exhibition of 1876 at Philadelphia and the elaborate Descriptive Catalogue that accompanied it. The museum and offices had not yet been removed to Ottawa, so that Montrealers had an opportunity of seeing the wonders (not in the mineral kingdom alone) gathered from the remotest habitable north and west of that (in Dominion annals) comparatively remote date. A special section was devoted to minerals applicable to the fine arts and to jewelry. There were polished specimens of green porphyry, another showing white crystals in a dark-coloured base, a vase of Grenville (P.Q.) labradorite made in Paris, cut and polished specimens of albite and perthite, a vase of jasper conglomerate from the Bruce Mines, an ornamental pile of hundreds of pieces of amethystine quartz and several specimens of agate. Mr. W. A. Morrison, of Toronto, also sent a collection of precious stones to the Centennial. In 1886, the Survey sent a still fuller collection to the Colonial and Indian Exhibition of London. But, as Mr. Kunz well observes, the field of Canada is so vast that, notwithstanding the progress of research in recent years, only a small part of its great expanse of territory has been thoroughly examined. No diamonds, no emeralds have so far been observed in Canada, though in Maine, not far from the frontier, fine aquamarines occur. Crystals of beryl, over an inch in diameter, have been found in Berthier and in Saguenay Counties, and specimens of these may be seen in the Survey Museum at Ottawa. Tourmaline also occurs in this province, in the townships of Chatham and Villeneuve; and at Calumet Falls, Clarendon and Hunterstown, P.Q., and Ross, Ont., fine yellowish or translucent brown crystals (furnishing an occasional gem) have been discovered. Black tourmaline occurs in large crystals at Murray Bay, St. Jérôme, Lachute and other localities, and the velvet black, evidently an indicolite (giving a blue powder) is seen at Madoc and Elzevir. Garnets occur in British Columbia, Ontario and Quebec. The faces of the splendid almandite garnets found along the Stickeen are, from their perfect form and polish, the most beautiful in the world. Though not transparent enough to cut into gems, they could be used for watch jewels. Beds of pure red garnet rock, twenty-five feet thick, are met with in the gneiss at St. Jérôme,

and in quartzite at Rawdon, Marmora and elsewhere. Andradite garnet is found on Texada Island, B.C. Hyacinth is found in crystals at Grenville, P.Q., (but not of gem value) and in fine crystals associated with idocrase at Wakefield, P.Q. The green chrome garnet (ouvarovite), found in Orford, is among the most beautiful known examples of this rare mineral. The crystals, transparent dodecahedrons, rarely above an eighth of an inch in diameter, and of the deepest emerald green, are found lining druses in cavities of crystalline limestone. But for the small size of the crystals, this green garnet would take high rank as a gem. The familiar "diamonds" which tourists used to take away as souvenirs from Quebec are small doubly terminated crystals found in the limestone of the Levis and Hudson River formation. Smoky quartz is found in immense crystals—some weighing a hundred pounds—near Paradise River, N.S. Milky and rose quartz are also found in many localities. Jasper abounds in Canada, and Mr. Kunz thinks it strange that so beautiful an ornamental stone should have been so long neglected. Dr. G. M. Dawson believes that the jade used by the Selish and other Western Indians for their implements belongs to the highly altered and decomposed rocks of the Carboniferous and Triassic series. Labradorite, which exists in great quantities on the coast of Labrador, is also found on Lake Huron and in some localities in this province. Epidote occurs in pea-green veins in the fine-grained reddish gneiss of the Mingan River and Ramsay, Ont. Peristerite, a variety of albite so named from its peculiar opalescence, suggesting the hues on the neck feathers of a pigeon (*peristera*), is met with at Bathurst, Burleigh and near Perth, Ont. At Burgess, near the latter place, what is known as perthite, which, like peristerite, is well adapted for ornamental uses, is found in large quantities. Pyroxene, fluorite, ilmenite, olivine, prehnite and titanite are other precious stones more or less abundant in various parts of the Dominion. The titanites of Canada have long been famous, and many thousands of dollars' worth of them have been sold as specimens. Mr. Kunz makes mention of a great many other minerals of price which have not yet been found in paying form or quantity. Specimens of the most important may be seen at the Museum of the Survey, Ottawa; at the Redpath Museum, Montreal; at King's College, Windsor; at the School of Mines, New York, and the New York Museum, Albany. For his information Mr. Kunz acknowledges his indebtedness to Mr. Coste and Mr. Brumell, of the Survey, to the late Rev. Dr. Honeyman, and to Mr. C. D. Nimms, of Philadelphia.

#### THE NEW ROUTE TO AUSTRALIA.

Mr. Douglas Sladen forwards the following suggestion for a new route to Australia:—For some years past the line running between San Francisco and Sydney *via* Honolulu and New Zealand has been issuing tickets from Australia to England at the same price as the two main all-sea lines, the Orient and the P. and O.—*viz.*, \$350—first class. This includes cabin passage from Sydney to San Francisco, transit across the American continent by the various transcontinental lines (sleeping car accommodation and meals on trains extra), and cabin passage from New York to Liverpool by the various Atlantic steamship companies.

This is a magnificent advertisement for the

American Pacific railroads. The Canadian Pacific has hitherto not participated, but it has a double opening. In the first place, it can make an arrangement with the various steamship lines running between Montreal and Liverpool and with the steamers running from San Francisco to Vancouver and offer this route—Sydney to San Francisco, San Francisco to Vancouver, Vancouver to Montreal, Montreal to Liverpool—charging the same rate, *viz.*, £70—\$350, not including sleeping cars or meals on trains. But this has trifling attractions compared to the following:—Melbourne *via* Sydney, Brisbane, etc., to Hong Kong and Yokohama, Yokohama to Vancouver, Vancouver to Montreal, Montreal to Liverpool.

There is a line of tea steamers, which carry passengers, trading between Melbourne and Yokohama. The C.P.R. would have to make arrangements with these steamers, called, as far as I remember, the Eastern and Australian line, which would enable them to carry passengers from Melbourne to England at the same rate as the Orient, P. and O. and San Francisco line, *viz.*, £70—\$350 (sleeping cars and meals on trains extra), and then they would receive nearly the whole of the trans-pacific Australian passenger traffic. Most Australians would dearly love to see Japan if they could take it *en route* for England, though they shrink from the long voyage to Japan and back again without "furthering" themselves; and all of them long to see Canada, the great sister colony, with its untold, almost unworked, fields for investment. In my opinion it would be essential that the C.P.R. should offer this route at the same price as the other lines from Australia to England—though they might in working find the passengers willing to pay a slightly advanced price.

The advantages to Canada and the C.P.R. would, it seems to me, be immense. In the first place, in every advertisement of the "Eastern and Australian" line in the Australian papers and on their sign boards and prospectuses, Canada and the C.P.R. would figure largely and prominently; and, in the second place, Australian capitalists would travel across Canada instead of across the States.

Now the Australian has large capital and is a singularly bold investor, not at all averse to investing outside his own country, and Canada notoriously has the greatest prizes in the world for practical investors—for she has so many undeveloped enterprises, particularly in mining and sheep-ranching—enterprises in which the Australian speculator is inclined to look afield, for the various Australian governments are so thoroughly awake to the profits that can be made by squatting (*i.e.*, ranching) and mining that they have become very hard taskmasters to the speculators in these lines.

Once, by holding out the attraction of Japan and the travel across a sister colony, make the Australian capitalist take the C.P.R. route to England, and his embarking in Canadian enterprises is a certainty; and he is exactly the man to do it well, because he understands colonial conditions, and what he takes in hand he attends to personally.

Charles F. Coghlan, the eminent English actor, is at present in Prince Edward Island writing a play for his sister Rose, and fishing when he isn't writing. Miss Coghlan has received a very pressing invitation to spend the summer with her brother. "I think I shall go," she said, "I want to get to some place where I can roam about in a free and easy sort of a way, and where I can dress as I please."