

erection of defences, measures to increase the depth in the Pei Ho, to facilitate the advance on the Legations by boats, etc., etc. The campaign was remarkable for the number of C.R.E.'s who succeeded each other in quick succession—Major Lee, Colonel Scott-Moncrieff, General Shone, General Spratt Bowring (who I am glad to see here to-night, and who, I think, should have presented the China plate, as having been more directly connected with R.E. work than I was), and Colonel Prendergast. I am afraid I have been trespassing too much on your kindness with this long story.

The presentation plate (shown on accompanying illustration) consists of a silver model of one of the two dragons which stand at the entrance to the Emperor's Hall of Audience at the Summer Palace, Peking; this rests on a carved ebony base, and the whole is supported on an ebony pedestal, the two long sides of which are occupied by silver plates with the names of subscribers, and the two ends respectively by a record of the presentation and a description of the dragon.

The original dragons are of bronze, 5 feet long, resting on white marble pedestals some 3 feet high. The silver model is 15 inches long (or $\frac{1}{4}$ -size of originals), and was made by Wang King, of Hong Kong, from drawings and photos sent to him for the purpose; it is an exceedingly well-executed and elaborate piece of work, and the whole piece is a very striking, as well as very appropriate, memento.

DEMOLITIONS IN SOUTH AFRICA AND CHINA.

It is understood that many R.E. officers had very considerable and varied experience during the late wars in demolition work of an exceptional nature or under unusual circumstances.

If such officers will be good enough to send reports of their experiences to the Secretary, R.E. Institute, describing the nature of the demolition, explosive and charge used, method of fixing and detonating, results, etc., with explanatory sketches, he will endeavour to compile a Professional Paper on the subject for publication and issue to officers.

DESCRIPTIVE ACCOUNTS OF STATIONS ABROAD.

ESQUIMALT, BRITISH COLUMBIA.

KIT.—(a). Plain Clothes, Underclothing, Boots.—Just the same as required in England. A large supply of all these should be brought, as those obtainable locally are very inferior, and much higher in price. Good strong boots are essential, as the winter is very wet. Measures should be left at home with tailor, bootmaker, and shirtmaker. Burberry's slip-on coat is a great convenience; no specially warm overcoat is required for Esquimalt, but one would be very useful if on leave in Eastern Canada. Plenty of flannels and white ducks are useful. Frock coats and top hats would only be used for weddings, and are not essential then. A couple of neat blue serge suits (winter and summer) are recommended.

Children's and ladies' clothes as at home; a good supply should be brought, as the Customs duties are very high, and local materials are expensive.

(b). Uniform.—As at home, except for F.S. helmet and service cap. No Customs duty on uniform.

(c). Furniture.—Very expensive if bought new locally, and of inferior quality, but a great deal can be picked up at auctions at reasonable prices. Do not bring much in any case; bear in mind that on a railway journey of over 3,000 miles overweight becomes a serious item; in particular, no single package of luggage should exceed 250 lbs. in weight, otherwise the C.P.R. will not take it in passenger trains.

Heavy baggage of married officers can be bonded through by freight, and reaches Victoria within a few days of one's own arrival.

(d). Plate and Crockery.—Very expensive locally; good quality and style is unobtainable. It is best to bring plate in possession, and buy inferior crockery locally to save transport.

(e). Saddlery.—Bring ordinary hunting saddle and gear, *all of the very best*, as they have to stand a great deal of wear and tear in the wet winter; bring also horse rug, surcingle, and all stable requisites; these are all obtainable locally, but are inferior and expensive. Bring a good set of harness if intending to keep a horse, also any spare bits, bridles, etc., in possession.

(f). Accoutrements.—As at home.

(g). Weapons.—Bring English hammerless 12-bore gun, but not a very expensive one, as it will get very rough usage; also a 10-bore in addition if a keen shot. Excellent rifles are obtainable locally at very moderate prices, but an English rifle in possession should be taken. Shot guns can be bought second-hand frequently; new ones are cheap, but shoddy. Bring all the ammunition possible; it is more than double English price here. Plenty of 8's, 6's, 4's (and 3's for a 10-bore if brought).

(h). Shooting, Fishing, and Riding Gear.—For shooting, stout, strong ankle boots with nails, and the very oldest of clothes.

For fishing, a good salmon rod with reel and line, and a trout rod with same; trout casts should be brought, but not flies or spoons for either salmon or trout. Farlow's 14-foot Colonial rod does for both capitally, and is used and recommended by the keenest men here. Those not very keen on fishing can pick up local gear cheap, but it is not good. English rods, lines, etc., sell very well on leaving. Keen fishermen would do well to consult with Farlow about extra strong tackle for the 50-lb. salmon of the Campbell River.

For riding bring breeches and boots, or boots and gaiters, and a good hard hat; Chinese tailors can copy riding breeches fairly well.

SERVANTS.—For married officers, Chinese servants are the general rule. One Chinaman (wages varying from £3 to £6 a month) does cook and housemaid. They are excellent cooks, and very good servants, clean, honest, and obedient. English and Canadian nurses are obtainable with some difficulty for somewhat lower wages.

For single officers the general rule is either to share a Chinese servant (about £2 5s. each per month), or a Reservist (about £3 5s. each per month). The Chinese are very good officers' servants when once they have learnt their duties. Reservists would not come for less than £9 a month and food; this means three officers sharing.

Mess livery should be brought.

HORSES AND DOGS.—Dogs are expensive to bring out; sporting dogs are obtainable here; other dogs (well-bred) can be bought at high prices. It is a good place for dogs.

Horses for riding and driving vary in price from £20 to £30, and the stabling in barracks is excellent; stalls for 10 horses altogether. Four out of six of the R.E. officers draw forage. Grooms are a difficulty on account of the high wages, the usual method being to share a groom between two or three officers. Forage is about same price as at home.

The local price of traps (rubber-tired buggies made of hickory) varies from £25 to £30 new, and are excellent value for the money. Light two-wheeled carts can be got for \$75, and are capital for shooting and fishing expeditions. English traps should not be taken, even if sent round by sailing ship.

HOTELS, HOUSES, LODGINGS, QUARTERS.—Hotels.—Fair, 15s. to £1 a day for everything.

Houses.—Furnished, from £5 to £10 a month. Married officers would do well to write and get someone to look round for a house, as it is very difficult to get one near barracks as a rule.

Lodgings.—Nil.

Quarters.—All Government quarters are in one block at Work Point Barracks, and are very pleasantly situated on the harbour. The O.C.R.E. is the only officer for whom married quarters are available, and for him only if he is senior officer on the station. Single officers' quarters are very good; the mess is in the same block. Accommodation is ample for unmarried officers.

Mess.—R.A. and R.E.; very comfortable, about nine dining members, messing about 4s. 6d. a day; moderate subscriptions.

CLIMATE AND HEALTH.—The climate is practically the same as the S.W. of England; a long fine summer, and a very wet winter from November 1st to April 30th. Fogs are unusual; no heavy storms or hail. Short spells of tobogganing and skating nearly every winter. The winter is, generally speaking, wet and raw. The climate is excellent, but the winter is perhaps trying to anyone with rheumatism and kindred disorders; the water locally is, however, supposed to have a very injurious effect on teeth. A good place for children.

PHYSICAL FEATURES.—The country is hilly and mountainous, very thickly wooded with fir and cedar; sea on all sides except north; incomparable views and drives in all directions.

MAPS AND DESCRIPTIVE BOOKS.—Report of British Columbia Board of Trade.

AMUSEMENTS AND SPORTS.—(a). Shooting.—Wild fowl excellent (brent and duck); pheasant, snipe, quail, grouse (blue and willow), occasional and not plentiful. Barring wild fowl, the shooting is very rough and difficult; a good dog and good local knowledge is essential to a bag. Deer are fairly plentiful on the island. Elk can be shot up north. The big game shooting on the mainland (within three days by rail) is excellent, and includes mule deer, mountain sheep, goats, and gazelles. Black bears are fairly frequent on the island.

(b). Fishing.—The salmon fishing is unlimited, but is by trolling only; a much discussed fish, known locally as a steelhead, and running up to 20 lbs., takes the fly freely; but it is a moot point as to whether it is a salmon. Salmon can be caught within 500 yards of the barracks. The trout fishing is good, but requires a trip varying from 5 to 40 miles, either by trap or by rail. Trout are plentiful in Cowichan Lake and River. The sea fishing is poor.

(c). Riding.—Good, but not much open country; there is a local hunt club, and paper chases take place every week throughout the winter; the jumps are naturally all timber. Two race meetings a year, and a gymkhana.

Golf.—Two links, the Victoria and the United Service, the latter within 500 yards of barracks. The Victoria links are good, the latter fair. Plenty of clubs and balls should be brought; cleeks cost 9s. a-piece locally.

(d). Yachting, Boating, Canoeing, etc.—Very good place for cruising; the racing is fair; the barracks at present are the backbone of the racing, and took practically all wins for 1902. There is a one-design class, two boats of which are in the barracks. The yacht club is very feeble, but keen yachtsmen will be gladly welcomed at the mess. Very good facilities for boating; a good regatta every year. A favourite and most enjoyable two days' trip is to go down the rapids of the Cowichan River in canoes; Indians run the show. A first-rate place for camping out in the summer.

(e). Tennis.—Two good courts in barracks, and very good courts in town club and in private grounds. Great interest is taken in tennis. Racquets are expensive locally.

(f). Cricket, Football, Hockey, and Lacrosse.—Fair cricket; but not many matches are played. Matting is used a great deal. Rugby and Association football both played; plenty of good matches. A hockey club is usually got up in the winter by the navy and barracks; not many matches, but games very frequent. Lacrosse and baseball are, of course, played locally by Canadian teams.

(g). Badminton.—Twice a week in winter afternoons and evenings; one court at barracks, one in town.

(h). Cycling.—Usually only for work or fishing expeditions; would recommend selling English bicycle and buying here, if required.

DUTIES.—The O.C.R.E. has hitherto been also O.C. troops. The garrison consists of 1 double company, R.G.A.; half a fortress company, R.E.; submarine mining company, R.E.; and details; total, about 350 all ranks. Two division officers, one for the barracks, and one for fortifications; the new barrack work is nearly complete; the fortification work will probably be extensive for some time.

The barracks themselves are compact, but are two miles from S.M. Establishment and A.O.D. Depot on Esquimalt Harbour, usually reached by car or by

bicycle. The barracks are two miles from the town, but cars pass every 15 minutes.

PROFESSIONAL BOOKS.—As required; it is hoped that a branch of the R.E. Library will shortly be started.

PASSAGES OUT AND HOME.—Out, by Allan Line, to Montreal in summer, Halifax in winter; and across Continent by C.P.R. Alternative route *via* New York and the Northern Pacific Railroad. The first is the most interesting, the second is more comfortable and quicker. Officers ordered home draw £40, and go by any route, accounting for the amount; it is doubtful if the reverse is allowed. If leave can be obtained, a direct line of steamers run from here to England, *via* the East—70 days' trip for £70.

TRIPS.—To Japan (with four months' accumulated leave), by Empress steamers, about £35 each way; and to mainland, Bauff Glacier, and the various show places of the Rockies in summer. A good winter trip is to S. California; the fare to San Francisco is only £3.

PROCEDURE ON ARRIVAL.—Invariably telegraph at Winnipeg to O.C.R.E., stating what day you will arrive in Victoria. Would recommend married officers, unless they have made other arrangements, to put up at the Driard Hotel; the steamer arrives at 7.30 p.m. here. Single officers can always be accommodated for the night in the mess. Report to O.C.R.E. next day at orderly room.

GENERAL REMARKS.—The station is probably the best foreign station for R.E. The society, both naval and civil, is very good, and the local people are always hospitable to the services. Dances and social entertainments of all kinds very frequent; the theatre is, however, very feeble, being out of the way of good touring companies.

The place is most expensive generally speaking, and a special colonial allowance of 6s. a day is issued to all officers; but this is very easily spent. Married officers feel the expense most, as rents and servants are expensive, but there are many compensating advantages.

Mails leave and arrive twice a week; 14 days from London is the usual time.

P. H. FRENCH,
Lieut., R.E.

Esquimalt, 24. 11. 02.

STEEL CONCRETE ARCHES.

CORRECTION.

In last month's issue the formula, at bottom of page 221, for the thrust at the quarter span should have been printed

$$\frac{1}{16} \cdot \frac{(2w_1 + w) l^2}{d} \sqrt{1 + \frac{4d^2}{l^2}}$$

BORING FOR WATER IN THE CAPE COLONY.

(By BERNARD WILLIAM RITSO, A.M.I.C.E.)

The land of the Cape Colony rises from the sea towards the interior in a series of terraces formed by ranges of mountains, which, having comparatively little descent on the landward site, constitute a succession of gigantic steps from the coast to the Great Karroo, a plateau which may be described as forming a portion of the central table-land of South Africa.

The lowest of these steps is the coast plateau, between the sea and the coast ranges. It averages 600 feet in height, and, from a breadth of 30 miles throughout the extent of the west coast line, widens to 50 miles near the Cape and along the south coast, gradually narrowing to only a few miles near Port Elizabeth, and varying between 10 miles and 20 miles in width on the east coast. The Little Karroo, which forms the next step, consists of a long narrow plateau, 1,200 feet in height, 200 miles in length, and 50 miles in breadth, and lies between the coast ranges and the Zwart and Zuurberg Mountains. The third plateau, which is of much larger dimensions, and is bounded on the north by the Great Inland Chain (which traverses the whole of the Colony from east to west), has an elevation of 3,000 feet, and is known as the Central Karroo. The last step leads to the Great Karroo, which is the highest and most extensive of