been uncovered. About 400 fet back from the contact, an open cut has exposed a lode 4 feet wide of fairly well mineralized rock.

The Gloucester group, now being worked under bond by the Dominion Copper Company, was not visited. On the G. H. claim of this group is a ledge of magnetite, with a little pyrite and chalcopyrite. In places it is at least forty feet wide, and it has been traced several hundred feet. It seems to lie wholly in the grey granodiorite. On the Gloucester was a good showing of copper ore, with pyrite, molybdenite, calcite, and quartz, with grey granodiorite on one side at least, but the country rock is badly altered. Development here is made more difficult by some faults which have been encountered.

On the south slope of Tenderloin Mountain, several copper lodes were seen during the survey of the district. They occurred in the grey granodiorite, in fractures, or crushed zones. In the latter, the rock is sometimes crushed to a sort of nodular structure, the more highly triturated material of the rock wrapping round the ball-like rests of unbroken material. In these crushed zones, particularly along well-marked fracture planes, the mineralization by copper and iron sulphides is quite heavy.

In addition to the claims mentioned, a large number are held, on which deposits of one or more of the types mentioned, have been discovered. Most of the claims spoken of lie within an area 3 x 1 1-2 miles, and an area 8 miles long by 1 to 4 miles wide—covering both sides of the river, would embrace most of the discoveries so far made. There are possibilities, however, in this camp over a somewhat longer and a much broader area—all that ground lying within the encircling, recent acid or alkali eruption rocks, for all the older rocks of the camp, the altered basal rocks, the granodiorite, gabbro and porphyritic syenite are mineralized and lode-bearing. Lodes of the first type are likely to occur in the continuation of the limestone band northward from the McKinley, and in other limestone or altered limestone areas. Contacts seem promising points for prospecting, and in addition to the contacts, shear or crush zones in the massive rocks. From what has been seen of the acid granite, and the pink alkali syenite (Rossland alkali syenite) and the Tertiary lavas, both here and elsewhere in this Province, it is altogether unlikely that workable deposits, at all events of the described types, will be found in these rocks, but the older formations along their contacts, and along dykes from them is good ground to prospect.

In its geology and the nature of its ore deposits it bears a strong resemblance to the Boundary Creek district. The main rock formations are common to both, as are deposits of types 1a and b, and 3, the main difference being that in the Boundary sulphur is less plentiful, so that pyrrhotite is found in place of pyrite, and iron oxides are more prominent.

Deposits of Type 1 are connected with contact metamorphism by intrusive rocks—and are to be explained by the influence of heat, together with mineral-charged water or vapors given off by the cooling intrusive magma upon the country rocks. Such emanations ascend as best they are able by all sorts of channels, among which fissures and fracture planes are likely to be important. The rock along these channels usually exhibits characteristic alteration, produced by these mineralizers, and is often replaced by the mineral matter carried by them for some distance on either side of the channel—especially when complex fractures enable the solutions to wander into the rock and expose a great number of surfaces of attack. It will be evident that contact metamorphic action will not be confined to the immediate contact of the intrusive rock (indeed may be absent there) but may be irregularly distributed, according to the physical and chemical characters of the neighboring country rock, the distance below the surface, temperature and other precipitating conditions. There may be expected to be transitions between contact metamorphic deposits and ordinary lodes or veins, and such have been found in a number of places. Deposits of Type 2 are probably to be regarded as such—as are also the deposits of the Rossland Camp, now being mined. Deposits of the contact metamorphic type seem to be widespread in Southern British Columbia, not only in Boundary and Franklin, but in other districts as well, and will, no doubt, be recorded from a great many localities.

From descriptions of copper and magnetite deposits in the Similkameen, Kamloops and the coast, it would appear to the writer that examples occur in these localities. On the outskirts of the Rossland Camp the same type occurs, and transitional types to ordinary lodes and veins are widely distributed.

It has not been absolutely determined for Franklin Camp what intrusive rock has been responsible for the metamorphism and mineralization. The possibilities are the granodiorite, the alkali syenite, and the undiscovered or unrecognized plugs or dykes which gave vent to the lavas. The first is in closer proximity to the deposits in large exposed areas, but the second is well represented by large dykes; of the third, as no information is at hand, nothing may be said. The granodiorite is itself deformed and mineralized; the alkali syenite at certain points in this section is responsible for mineralization and seems to have been injected just prior to the great period of ore formation. Both these rocks are present in the districts of Southern British Columbia visited by the writer, which are characterized by this class of deposits. At present, the balance of the evidence seems to be rather in favor of the alkali syenite as the metamorphosing rock. In the Boundary district the large syenite porphyry dykes seem to have been furnished by the mineralizers. (1) In a recent monograph (2) Lindgren ascribes the origin of the Clifton-Morenci contact deposits to porphyry dykes.

The contact metamorphic deposits, while distinguished by Von Goddick in 1879, have only in recent years been recognized as an important type, found in a large number of copper-gold districts, but an extensive literature on the subject is now being rapidly accumulated.(3)

Of the more important deposits of this class may be mentioned some of the Clifton-Morenci copper deposits, Arizona (4), the copper deposits of Cananea, Mexico (5), and the gold-copper deposits of many other parts of Mexico. In Eastern Ontario, the writer has recognized examples of this type.

Since limestone has been found to be the country rock of most of the contact metamorphic deposits hitherto described and consequently seems to be the rock most susceptible to this mode of alteration, and since in its impurities it contains many of the elements necessary to form with the lime the observed gangue minerals, the inference has been widely drawn that such deposits are peculiar to limestone contacts. This fact has been included in various definitions of this type of deposit. Many authorities (Rosenbusch, Barrell, Zirkel Klockmann) hold that the results are due to the alteration of impure limestones through heat alone, and that there has been no addition of material, by waters and vapors, at all events none to go towards the formation of the typical gangue minerals. Others, as Michel Levy, Vogt, Lindgren, Kemp and Blake, bring forward facts to show that some of the material of these minerals has been in-