Report & Map checked Oct 24/44.
Price charged & work claimed reasonable.

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REPORT ON

THE GEOPHYSICAL SURVEYS FOR

THE COCHRANE CHROMIUM PROSPECTING SYNDICATE

AND

DONALDSON CHROMIUM PROSPECTING SYNDICATE

BEAUME TOWNSHIP, ONTARIO

During the period May 18th to June 17th inclusive, magnetometer surveys were conducted on the properties and rock exposures were examined.

The Donaldson Syndicate claims lie in the northwest quarter of Beaume township. Together with the Cochrane Chromium claims they comprise a group of 36 claims.

A good motor road extends west and south toward the claims for a distance of 11 miles from Cochrane. Here are situated several small farms, the nearest permanent establishments to the claim group. From the end of the motor road are two trails, one to the west and south (on lot 8-9 line) reaching the north boundary of the property in about 2 miles, and the other skirting the east side of two lakes to the south, then going west along Con.VI-V boundary to the east side of the property. The second route is some 2½ miles long, but if a boat is available, half the distance on land may be eliminated. The trails are for the most part wet, and travelling is made difficult by considerable

windfall: the only good section is that on the east side of the two lakes.

The property is mostly low, wet swamp, with a few discontinuous zones of higher land underlain by shallow swamp. Drainage is poor, with only two well-marked streams, both in the southwest section. A fair-sized stream flows north about ¼ mile east of the claim group. Large stands of spruce are available over almost the entire group of claims. The nearest sand and gravel is three-quarters of a mile east of the property.

Rock exposures are small and infrequent. They include gabbro, serpentine and basalt. Relations among these are not definitely known since no contacts were seen. The gabbro is intrusive into the basalt, for it is fine grained near its assumed contacts. The peridotite rock from which the serpentine was likely derived by alteration may bear a close relation to the gabbro. Just what this relation is cannot be decided from the present evidence, but the two seem more closely related than was formerly supposed. Patches of gabbroic rock are found in and near areas of serpentine, and the magnetic results suggest that long lens-shaped serpentine masses lie within the gabbro. N.B.

Mineralization in the gabbro is slight: a little pyrite and a few stringers of barren blue quartz. There are some quartz sulphide veins in the western part of the Cochrane Chromium Syndicate block, and a little carbonatization. None of these seem to merit further attention.

The outstanding mineralization is confined to the serpentine zones.

Magnetite is the most abundant metallic mineral. N.B. It occurs finely disseminated throughout the serpentine, and locally may be concentrated to include some thirty percent of the rock. A small proportion of this magnetite is derived from the

breaking down of the olivine during serpentinization, but most of it is an original product of magmatic segregation. Lens-shaped streaks may be several inches in width and two or three ft. long, and they tend to parallel one another. The richest outcrop of this material is on lot 10-11 line in Conc.VI.

It is an interesting fact that many of the highly magnetic zones in the area (i.e. those rich in magnetite) occur over either rock exposures or comparatively high ground. This is believed to be because the magnetite-rich rock is more resistant to erosion than purer serpentine.

A little pyrite is an expected accessory in peridotite rocks, and is found to occur in small quantities with the magnetite.

Pyrrhotite is sometimes conspicuous in scattered grains throughout serpentine, especially in the large outcrop in the south half of lot 9 Con.VI. Here the accompanying magnetite is very fine grained and occurs only in moderate quantity. Some chalcopyrite and pyrite usually accompany the pyrrhotite.

Chromite was seen in the first mentioned location where the magnetite is relatively rich. A few tiny scattered grains were observed with magnetite in the pit at the north edge of the rich magnetite zone. This is the location from which assays of from 9 to 13½ percent Cr_2O_3 have been obtained in the past. However, larger samples taken in 1942 by Dr.Horwood, and during the present year by E.K. Rockler, ran between one and one half and two percent. All these samples came from the magnetite zone mentioned above.

The alteration of peridotite to serpentine has left cracks up to one-eighth

inch across, now filled with asbestos, and other products of serpentine alteration lie along the smaller cracks. Glaciation has removed any secondary enrichment products that may have formed; glacial gouges are prominent features of the soft serpentine outcrops.

All the ore minerals seen - magnetite, pyrrhotite, chalcopyrite, pyrite and chromite, are well known as products of magmatic segregation in a basic rock such as peridotite. Often they form in more or less well defined bands, their position being determined by sequence of crystallization, specific gravity, and other factors. The psotion of chromite in such a series is a subject of much contraversy: probably most authorities favour an early cyrstallization, and therefore a position near the bottom of the series. Some chromite is definitely later. Many chromite concentrations are very irregular in shape, forming discontinuous masses rather than regular stratified layers.

In the present case, the original position of the peridotite mass (or masses) is not known. It may be tilted vertically to judge by the vertical position of some magnetite bands, but even then it is not known which was originally on the upper side.

It is important to note that while chromite, the sulphides, and magnetite are capable of concentration by the same processses (magmatic segregation), they need not be intimately associated with one another, although many deposits are known in which chromite and magnetite are admixed. It is already seen that magnetite and pyrrhotite occur in different zones. There may be a space relation among the various zones in the parent rock. If this can be determined, any traceable horizon in the rock will be a useful indicator for the other zones, including any chromiferous zones that may exist. The fact that grab samples assay as high as 13½ percent Cr_2O_3 is a promisingindication that other, perhaps larger concentrations of

chromite may be present nearby.

The geophysical work was done with this as its object - to map any horizons that lent themselves to detection by geophysical methods. Since magnetite is the mostprominent mineral concentration, and because magnetic surveying is rapid and inexpensive, the magnetometer method of measuring vertical magnetic intensity was chosen.

Observations were made along north-south claim lines, a direction nearly at right angles to the strike of the anomalies. These were supplemented in places by readings along the east-west lines, and a few intermediate profiles were run. The readings were spaced at 100 ft. intervals except over sections of rapid change where closer spacing was used as needed.

Results.

The area covered contains a number of magnetite-rich lenses that strike within a few degrees of N70°E. Most of these are long as compared with width, and they suggest either dyke-like intrusions of serpentine, or layers of magnetite in a larger mass of rock.

Another type of anomaly tends to be knob-shaped, as if underlain by an isolated mass of magnetite rather than a layer. The magnetic intensity is of the same order over each type.

Values over the highest part of the anomalies suggest an accumulation of small up-turned lenses rather than wide, uniformly rich zones. Closely spaced readings in such cases show extreme fluctuation from very high to very low.

Magnetic values may be of help in making a better geological map of the

area than that based on outcrops alone. From a correlation of readings with the few outcrops available, the following may be stated: anomalies are assumed to be serpentine - it always contains magnetite to some degree: readings from 0 to 1000 represent gabbro (basalt?), and those below 0 are basalt (Gabbro) (except when adjacent to a magnetic high, in which case the rock is still serpentine).

Recommendations.

Two holes have been spotted to drill across the two higher anomalies; hubs and front line pickets were put in place on the ground.

The first hole is to cut the rich magnetite zone from which the chrome assays were obtained. This should give a fair idea of the relation between magnetite and chromite, and explore the possibility of a chromite concentration in this vicinity. This hole is located at the south edge of the outcrop on lot 10-11 line, 2600 ft. south of Con.V-VI line. Drilling north along the lot line at 35° 200 ft. should cross the major part of the anomaly. The set-up is on bedrock.

The second hole is to cut a very high magnetic zone and cross beneath the outcrop fairly rich in pyrrhotite. Here it should be possible to find a rich magnetic zone, with possible chromite and perhaps nickel, and to adjudge the position of pyrrhotite with respect to magnetite and chromite. The set-up is located just off the south edge of the outcrop on the south half of Lot 9, Con.VI. Overburden is probably no more than two feet thick. The hole is recommended to cut the zone of highest magnetic intensity recorded during the survey, and to continue into a section of pyrrhotite-rich serpentine. A horizontal distance of 350 ft. should be drilled.

Depending upon the results of these two holes, further drilling may be

worthwhile. Even if chrome assays are very low, there may be a suggestion of increased chrome between the small magnetite lenses. In such a case, drilling between the larger anomalies might give favourable results on a grander scale.

The magnetic survey has shown where to drill, and coupled with the results of the drilling, will make evident the possibilities of the property.

Further recommendations must await the completion of these holes.

Respectfully submitted

Toronto Ont.
June 23rd,
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Geologist

Approved

rec'd. G.B. 20/10/44

T-25597 T-25598 T-25602 T-25605 T-25608 T-25611

T-25614 T-25599 T-25600 T-25603 T-25606 T-25609 T-25612

T-25319 T-25318 T-25317 T-25601 T-25604 T-25607 T-25610 T-25613

T-25320 T-25321 T-25322

LOT 11
LOT 10
LOT 12

CON. VI
CON. V

Gabbro
Serpentine
Serpentine and gabbro
Serpentine and basalt
Pit
NO.1
NO.2
Blazed line
(Not a claim line)
CREEK

DONALDSON PROPERTY

COCHRANE PROPERTY

SCALE OF FEET

N

LEGEND

- Serpentine.
- Gabbro
- Outcrop boundary.
- Iso-dynamic lines of vertical magnetic intensity.
- Intensities above normal.
- Intensities below normal.
- Claim posts.
- Approximate property boundary (not surveyed).
- Recommended diamond drill hole.

MAP SHOWING

MAGNETIC RESULTS

OF THE

GEOPHYSICAL SURVEY

ON THE PROPERTIES OF THE

DONALDSON AND COCHRANE CHROMIUM PROSPECTING SYNDICATES

REAUME TOWNSHIP, ONTARIO

SCALE 1 INCH = 400 FEET

TO ACCOMPANY REPORT BY
HANS LUNDBERG
TORONTO, JUNE 1943

Hans Lundberg

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