Bergvesenet

Postboks 3021, N-7441 Trondheim

Rapportarkivet

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Tittel

The Gabbro Body at Hamn, Senja, Norway

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Johansson, Harald	18.07	1962	Consul Odd Berg, Tomsø

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Fagområde	Dokument type	Forekomster (forekomst, gruvefelt, undersøkelsesfelt)
Geologi		Hamn

Råstoffgruppe	Råstofftype
Malm/metall	Ni, Cu

ammendrag, innholdsfortegnelse eller innholdsbeskrivelse

Beskriver en preliminært geologisk undersøkelse.
Gabbroen i området er en middels- til grovkornet type. Rundt denne en lys gneiss. Begge bergarter skjæres av diabasganger. Mineraliseringene beskrives. Gabbroen er impregnert over alt. I tillegg til Hamn er det en større konsentrasjon mot øst.
vedlagt kartskisser av gruven og mikroskopbilder av pentlanditt i magnetkis.

Avskrift.

THE GABBRO BODY AT HAMN, SENJA, NORWAY.

At the request of Consul Odd Berg, Tromsø, Norway, the undersigned has made a preliminary geological survey of a nickel-bearing area on the island of Senja.
Assistant has been Mr. Erling Hansen, Tromsø.

Because of a chilly spring the snow-smelting has delaid and the mapping couldn't be performed before the beginning of July. It was carried out between the third and eleventh of July.

Introduction.

The area dealt with in this report is situated at the west coast of Senja about 56 miles S 70 ° W of Tromsø measured the air-line distance. (Fig. 1. The map).

There hasn't been yet any geological mapping performed by the N. G. U. As work-map was used the topo-graphic sheet 1333, Berg Norway, Scale 1:50000. About 17 square miles have been plotted.

The topography of the reion is typical of glaciated areas but glacial deposits seems to be of less extent.

and the overburden is only a few feet deep on the covered hills. Naturally it is deeper in the valleys.

Pre-glacial weathering is missing and the gabbro areas has only in some places with coarse-grained rocks been post-glacial weathered to a deept of a few feet.

Ridges and valleys are charasteristic for the morphology of the gabbro region. They strike northwest.

The edge of the gabbro body has an average altitude at the north and northeastern side of about a hundred feet above sea-level and at the south and southwestern side of about twelve hundred feet, but some pikes rise here to more than eighteen hundred feet. At the western side the edge dip into the sea. (Fig. 2.).

The rocks of the region.

The gabbro body and the enclosing gneiss are the dominant rocks of the area.

The gneiss consists of a light coloured, medium - to coarse-grained rock. Most of it is nice banded. Quartz- and feldspar-rich bands alternate with bands richer in mica. Sometime the gneiss is fine folded.

Small garnets, scattered magnetite crystals, some sulphides and a few small spots of molybdenite have been observed in the gneiss. At some places it is more similar to a migmatite with feldsparization and granitization than a real gneiss.

The gabbro body, about five square miles large,

consists of different medium- to coarse-grained types of the gabbro clan, as normal gabbros, norites and probably olivin-bearing gabbros, but also ultramatic rocks as pyroxenites are present. There are also very coarse-grained pegmatitic varieties with a rather high biotite content.

The dominant minerals are calcic plagiocalse, orthopyroxene (hypersthene), clinopyrocene (augite), in small amount brown biotite and around the pyroxene crystals are usually reaction rims of hornblende and also chlorite. Other minor accessories include apatite and ore minerals.

Dikes of diabas cut both the gabbro and the gneiss.

Except this basic rocks there are concordant and discordant to the schistosity of the gneiss a lot of amphibolite dikes derived from basic ingenious rocks.

Between the gabbro body and the gneiss is a holofelsic to felsic fine-grained, mica-bearing granite containing a few small grains of magnetite. It is about 300 to 600 feet wide. Dikes doming from the granite cut the gabbro edge. There is a few inches wide reaction zone in the gabbro at the contact of the granite.

The granite probably results from grantization, of the gneiss along its contact with the gabbro where the magmatic emanations and the instrusive magma easier could pervade the felsic rocks. The granite seems to be emplaces during the later stages of orogeny.

The ore minerals and their occurance.

All the gabbro region seems to contain more or less sulphides. Far from all of the outcrops have been checked. Without blasting it is difficult to judge the sulphide content of weathered outcoprs.

To this day two sulphide concentrations are known. One at the west side, Hamn Mine, and the other at the east side of the gabbro area.

The last mentioned consists probably of two almost parallell strokes estimated at 900 and 2000 feet long resepctively. Four blastings to a depth of three to six feet have been made.

There seems to be two types of ore. One very caorse-grained with scattered large sulphides and sulphide aggregates, the other medium-grained with more numerous but smaller sulphide grains.

Nickel-bearing pyrrhotite was found at Hamn, Senja, in 1889. Mining proceeded between 1872 to 1886.

The mine is 246 feet long, 57 feet wide and from the top 138 feet deep. Now it is filled with 78 feet deep water. Last year it was pumped free from water and specimens were taken.

The diagrammatic profiles (fig. 3 A - G) made by E .Hansen from memory may give an idea how it has been mined.

Blastings and specimens show that some ore remains in the walls. Specimens from the bottom makes it probable that other circumstances then, that the ore

was on the decrease, stopped mining.

The sulphides consist essentially of pyrrhotite with pentlandite, occurring as numerous exolution, flames and in a cell and net texture, chalcopyrite and pyrite. Some of the ore grains are fine zoned. A core of pyrite is fringed with chalcopyrite and pyrrhotite. Macroscopic this is best to be seen at the east edge of the gabbro body. Magnetite and ilmenite occur too.

The sulphides occur partly as interstitial grains, as filling of fractures in the calcic plagioclase and as grains, permeating the alteration products of the pyroxenes, partly as probably redeposeted sulphides in craks and cavites in the host rocks but probably also in the adjacent rocks. They are later than the silicates and it is suggested that they are late in the crystallisation sequence of the magma. (Fig. 4).

At the northern shore of Tortenberg, west of Ballesvika, there is in fine folded migmatitic gneiss a rust-zone containing fine-grained sulphides. According to the inhabitants of Ballesvika there is also a dike containing mainly pyrrhotite.

The gabbro body is here on the west side bordered by the sea, but is supposed to continue at the sea-bottom because of the strikes in the gneiss and of the magnetic anomaly west of Hamn Mine noticed by fishermen. May be the gabbro body once has been the host rock to the this both small sulphide concentrations.

Structure of the region.

The main scope of the plotting was to check the gabbro border. To collect a satisfactory number of tectonic data for a real structural analysis of the region was not possible in such a short time.

The strike of the gneiss is as whole W - E and diping south. Gradually changing strike occur in the migmatitic gneiss. At the eastern edge of the gabbro body the strike turns to the south. Here the gneiss is more disturbed by granitic and amphibolitic rocks.

The axis of folds in the gneiss seems to dip 50^{o} - 60^{o} $S35^{o}W$.

The gabbro body lies probably in a isoclinal syncline plunging as a whole SSW. (Fig. 5).

Tromsø 18/7 1962
Harald Johansson,
sign.

Sketch.

Fig 2.

The gabbro body at Hamn, Senja, Norway.

Gabbro

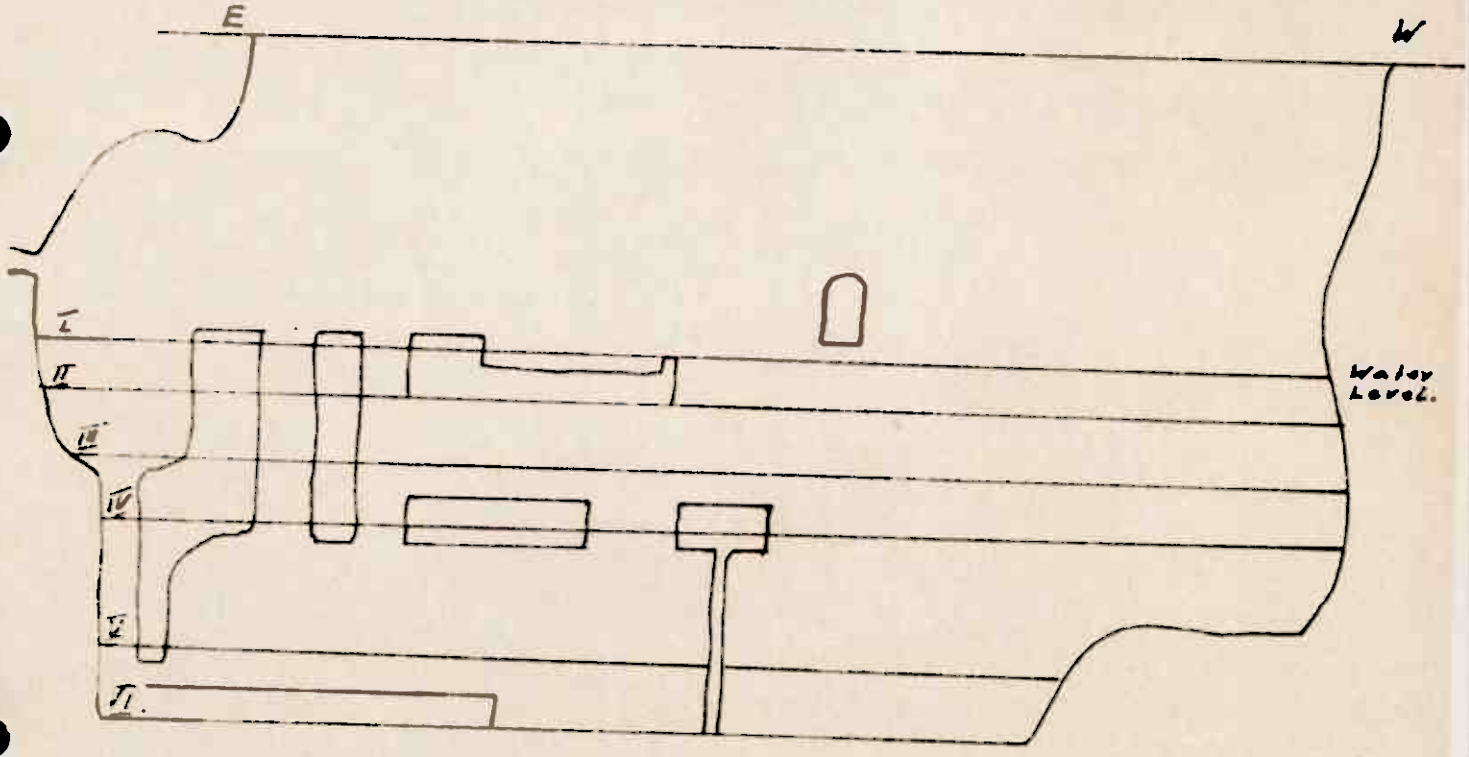
Gneiss

Scale 1:50,000

Fig 3 A.

The Hamn Mine.
(E. Hansen).

Vertical section E – W, seen to the south.

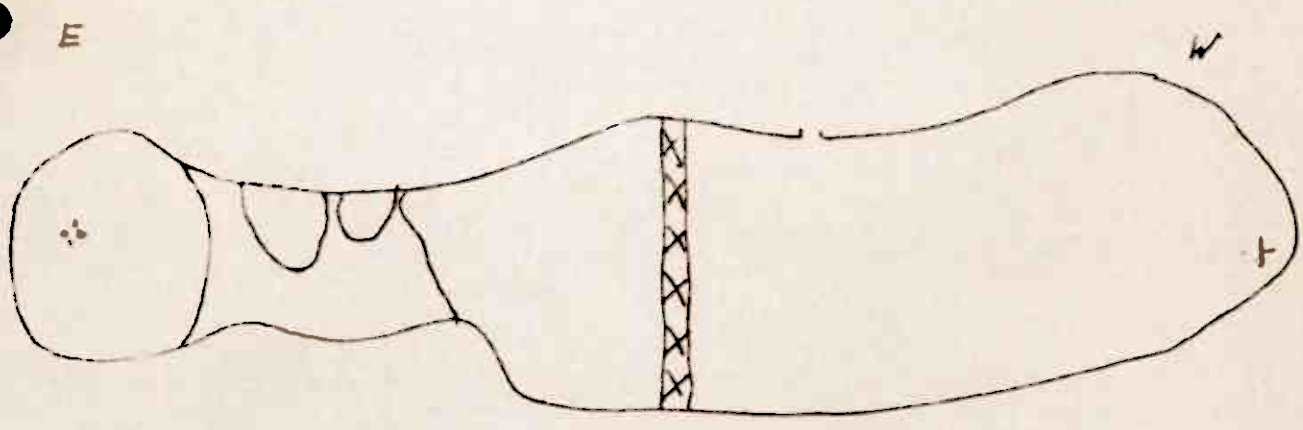


I – VI Horizontal section

[ ] Mines

Horizontal section.

I



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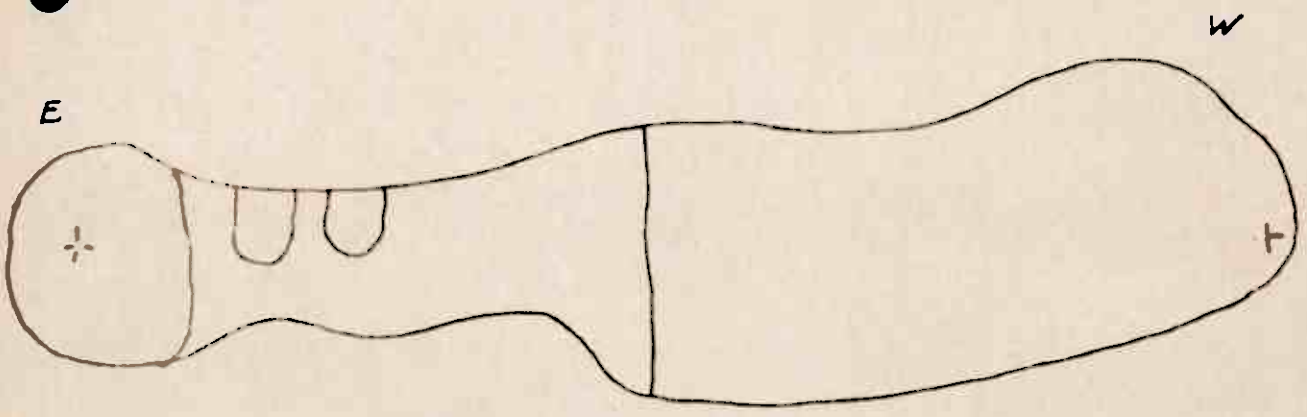

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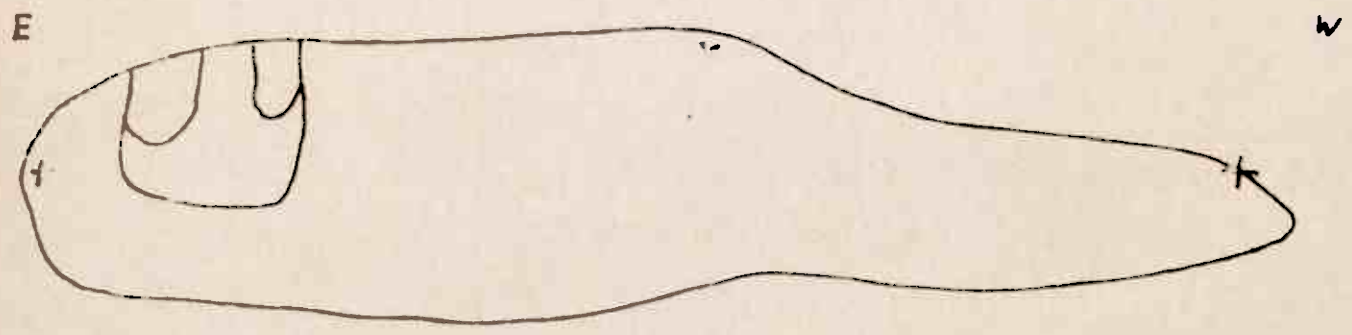

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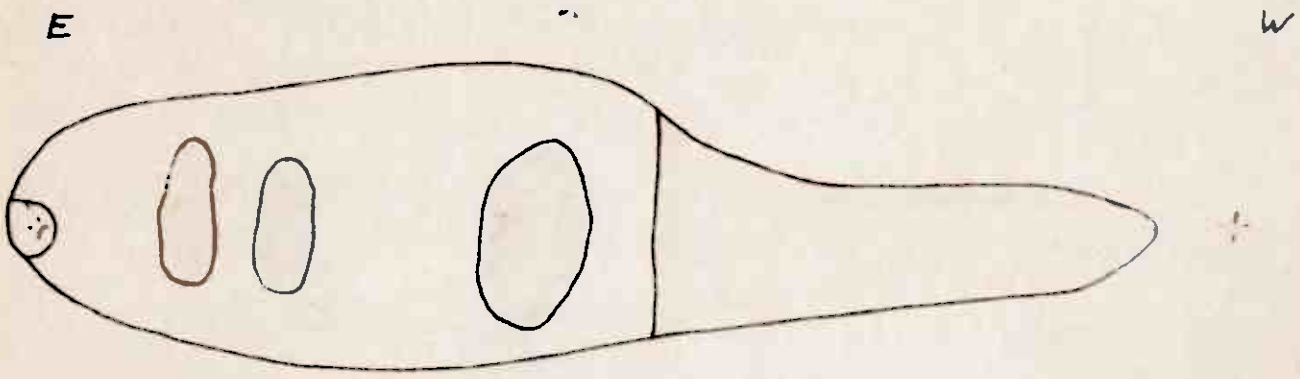

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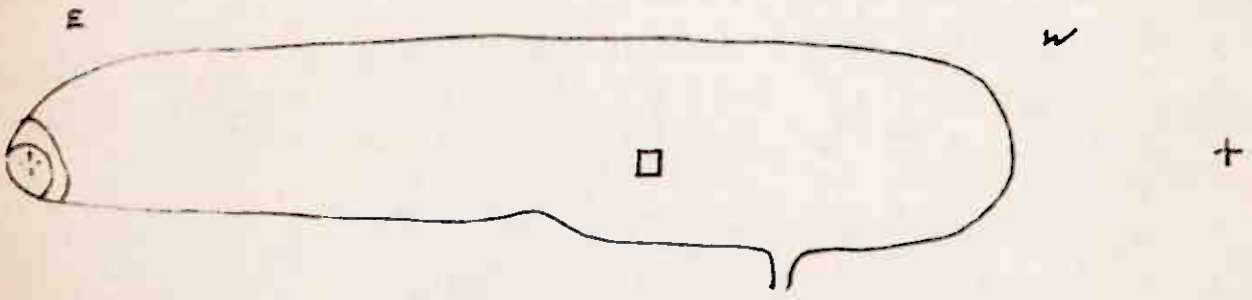

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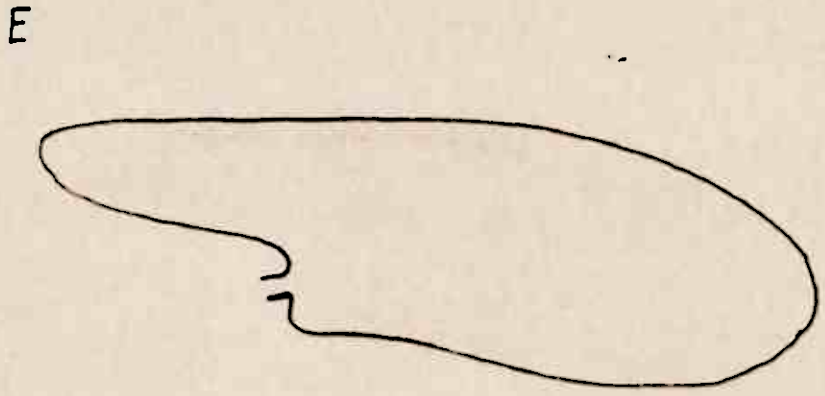


Fig. 4

From the east concentration.

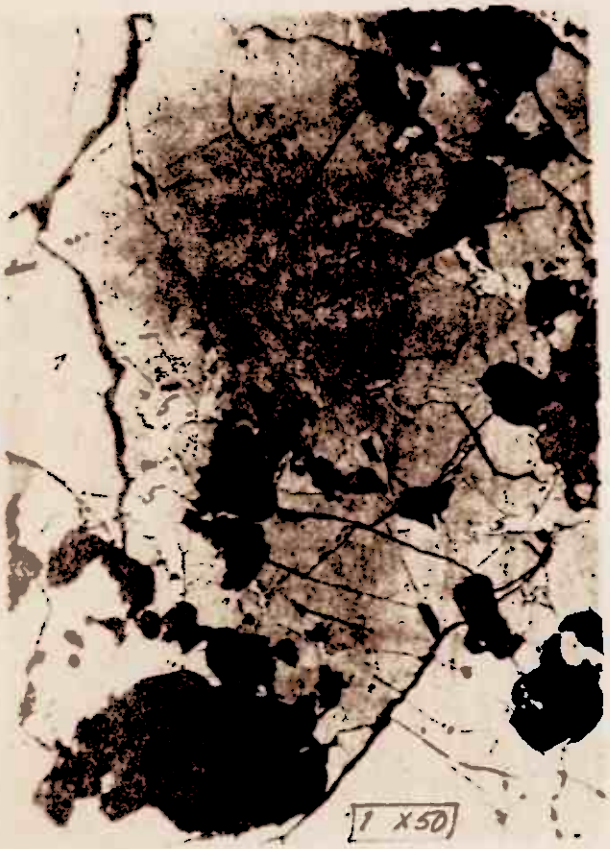
Fig. 7.

From the north wall of the Havana Mine

Fig. 4.

From the Hamn Mine.

From the bottom



1. [illegible]
2. [illegible]

From the north wall.

1. [illegible]
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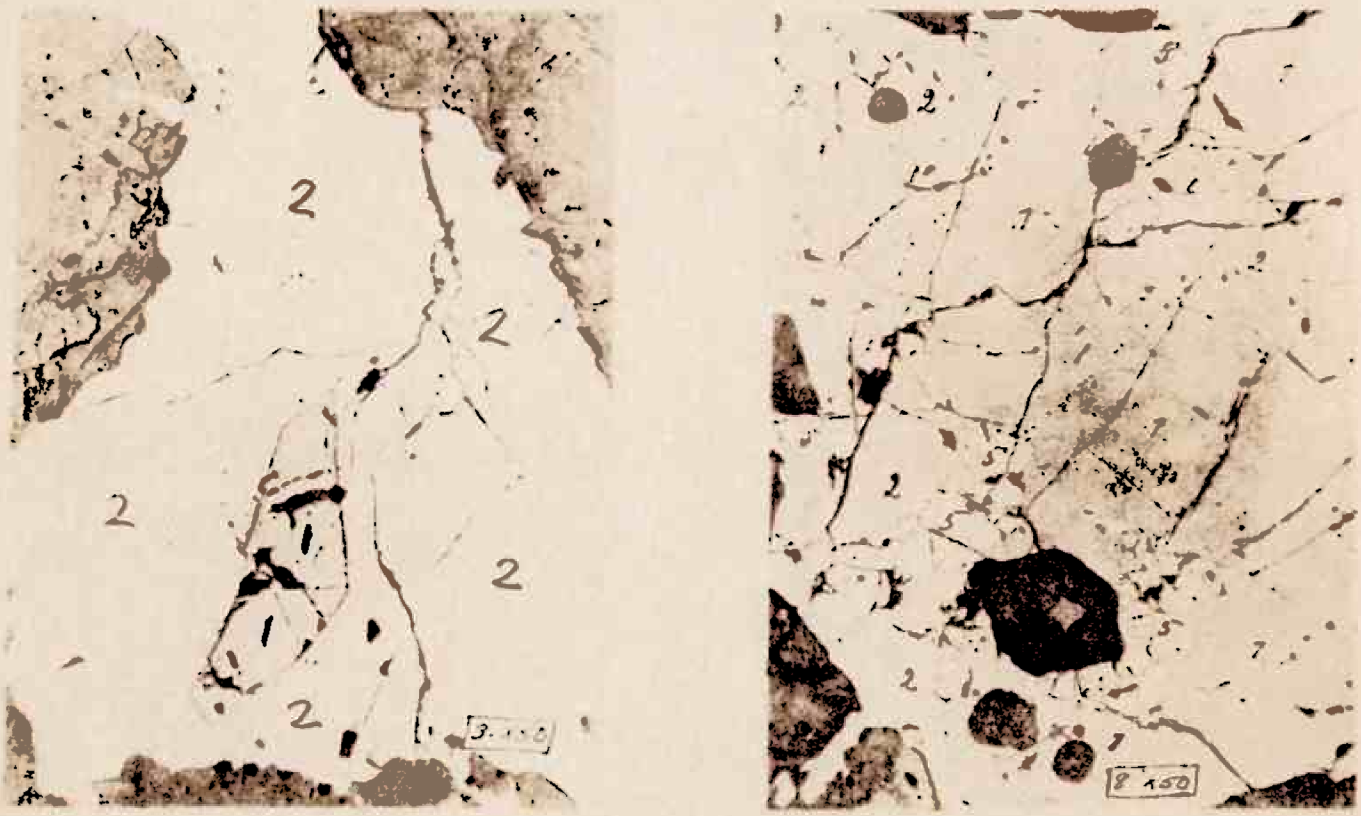
Fig. 4.

From the north wall of the Hamar Mine.



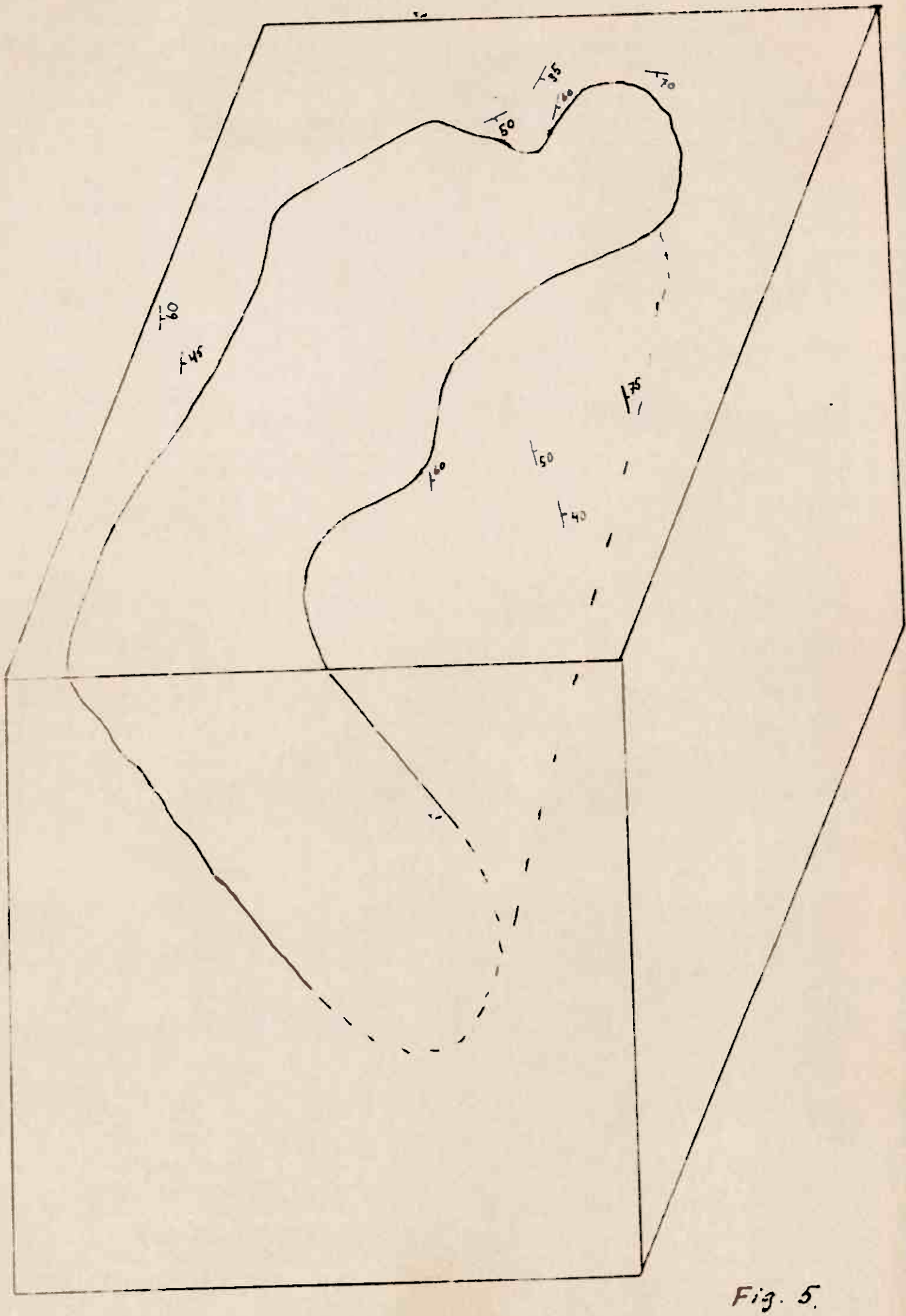


Fig. 5.