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GENERAL BUSINESS,  
THE SOCIETY'S PROGRESS.

**Mr. Andrew F. Crosse (Past President):** Under "General Business" I should like to make a couple of remarks. The first one is with reference to the past. We started a Chemical, Metallurgical and Mining Society in the old days before this present Society was in existence, but it did not last very long. Then we started this Society, which was a success. I would like to mention the name of one gentleman who did more to keep the boat afloat when we ran on the rocks than anybody else—that was Mr. Sidney Pearce; he deserves the thanks of the Society. It was a great many years ago now; many of you were not members of the Society then; he carried on the work when we had one or two defaulting Secretaries; he launched us into clear water out at sea, and we have been prosperous ever since. I thought I would just like to mention this fact.

**Mr. Andrew F. Crosse (Past President):** I have now to refer to quite a different subject. For the last few weeks I have been engaged in the most interesting work I have ever had to do since I have been in the Transvaal—nearly 32 years.

A RICH NICKEL ORE.

I am going to bring to your notice this evening one of the most interesting mineralogical discoveries of recent years in the Transvaal. It is an extraordinarily rich nickel ore, and I can find no description in Dana's Mineralogy or in a book—"The Nickel Deposits of the World"—published by order of the Legislative Assembly of Ontario (1917). I want you to look at some pieces of the ore, and also a bar of nickeliferous iron which I have here; it is probably the richest nickel alloy ever smelted direct from the ore, assaying about 52% nickel.

The analysis of a large sample of 76 lbs. was as follows:—

	%
Oxide of Nickel	40.30
Oxide of Iron	49.30
Phosphorus	0.13
Calcium Oxide	0.20
Silica	6.50
Loss on ignition, chiefly water	2.15
Loss	1.45
	100.00

Metallic Nickel	29.6%
Metallic Iron	35.7%
Platinum	0.2 dwt. per ton.

As there is no arsenic or sulphur in this ore it should prove very valuable for alloying with steel; 70% of the nickel produced today is used for that purpose.

I do not think that all the ore will be as rich as this sample, but it will be easy to concentrate either by a Willey table or magnetic separator, or the two combined; the specific gravity of this ore is 4.6.

This ore is as far as I am able to judge a new and undescribed mineral. If this should prove to be the case, I should like to call it "Trevorite," after Major T. G. Trevor, Mining Inspector for the Pretoria District, including Barberton.

My thanks are due to Mr. Cottrell, Chief Assayer of the Standard Bank, for smelting the ore according to my instructions as regards flux.

I must not forget to mention where the new discovery of nickel ore comes from; it has been found close to the talc mines on the farm "Bon Accord," north of the branch line to Barberton, near the Sheba siding.

An article on this ore, by Major T. G. Trevor, appeared in the *South African Journal of Industries*, June, 1920.

**Major T. G. Trevor (Member):** "I am sorry that I came unprepared with notes on this question, but I happened to be in Johannesburg and to meet Mr. Crosse who thought it might be of interest to members if I said something on the subject which he has just mentioned.

"In June last year I was informed that ore carrying about 27% nickel had been found in the Barberton district. I warned the people who told me about it to be careful as there was probably a mistake. I went up and saw the deposit. When I was looking at it I said, do not say anything about it because, personally, I do not think it is nickel—wait until I get some check assays made." I sampled the occurrence and found the check assays confirmed the original report.

"The deposit occurs on the Lily line in the Jamestown Series just opposite the Sheba Bridge. This line has been thoroughly described by Dr. Hall in his published memoir on 'The Geology of the Barberton Gold Fields.' A bar of hard quartzite forms the ridge pole of a long line of hills. This line stretches for about 40 miles, making a distinct feature of the country for

quite 20 miles. On the top of one of the hills in the ridge a man shot a buck and picked up a stone with which to despatch it. The stone was so heavy that he took particular notice of it, and took it to the camp. That was how the actual discovery was made.

"The richest portion of the ore appears as a massive black rock composed of grains of magnetite closely cemented together, with a slight green tinge, but without any banded structure. Mr. Crosse has given you the analysis of it. When I saw it the deposit was opened up by an open cut about 12 ft. deep. I published a report on it in the *Journal of Industries* for June, 1920.

"The hanging wall was a very fissile sandstone, which a geologist would describe as a 'phyllite.' The reef or deposit was 2 ft. 3 in. wide, and a representative sample taken 3 ft. below the surface gave an analysis of 17.2%, while a similar sample taken over 1 ft. 3 in. of the foot wall gave 1.67%. The dip was approximately vertical.

"Since my visit an adit has been put in which has struck the reef, and the reef is now being driven on. Assays vary from 3% to 27%.

"It was at once obvious that this ore was something entirely different from anything of which we had record, so I sent several samples to England. On the main sample sent to the Imperial Mineral Resources Bureau I have not had a report, but from other sources I learn that the ore, owing to the entire absence of sulphur in it, would be of great value to smelt with sulphurous ores.

"As to the quantities in which this ore occurs it is at present premature to say anything except that you have a definite outcrop for about 800 ft., assaying anything from 3% to 27%; also that on the same line, 1,500 yds. to the east the talc deposits everywhere contain traces of nickel. In the

main talc mine there are pieces of honey-combed limonite, which are so porous that they will float on water for quite a considerable time before sinking. I had some of this assayed by Dr. Moir, and it gave a result of 2.7% nickel. It is, therefore, obvious that there is a very considerable area in this locality which is impregnated with nickel and that the prospects of it developing into an important nickel mine appear to be extremely good.

"I must thank Mr. Crosse for the unexpected compliment he has paid me with regard to the name, which I accept. It is not particularly euphonic, but that is not his fault."

**Mr. Andrew F. Crosse (Past President):** I would like to make one more remark while we are on this subject. In smelting this nickel ore the largest proportion of the material I used for the flux was the talc itself. So that, if the talc contained nickel, that would go out into the metal. That is rather interesting.

**Mr. H. R. Adam (Member of Council):** I think you stated this was an alloy of nickel.

**Mr. Andrew F. Crosse (Past President):** It is an alloy of iron and nickel. There is graphite in it, of course, as in everything that is run down with carbon. There is iron with the nickel, but as the alloy will be required to mix with steel for making rails and various other things (French engineers recommend 3% of nickel in the steel rails for railways) you have no refining; no refining is necessary. You simply throw it in and average the percentage, just as the wine merchant does when he puts alcohol into wine.

**The President:** I think we are very much obliged to Mr. Crosse for bringing before us this occurrence of a mineral which promises to be of industrial importance.

FIRE-DAMP IN THE GOLD MINES OF THE FAR EAST RAND.

By T. N. DEWAR (Member).

During the past few years trouble has been experienced in certain mines of the Far East Rand through occurrences of fire-damp.

Fire-damp being generally associated with collieries, created some surprise when it made its appearance on the gold mines.

Coal beds and gold bearing reefs are mined in the Far East Rand area, the vertical distance apart being about 4,000 ft.

The collieries are singularly free from fire-damp and the death roll from explosions can be almost entirely credited to the gold mines.