THE MARSMAN MAGAZINE

A MONTHLY CHRONICLE
OF THE ACTIVITIES
OF THE
ORGANIZATION

FOR THE INFORMATION OF SHAREHOLDERS
OF
MARSMAN AND COMPANY, INC.
MINE MANAGERS AND OPERATORS
AND
ASSOCIATED COMPANIES

VOL. II
MAY
1938
NO. 11

MANILA, PHILIPPINES

GOODRICH

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Marsman Trading Corporation—*Agents in Baguio and Paracale*

May 1938

THE MARSMAN MAGAZINE

Vol. II No. 11

APRIL - - - ANOTHER RECORD-BREAKING MONTH

For the second consecutive month the total gold output of the Marsman producers set a new high record, the April figure being ₱1,458,434.93 a gain of nearly ₱300,000 over the March total. April was the second month during which the million-peso mark was passed.

Itogon, with an output of ₱377,189.73; Suyoc, which produced ₱157,055.54; San Mauricio, with a total of ₱263,618.12; and Coco Grove which produced ₱451,438.46, all established new all-time monthly highs. United Paracale was but a few thousand pesos under the record set in March.

In general the excellent showing resulted from higher grade ore and gravel, the tonnages handled being the same or slightly lower than those of previous months. Excellent operating conditions prevailed in all of the camps.

ITOGON MINING COMPANY

A new high monthly production record was made by Itogon during April, with ₱377,189.73 in bullion resulting from the treatment of 30,243 tons of ore. Recovery per ton was ₱12.47 and extraction was 87.38%. Development work amounted to 3,560 feet, of which 1,346 was in operating and 2,214 in capital development. Of the operating development 386 feet were in ore, as was 171 feet of the capital development.

Operations during the month were normal, and the mill treated over 1,000 tons of ore a day according to schedule. The value of the various changes effected in the mill flow sheet during March is reflected in the improved extraction for April.

The 875L Drain Tunnel extension cut the Taka vein during the second half of the month, and the vein proved to have a width of 44 feet at this level.

Gratifying results have been obtained in the 14 North crosscut 500L Sesame which has cut in a vein some 50 feet wide.

Work has been started on necessary repairs to the Taka Shaft, which will be concreted down to the 200 level.

The mill has been operating very satisfactorily, the record daily production being ₱16,200 and the highest daily tonnage treated during the month being 1,196 tons.

The construction department has started work on levelling the site for the new two-apartment staff house which should be completed by the end of May. Work is also being done in the Upper Store where another room is being built to permit the inclusion of a dispensary in the Itogon Drug Store.

MARSMAN BUILDING CORPORATION SUBMITS LOWEST BID ON AHC BUILDING PROJECT

Word was received in Manila from Washington early in May that the bid of Marsman Building Corporation for the construction of the American High Commissioner's residence in Manila was the lowest of the five submitted.

The Marsman bid was $477,663 for the residence without garage and servants' quarters, or $530,914 for the whole project. These bids were substantially lower than those of three firms in the United States and one in Manila.

Contracts will be awarded after the usual study of the bids has been completed by the Treasury Department, the dispatch from Washington stated.

SUYOC CONSOLIDATED MINING COMPANY

Suyoc produced ₱157,055.54 during April, from 6,496 tons of ore treated, the output being a new monthly record for this property. The average recovery was ₱24.18 per ton, and extraction was 87.25%. Increased plant efficiency combine with a slight increase in the grade and tonnage of ore contributed to make April a record month.

Underground development totalled 1,581 feet, and the result of this work were quite encouraging. Of the 779 feet of capital development, 55 feet were in ore, while of the 802 feet of operating development 87 feet were in ore. The unusual grade and width of ore encountered in the 18242 North Drift, the cutting of a narrow quartz streak with commercial values in the 1560 crosscut east, and the recurrence of pay values in the 16154 South, were outstanding features of the development work.

Drainage from the mine is now being diverted to the Palidan Tunnel. Work is also being pushed on this level, the 2201 North and the 2200 Station having been started.

During the month G. J. Schuermann and C. G. Scott joined the operating staff, taking the places of J. E. McDonald and Robert Armstrong.

SAN MAURICIO MINING COMPANY

April production for San Mauricio was ₱263,618.12, from 8,830 tons of ore treated, representing a substantial increase over the March output, and a new monthly record. Recovered value was ₱29.85 per ton, and extraction was 91%.

Development work totalled 1,429 feet, of which 405 feet was in ore and 1,024 feet in waste. The Tacoma 300 level section of San Mauricio continues with extremely good results and the importance of this work cannot be stressed too heavily. The south drift on the 150 level of Santa Ana is in very good ore with good widths, as is the north drift on the 300 level. All raises at Santa Ana are in ore.

The drainage adit was advanced 227 feet during the month and continues in bad ground. The ore pocket on the 500 level is 90% completed and will be put into service during May.

The new hoist was put into service during April, and is operating smoothly. The ore bin at the shaft is 90% completed.

Work has been started on the installation of the new Allen Diesel engine. Replacing the old wooden power poles to Santa Ana is three-quarters finished.

OPERATING COSTS LOWERED
During 1st Quarter of 1938

A substantial decrease in operating costs featured operations at the Marsman lode properties during the first quarter of 1938. This decrease is shown in the table below

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Mine disbursement includes total expenses at mine & mill, plus capital development.

Capital development plus operating expenses includes all expenses except capital investments.

	Mine Disbursement	*Capital Development plus oper. exp.*	*All Operating Expense*
ITOGON			
1937	₱13.47	₱ 9.55	₱ 7.10
1st. quart. 1938	10.60	9.04	6.39
April 1938	8.60	8.18	6.40
SAN MAURICIO			
1937	₱24.51	16.56	9.53
1st. quart. 1938	21.75	13.32	9.27
April 1938	12.24	11.96	8.75
UNITED PARACALE			
1937	₱14.57	10.94 13.10 [a]	7.40 8.87 [a]
1st. quart. 1938	15.37	13.42	8.70
April 1938	12.28	11.54	8.33
SUYOC CONSOLIDATED			
1937	₱14.44	12.39 12.84 [b]	10.33 10.90 [b]
1st. quart. 1938	14.30	12.88	10.72
April 1938	12.70	12.32	10.44

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[a] For second half of 1937; cost higher because mill converted to all-sulphide, the oxide deposit having been exhausted.

[b] Second half of 1937: Cost higher because of selective mining adopted.

FINANCIAL CONDITION GOOD

The mining companies are in excellent financial condition, a comparison of the balance sheets as of March 31, 1938 with those of December 31, 1937, reveals. Increased capacities and extensive development work has brought tangible results in the form of increase production, with prospects for the future never better.

ITOGON MINING COMPANY

During the first quarter the Itogon plant treated 88,455 tons of ore, and had a total production of ₱967,024.35. Operating expense was as follows: mine, ₱342,118.21; mill, ₱158,320.20; mine general, ₱59,815.00. Net operating profit was ₱410,331.26. Bullion marketing cost, ₱10,113; other mine general expenses, ₱54,088.48; depreciation, ₱139,372.20. Administration expense was ₱13,758.30, while general overhead was ₱47,416.52, leaving ₱145,582.76 to be transferred to the surplus account. Surplus as of March 31 was ₱1,075,015.71, as compared to a surplus of ₱929,432.95 as of December 31.

The extensive development work done is shown by the item "Capital Development" under Fixed Assets, which was increased from ₱639,284.22 at the end of the year to ₱871,936.66 as of March 31. The stock of machinery parts and supplies carried in the Itogon bodega was reduced from ₱549,879.94 on December 31 to ₱483,411.30 on March 31. Current liabilities at the end of the year were ₱1,921,397.01, but were reduced to ₱1,862,115.99 during the quarter. The total Net Worth of the company as of March 31 was ₱3,394,-820.36, as compared to ₱3,249,237.60 at the end of the year.

SUYOC CONSOLIDATED MINING COMPANY

The Suyoc plant treated 18,110 tons of ore during the first quarter of 1938, from which ₱361,782.15 in gold and silver was recovered. Operating expenses were: mine, ₱92,747.33; mill, ₱72,338.79; mine general, ₱29,568.44. Net operating profit was ₱167,383.97. Bullion and concentrate marketing cost, ₱4,752.08; other mine general expenses, ₱12,588.35; depreciation, ₱52,583.52. Administration Expense was ₱12,875, general overhead was ₱14,659.75, and the Palidan Suyoc profit participation was ₱10,188.62, leaving ₱57,735.57 to be transferred to surplus.

Surplus as of March 31 was ₱547,-490.57 less the dividend of ₱125,000 paid January 15, 1938; surplus of December 31 was ₱489,755.00. Current liabilities at the end of the quarter were ₱257,566.51, as compared to ₱352,-641.97 at the end of 1937.

UNITED PARACALE MINING COMPANY

Production for the first quarter of 1938 amounted to ₱620,488.51, from 27,471 tons of ore treated. Operating expenses were: mine, ₱138,063.88; mill, ₱56,498.19; mine general, ₱43,456.36. Net operating profit was ₱389,893.17. Bullion and concentrate marketing expense was ₱95,275.53; other mine general expenses, ₱23,698.29; depreciation, ₱64,789.82. Administration expense was ₱13,925; general overhead was ₱15,921.12; financing agreement cost, ₱36,160.98, leaving ₱140,122.43 to be transferred to the Surplus fund.

The surplus as of March 31, 1938, was ₱528,928.98, as compared to ₱388,806.55 at the end of 1937.

The surplus as of March 31, 1938 was ₱528,928.98 less Dividend No. 2 amounting to ₱110,000.00; surplus at the end of 1937 was ₱388,806.55. Current liabilities at the end of the quarter were ₱375,509.65 as compared to ₱383,954.57 at the end of the year.

SAN MAURICIO MINING COMPANY

The San Mauricio plant treated 25,165 tons of ore during the first quarter of 1938, from which ₱619,950.89 was recovered. Operating expenses were: mine, ₱145,543.57; mill, ₱55,281.65; mine general, ₱34,363.73. Net operating profit was ₱378,419.30. Bullion and concentrate marketing expense was ₱117,399.39; other mine general expenses, ₱23,336.29; depreciation, ₱77,403.44. Administration expense was ₱15,791.65; general overhead, ₱13,864.31; financing agreement cost, ₱30,586.36, leaving ₱95,580.07 to be transferred to the surplus fund. Current liabilities were ₱1,496,597.01 at the end of the quarter, as compared to ₱1,350.068.06 at the end of the year 1937. This increase was the result of expenditures for the expanded capacity of the plant.

By Ralph Keeler

FIRST, FIND A MINE!

An old recipe for chicken soup starts out like this: "First catch a chicken—" The same formula applies to the formation and operation of a mining company: "First find a mine!" Now finding a mine is, always has been, and probably always will be, about one part skill, nine parts common sense, and ninety parts sheer luck. The mine may be a series of small veins carrying rich values in gold or silver, a placer deposit buried 75 feet below the bed of a river, an enormous body of ore with small values in copper, or any one of dozens of different types of deposits—but it must be found before it can be of value.

There's a trite saying "Gold is where you find it", which explains how most of our mineral deposits were found. For Mother Nature did not adhere strictly to rule when she distributed her valuable metals. True enough, after a mine has been opened up, the geologist can tell you the age of the formations, and can explain how the gold was deposited—but it isn't often he can look over virgin territory and tell you where to find the vein.

Mining, milling, metallurgy, refining, marketing—all of the complicated processes that make up each phase of the mining industry have made possible the mining of ore from deep in the earth and the recovery of valuable metals from complex chemical compounds --but so far the scientists have depended upon the lowly prospector to a great extent to lead them to the lode in the first place.

Scientific prospecting has become more and more important in recent years, and has undoubtedly been of invaluable aid in locating salt domes, oil wells, and large deposits of base metals. With but few exceptions, however, the rich gold, silver, diamond, lead, and zinc discoveries of the world have been made by sheer luck or by prospectors whose chief qualifications have been unlimited courage and the faith to keep searching year after year for the ever-elusive pot of gold at the end of the rainbow. Only a few prospectors ever succeeded in finding a rich mine—but those few have blazed the trail for the scientific mining man.

The stories told about the discovery of the mining fields of the world illustrate this point.

* A little child picked up a shining pebble on a bank of the Orange River in South Africa in 1867—the pebble turn-

* Man and Metals, by T. A. Rickard, Whittlesey House, New York, 1932.

The first of this series appeared in the April Magazine.

ed out to be a diamond, and the industrial development of South Africa was started.

In 1834, a Boer named Carel Kruger, while on a hunting trip north of the Vaal in Africa, found gold and took samples with him back to Capetown. The Witwatersrand (White Waters Ridge) thus discovered became the world's richest goldfields (in 1937 The Transvaal produced $400,000,000 worth of gold, or nearly one-third of the world's output).

A Mormon named William Prouse panned gold in a little creek in Nevada in 1849, but the values were not high enough to interest him. In 1859, in the same area, the famous Comstock Lode yielded millions in gold and silver. Incidentally, Henry Comstock, fur-trader and trapper, bluffed two Irishmen who staked one of the richest properties in the area, into giving him an equal share in it. The lode was named after him, but that was about all he did make out of it, although the mine itself produced some $18,000,000; he committed suicide in 1870, and died without a penny to his name. The two Irishmen finally wound up in paupers' graves.

Two Colorado prospectors were grubstaked—provided with supplies—by an uneducated storekeeper in Leadville named Tabor, who was to have half of anything that they found. Included in their supplies was a jug of whisky, which the prospectors proceeded to drink on starting out from camp. After they had done away with the jug, they felt too tired to continue farther, and so they decided to stop and dig where they were. The spot on which they halted, on Fryer Hill, was one point on the whole hillside on which the ore lay near the surface. At a depth of 30 feet they cut the orebody of the Little Pittsburgh Mine, from which Tabor took millions in silver.

Many more such tales could be told. The man of science had his part, however, in locating stores of mineral wealth. William S. Stratton, a carpenter who studied mineralogy in his spare time, was instrumental in opening up the Cripple Creek district, from which $125,000,000 in gold was taken. Even Stratton, familiar as he was with the various minerals, did not recognize gold telluride after he had found it, and an ignorant miner is credited with having made the discovery that the peculiar looking rock, when heated, would yield globules of gold.

There is a story current in Cripple Creek to the effect that John Hays Hammond, one of the famous mining engineers the world ever produced, reported that it was geologically impossible to find gold in the phonolite rock of the district. Practically all of the gold in the area came from that same phonolite, despite the noted authority's scientific opinion.

Gold was found under the moss on the seashore at Nome, in Alaska, — it had been concentrated by the tide from sands washed down from the hills. What man of science would have dared to advise the working of sea-moss for gold?

It is practically impossible to tell what lies hidden beneath the surface of the earth without actually digging down to investigate. Many rich properties have been condemned by geologists because the surface indications were not promising; millions have been spent in the development of worthless properties because from all that could be predicted from geological studies a valuable mine was just waiting to be tapped.

In the Philippines, Benguet and Balatoc—both are today among the richest mines in the world for their size—were turned down several times by mining engineers of long experience, as not being worth the investment of a few thousand dollars. A return of capital was once started for Benguet, as a matter of fact, because of the exhaustion of the ore body. Just before the plant was shut down, fortunately, a diamond drill luckily ran into a pocket of ore averaging ₱25,000 per ton—and

the mine is now turning out nearly $500,000 a month!

No one would have anything to do with the Antamok Goldfields mine for years. One mining engineer was offered a third interest in it for $2,500, but refused to throw his money away! Yet the property produced $2,500,000 in 1937, and will do as well in 1938.

In many cases modern mining operations are being conducted on areas where the ancients once scratched for infrequent pieces of shining metal. This is unusually true in the Philippines, where every producing gold mine was worked hundreds of years ago. Not a single producer has been found in virgin territory—although during in 1936 boom there were a number of companies formed on the basis of such discoveries. The early Malay tribes, the Chinese, the Japanese, the Spanish, the English, and the Americans all found more or less gold all over the Archipelago—but at that time they didn't know what to do about it.

The search for the base metals, for coal, for petroleum and gas, and for various other minerals, was often a different story. While gold and silver occur in small quantities, and thus are hard to detect scientifically, the location of deposit of iron ore, for example, carrying millions of tons of iron, is impossible to hide from modern instruments.

LOOKING INTO THE EARTH

While it is impossible to tell with certainty what lies beneath the surface, or to explain exactly what happened during the formation of the various features of the earth, a study of the different structures and occurrences has made known much information which is of help to the prospector.

Early man naturally was curious as to what caused storms, floods, earthquakes and volcanoes, hills and valleys, fertile plains and deserts. At first all such things were credited to, or blamed on, the gods, but as the intelligence of man grew he began to acquire an understanding of what likely had happened.

* *Geology* is the science which treats of the history of the earth and its life, especially as recorded in the rocks. The three principal branches of geology are: *Structural geology,* which deals with the form, arrangement, and internal structure of the rocks; *Dynamic geology,* dealing with the causes and processes of geological change; *historical geology,* which, aided by other branches, aims to give a chronological account of the events in the earth's history.

Economic geology deals with the application of the science in industrial relations and operations. *Legal geology* is the application in litigation of the facts and principles of geology, particularly its subdivisions *mineralogy* (the study of the minerals), economic geology, and mining geology. *Mining geology* is a subdivision of economic geology concerned with the application of geological facts and principles to mining.

The *geologist* is one of the most important allies of the prospector and of the miner. He studies various rock formations and structures, and maps his findings. The prospector is often

* Glossary of Mining and Mineral Industry, by Albert H. Fay, Bulletin 95, Bureau of Mines, Washington, 1920.

guided in his search for new deposits by the work of the geologist, while the miner in his work underground depends upon geology considerably in the intelligent and economic mining of the deposits.

* The ancient Greek and Roman philosophers had very sound ideas about the earth although they also had some very highly imaginary theories. The study of the earth progressed slowly for many centuries, and it was not until about the beginning of the 12th century that recognized prospecting was started. At that time the bounding or staking of ore was established in Cornwall, and slaves discovering ore were given their freedom and civic independence.

The first department of mines was started at about this time by the King of England, who put the tin mines of Cornwall under the supervision of a warden which he appointed.

Until the start of the 19th century, however, there was but little connection between geology and mining. Mining was carried on by the most primitive methods; geology was still more or less in the realm of fantasy. With the dawn of the 19th century, the world made rapid progress in thought and in action. Machinery and steam power suddenly revolutionized industry. At once a great demand for metals was made upon the miner. Mineralogy had but recently been established on a systematic basis, and geology had begun to develop into a real science.

An English surveyor, William Smith, in 1800, is credited with being one of the first to apply geology to the problems of mining and to the search for valuable minerals. His chief contribution to the science was the discovery that a definite succession existed in sedimentary rocks, and that certain fossils were found in definite horizons in this succession. Great progress was being made about this time in the study of fossils which finally had been recognized as the petrified remains of animals that once had lived, died, and had been buried in mud and sand which was latter formed into rock.

About 1850 the theory that deposits of minerals came from the interior of the earth was replaced by one that advanced the idea that ore deposits were formed by the accumulation of circulating waters of minute amounts of minerals present in the ordinary rocks which, under favorable conditions, were concentrated and redeposited to form ore-bodies. Later this theory was in turn displaced by one which proposed that ore deposits were formed from fluid molten rock during the process of cooling.

The study of geology, or of any branch of it, is complicated, and takes years of concentrated effort for the training of a skilled geologist. The investor in mining is not particularly interested in whether a formation is Palaeozoic, Mesozoic, or Tertiary (the three great divisions of time after the appearance of life on the earth). He wants to know about the ore in the mining property in which his money is invested—whether it will bring him a profit or not.

Advertisements and prospectuses offering stock in new mining companies for sale usually stress a geological report on the property. To the layman, and, indeed, often to an experienced mining man, such reports often mean little or nothing. Any similarity between the new property and a producing area is usually emphasized, although actually such comparisons are more than likely useless.

In the Baguio district of the Philippines, for example, the gold veins now

* Elementary Geology Applied To Prospecting, A Course of Lectures by John F. Walker, Provincial Mineralogist, Victoria, B. C., 1935.

being worked have been found in the *andesite* (a volcanic rock of large crystalline texture) or *diorite* (a granite-like rock) formations. The Benguet Consolidated, Baguio Gold, and Demonstration vein systems are in the andesites, while the Antamok Goldfields, Balatoc, and Itogon pay shoots are in the diorites. This fact was very useful to the flock of promoters and pseudo-engineers who floated, or attempted to float, hundreds of new companies during the boom days of 1933 and of 1936.

One prospectus had the following information under the heading "Geology":

"The country rock is good, consisting mostly of andesites and basalts." Now the "country rock" is the general mass of adjacent rock as distinguished from that of a dike, vein, or lode; whether it is 'good' or 'bad' has nothing whatsoever to do with its possibilities as a bearer of gold. There are hundreds of square miles of andesites and basalts in the area—but what of it?

Another preliminary report stated: "The country rock is coarse-grained diorite. Andesite is observed on the southwestern part of this property. The country rock on the property side is very well mineralized. Great disturbances have occurred causing displacements and fractures." The author of this evidently wanted to be sure he had both formations, so he put them in. An even greater disturbance occurred when the disillusioned stockholders found out that the mineralization was more imaginary than factual.

"The predominant rock structure is formed by alternate intrusions of fine grained and coarse grained andesites and diorites. The mountains show a very rapid erosion. Gullies cut deep into the formation. The overburden is very thin and the country rock is on many places exposed." (From a prospectus issued late in 1937). Here again we have the good old andesites and diorites. If the mountains didn't show a very rapid erosion, with gullies cut deep into the formation, they would hardly be mountains. The fact that the overburden is very thin and the country rock is exposed may be interesting, but, in this case at least, didn't mean that nuggets of gold were strewn like so many huckleberries waiting to be plucked.

Here's another geological report that was written with more enthusiasm than common sense:

"A cursory study of the geological condition of the entire area so far explored reveals its Paleolethic and Neanderthal or Neoclethic Layers crumbling off through weathering processes of erosion and through some tectonic faulting. Huge chunks of granite, of nugget-bearing marble slabs, of andesites, of quartzites, of coal, of chromium and copper ores are carried along by the occasional overflooding streams and left scattered along their courses. Some are already rounded off, others are flattened and others still revealing their sharp edges due to the occasional faultings and crumblings. Hence, in some parts of these Placer Claims embankments, there are outcrops of gold-bearing veins as well as silver and ore copper-bearing granite chunks; and over these placer claims, as a result of the ravages of these tributaries, are scattered enormous heaps or mounds of auriferous gravel and black sands gold-bearing debris, huddles along thruout the centuries by these tributaries and by the ———— River which serves as an outlet of Lake ———— to such an extent that these Placer Claims are

greatly enriched with gold deposits at some of those strategically located "gold pockets." (spelling taken directly from the prospectus). Now black sand, being of high specific gravity, is sometimes concentrated with placer gold; but the existence of black sand doesn't necessarily mean that gold will be found—usually quite the contrary is the case. With all of the possibilities offered by the "nugget-bearing" marble slabs, the andesites, et cetera, one would expect great things of the property. Unfortunately the gold, the coal, the chromium, and the copper have so far proved most elusive.

A prospectus for a company seeking to promote a gypsum property stated "On the strength of my investigation and the indications found on the gypsum deposit of the ———— Company I estimate the amount of gypsum of commercial value to be approximately 210,000 tons. With an average price of ₱12 per ton the deposit would represent a value of ₱2,520,000. As the deposit is only half a kilometer from the sea, and labor also cheap, I estimate the expenses of mining to round ₱4.00 per ton delivered to the boat. This would mean a total profit of ₱1,680,000." This company was successfully floated on the strength of such statements. Work was carried on at the property for about 18 months, during which only a few hundred tons of the 210,000 tons found by the optimistic estimator were extracted—and even that much has not been sold. Needless to say the chances of the company making a total profit of ₱1,680,000 are about 1,680,000 to 1.

The report of a competent geologist is essential to those who are about to investigate the possibilities of a mine. Such a report, however, can only be interpreted by a competent and trained mining engineer or geologist. For a layman to attempt to form an opinion as to the worth of a property because of a report studded with highly-technical and impressive, but meaningless to him, words, is sheer folly. For an investor to put his money into a company because the report sounds good, is sheer stupidity.

The mining investor, unless he can understand technical geological reports, should investigate the training and experience of the man making them, and the reputation of the company and the men back of them. In no other way can he be sure that he is getting his money's worth.

(To be continued)

UNITED PARACALE MINING COMPANY

United Paracale treated 8,986 tons of ore during April, from which ₱201,-451.08 was produced. Recovered value per ton was ₱22.42, with an extraction of 87.17%.

Development footage totalled 1,240 feet, of which 841 feet were in capital and 399 feet in operating development.

The Haliguing Bato road extension was completed during the month, thus permitting truck haulage from Jeff No. 6 tunnel.

The construction of a new assay office building on the United Paracale property was started April 1 and finished April 16. The assay equipment was moved to the new building and the old office located in the town of Paracale was dismantled. This new arrangement will result in a considerable saving in rent and in operating expense.

COCO GROVE, INC.

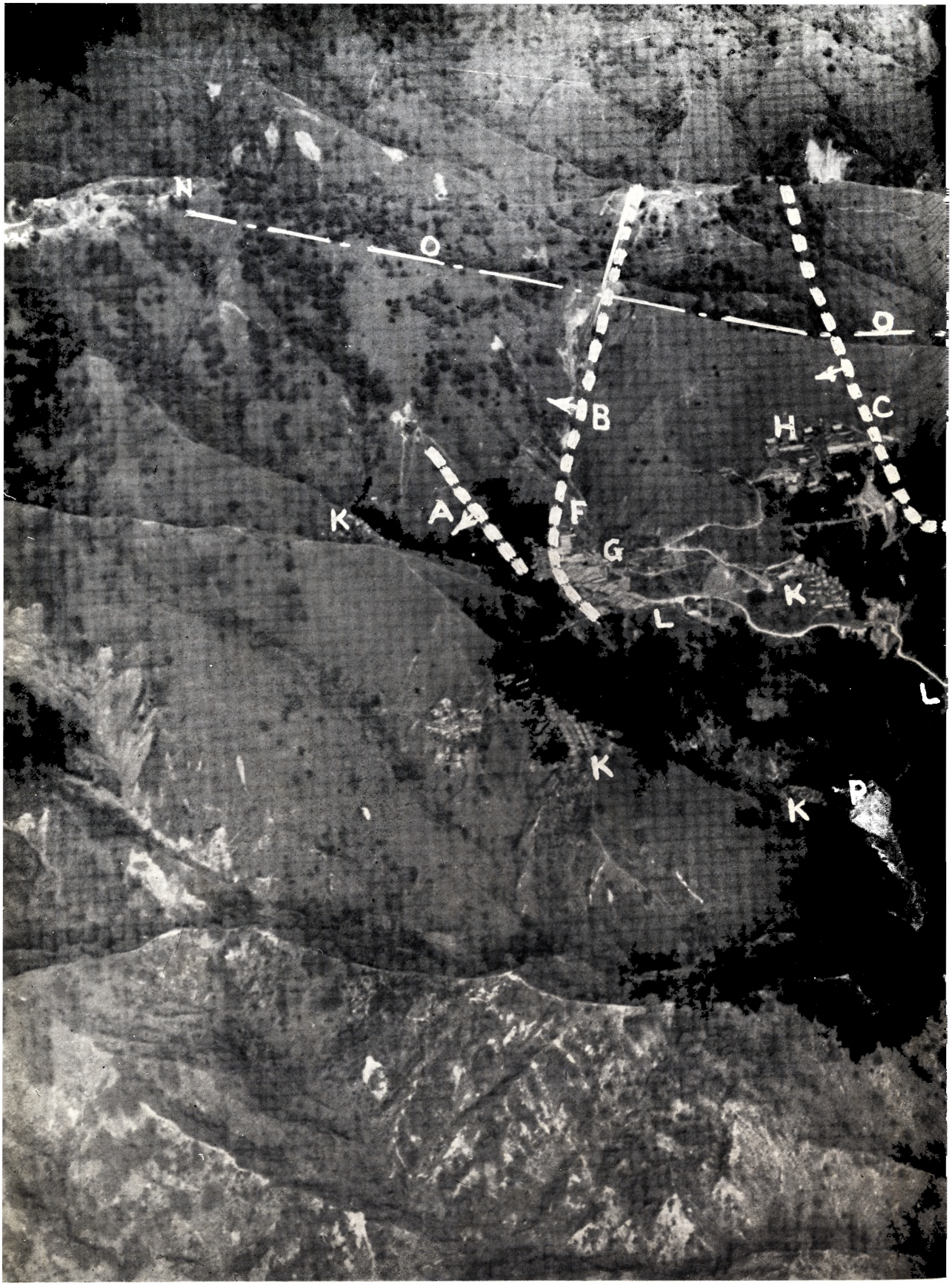
The April production of ₱451,438.46 from 362,817 cubic yards dredged by the two boats set new high monthly records for both yardage and output.

The Mary Angus handled 182,305 cubic yards, from which ₱135,018.27 was recovered. It dredged to an average depth of 56.5 feet, and covered an area of 87,059 square feet, operating 613.58 hours.

The Anne Petronella dredged 180,512 cubic yards, from which ₱316,420.19 was recovered. It dredged to an average depth of 51.7 feet, and covered an area of 94,165 square feet, operating 608.75 hours.

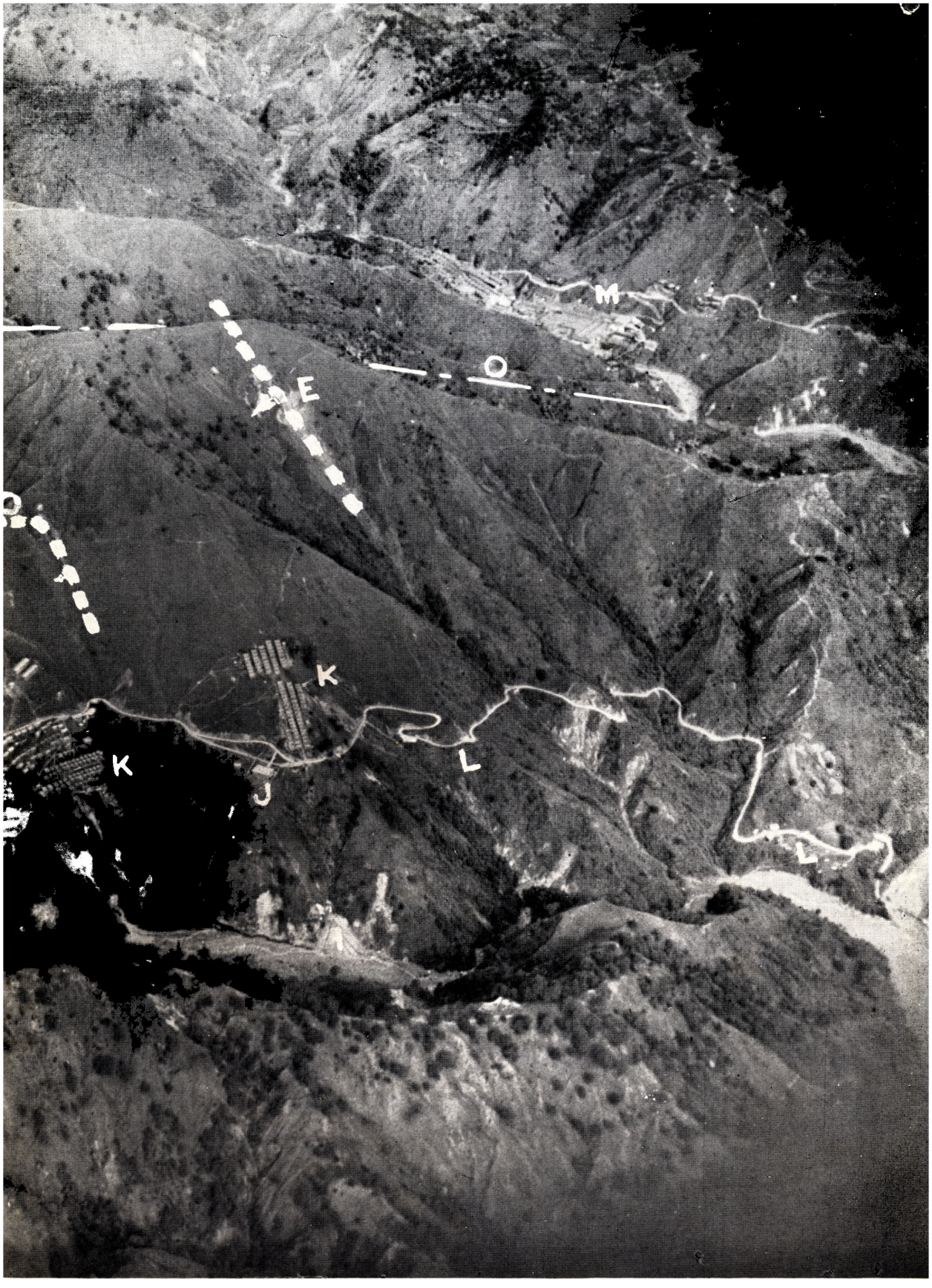
During the month some mechanical trouble developed, resulting in some loss of operating time. However, the Bucyrus-Erie Company, of South Milwaukee, Wisconsin, manufacturers of the dredges, sent their chief designer to the Philippines by Clipper.

One dredge was shut down for several days during repair work, but both are now in regular operations.



Itogon Mining Company

The Itogon vein systems are roughly parallel and converge toward the Balatoc property, as the Balatoc); C, Sesame vein (231 vein of Balatoc); D, Idol vein. The arrows show the dip of the v the boundary line between Itogon and Balatoc. F is the main Itogon headframe; G, the mil'ing pla the Balatoc millsite; N, Agno timber tram terminal; P, 500 level Taka portal.



Systems and Buildings

Line on this aerial view shows. Vein A is the Frog vein; B, the Taka-Barr vein (Barr vein of (the direction in which the slant underground. The long broken line O along the ridge indicates H, staff houses; I, 875 level drain tunnel portal; J, hospital; K, barrios; L, road to Baguio; M is

MINDANAO MINING COMPANY

During April 16,781 cubic yards of gravel were handled, and ₱7,732 in gold was produced.

PHILIPPINE SMELTING COMPANY

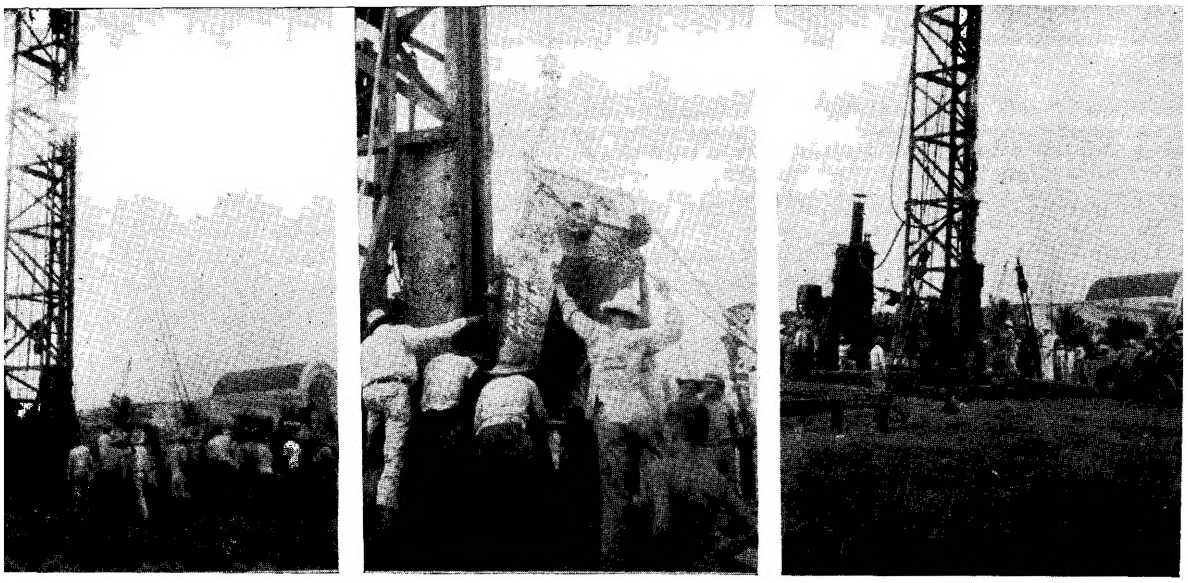
The smelter operated very satisfactorily during April. The blast furnace smelted 1,075.5 tons of concentrates in the form of sinter. Slag losses are comparable with those of any smelter treating material of the character of that sent to the smelter.

A modern electrical Cottrell dust precipitator was ordered during the month which will recover over 90% of the dust, which will cut dust losses to a minimum.

GUMAOS GOLDFIELDS, INC.

The shaft at Gumaos Goldfields was sunk 50 feet during the month, and is now 350 feet deep. At the 300 level, bearing timbers were cemented in place and a station set with long post was placed. Nine sets of timber were placed during the month.

The average number of men employed during the month was 70. Conditions throughout the camp continue to be good.



The tube having been driven, the steel reinforcement is lowered into it (above left), the concrete is poured into the tube (center), the pile is poured and the extraction of the tube is started (right).

Vibro System Is Demonstrated

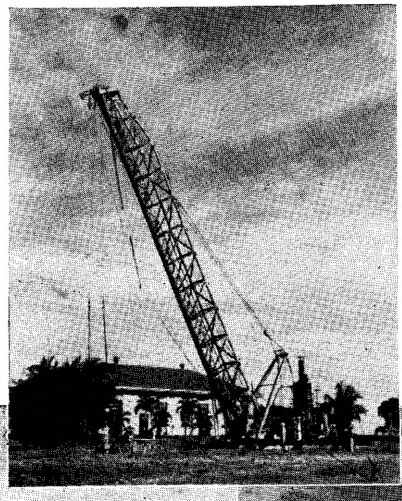
About a hundred prominent government officials, engineers of the Bureau of Public Works in Manila, construction engineers, architects and contractors witnessed the first public demonstration of the Vibro Concrete Pile System, conducted near the Marsman Building in the Port Area on Saturday, May 14.

Considerable interest was shown by those who saw the pile driven under the supervision of Mr. H. D. S. Page, Manila representative of The Vibro Piling Company, Limited, concessionaires for Hongkong and South China.

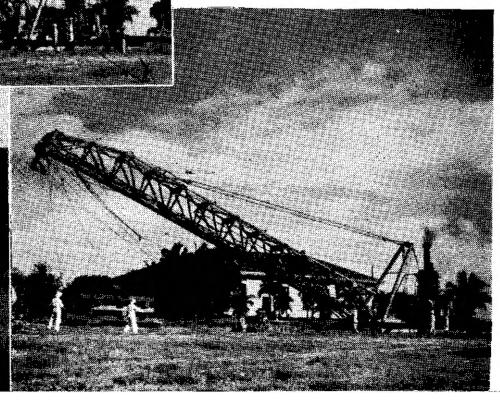
Almost every country in the world has adopted the system, and there are more than 50 machines in constant use.

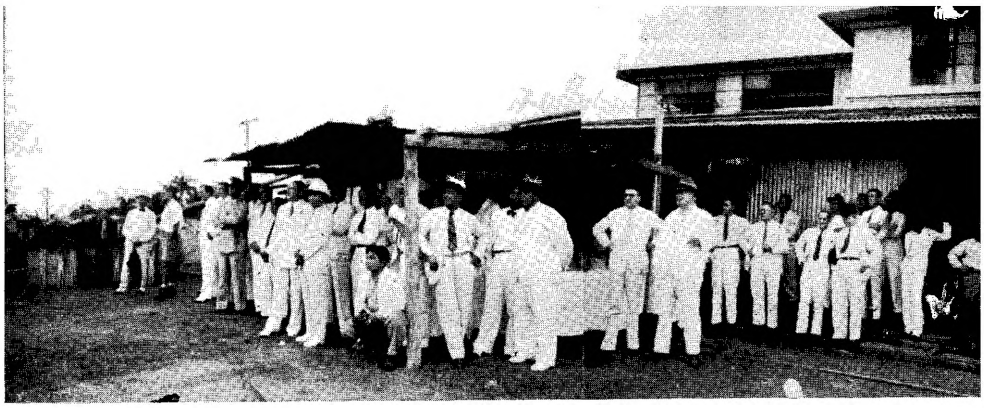
THE Vibro process is based on correct engineering principles, and ensures the formation of a pile consisting of dense, compressed concrete which has not been subjected to any driving stresses and which is able to carry its load without risk of settlement.

The boiler for the Vibro machine is raised (below)



The derrick is pulled erect by its own boiler (below) and is about to go into place (left picture).





Part of the audience which attended the demonstration. Mr. Marsman is shown in front of the group with Mayor Juan Posadas of Manila. After the demonstration breakfast was served under the shelter shown in the background.

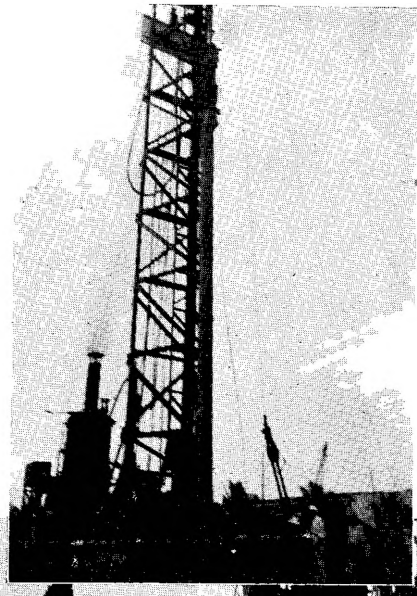
Vibro piles are generally formed by driving a steel tube fitted with a conical cast iron shoe into the ground until the desired set is obtained. The tube is then filled with concrete and is extracted by a succession of upward extracting and downward tamping blows; the lower end of the tube is enlarged to form a tamping rim, so that each downward blow rams the concrete outwards firmly against the surrounding earth and keys the pile securely into the ground. The finished pile cannot be smaller than the outside diameter of the tamping rim.

The ordinary Vibro pile is suitable for practically every type of foundation and nearly all ground conditions; there are, however, modifications of the standard Vibro system which are particularly suitable when ground of low bearing value is encountered for a considerable depth.

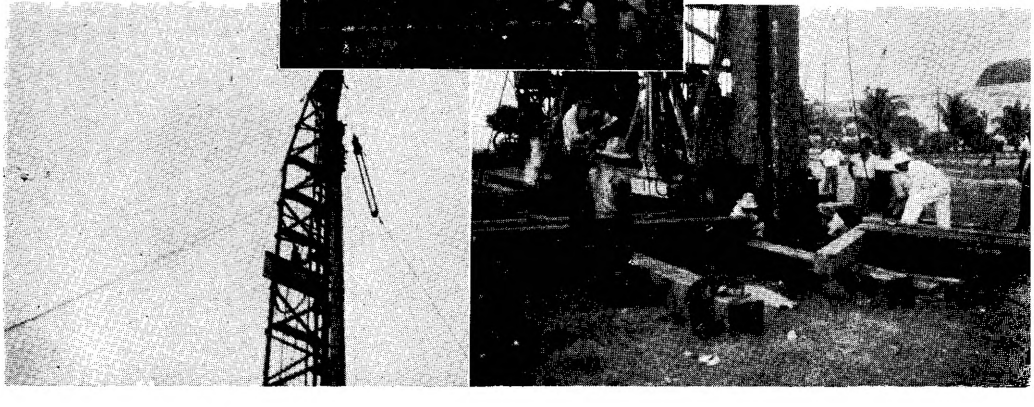
The plant required for the formation of Vibro piles is simple to operate, and can be employed without alteration not only for standard Vibro piles, but also for any modified type that it may be found necessary to employ. The rapidity with which Vibro piles are formed compares very favourably with other systems or with pre-cast piles.

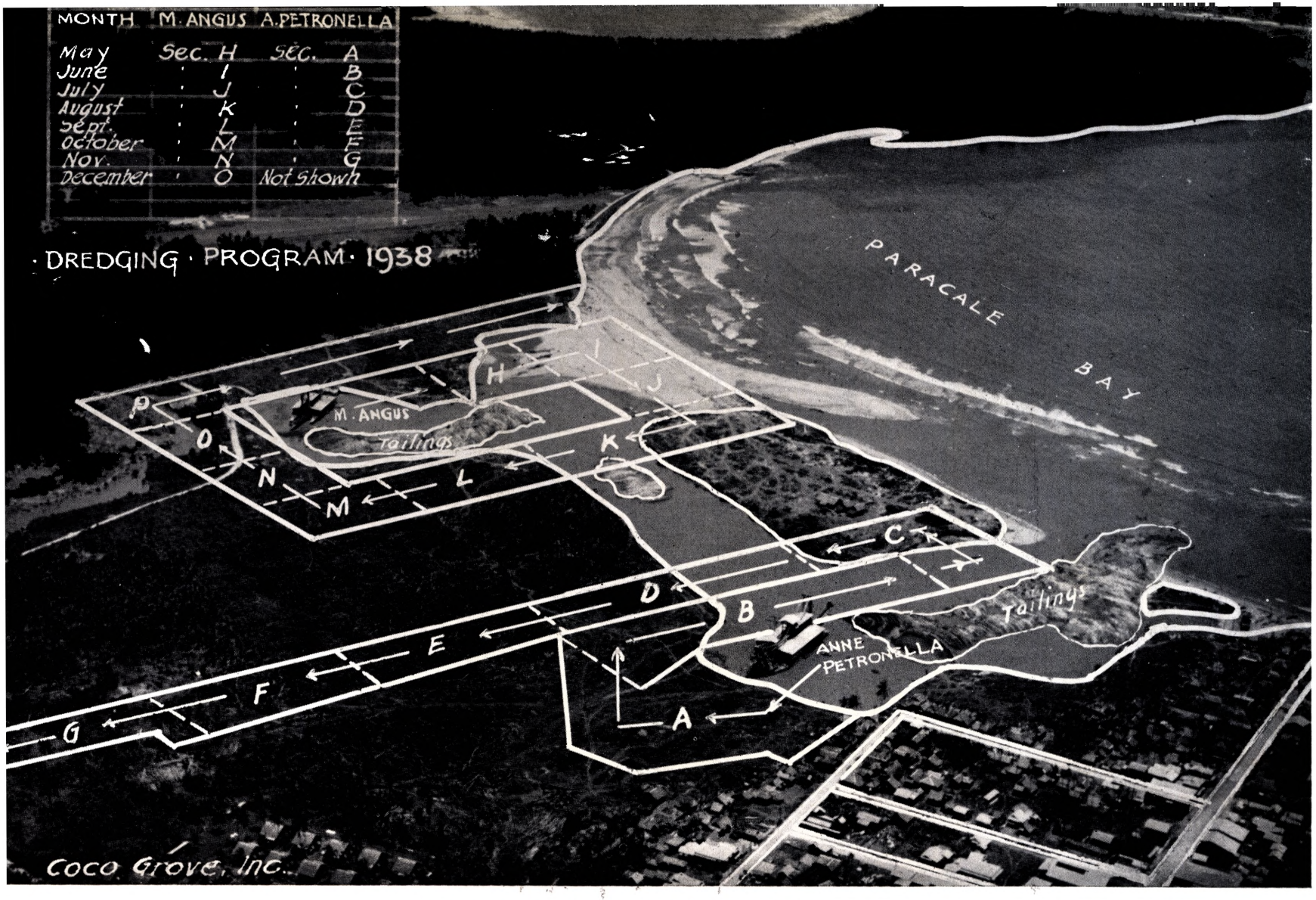
Vibro piles have been extracted for examination from time to time; every one has always been found to be of the full section and consisting of perfect concrete. Numerous loading tests have been made, and in no case has the Vibro pile failed to carry its load with an adequate factor of safety.

The extracting links being lowered preparatory to the starting of operations (below)



Lowering the tube on to the cast iron pile shoe (below), and the start of driving the tube (left)





Where the Coco Grove dredges will work this year.

Dredging is not a haphazard digging operation in any way; this picture with the map superimposed shows where each dredge will operate each month of the year. Picture by Bryon A. Glover, Patco pilot.

MYSTERIES OF MINING

This is the fifth in a series of features describing various interesting phases of mining and the mining industry.

The old fellow who first discovered explosives must have felt like this: considerably surprised but none the less grateful.

DYNAMITE

Of all the tools that the miner uses in his search for gold and silver, for coal and petroleum, and for all of the hidden wealth of the earth, dynamite is probably the most indispensable. Without the use of this remarkable material, it would be simply impossible for man to penetrate to depths thousands of feet below the surface, or for him to open up mile upon mile of tunnels, drifts and stopes in his pursuit of minerals.

Dynamite is one of the two types of explosives—substances which when converted into a gas from their original state develop a sudden pressure on their surroundings. The first explosive was discovered more or less by chance, back in the 13th century when Friar Roger Bacon, attempting to purify a salt, stumbled on to a mixture of sulphur, charcoal, and nitre which when ignited, exploded.

For many years gun powder was the only known explosive. Then, in 1863, Alfred Bernard Nobel a Swedish chemist and engineer, started some experiments with a little-known substance called nitroglycerine, made by spraying glycerine into a mixture of nitric and sulphuric acids.

Nobel discovered that when he mixed the highly sensitive and dangerous nitroglycerine with an absorbent and inert substance such as clayey sawdust it became safe to handle and easy to control. He patented this mixture in 1867 and called it dynamite. He made an immense fortune from his invention, and when he died in 1896 he left the income from this fortune to be given annually in the form of five prizes, one of them to the person who best promoted peace on earth!

Now dynamite is entirely a commercial explosive and not a munition of war. Its sensitive qualities make its use impossible in shells; its disruptive force makes it unsuitable as a propellant in rifles or cannons. The machinery and plants used in the manufacture of dynamite cannot be turned into the production of smokeless powder, picric acid, T.N.T., or other explosives used in war and classed as munitions.

Since Nobel's monumentous discovery, many improvements have been made in dynamite. Several different types of dynamites are now manufactured, containing varying amounts of nitroglycerine, in addition to other materials affecting ease of handling, safety, and rate of detonation. Straight nitroglycerine dynamites have a relatively high rate of detonation, and are used when quick action or a shattering effect is required. Ammonia dynamites, most widely used, contain in place of part of the nitroglycerine, ammonium nitrate which slows down the velocity of the detonations somewhat and makes the action less shattering; it is safer to handle than straight nitroglycerine dynamites and the gases are less objectionable. Gelatine dynamite contains instead of part of the nitroglycerine a colloidal solution of nitrocotton in nitroglycerine, absorbed in a mixture of sodium nitrate and wood meal. This dynamite is water proof and is used for under-water blasting. Ammonia-gelatine dynamites are a combination of the two above. Blasting gelatine consists of nitroglycerine in which has been dissolved nitrocotton to form a jelly, together with a small proportion of an antacid solution as chalk. It is a tough rubbery material upon which water has no effect, and is only used where the greatest possible concentration of energy is required.

Three pounds of dynamite were sent off in San Francisco in 1867 — the first manufactured in the United States. Since that time the mining industry as well as engineering science in general has been revolutionized by the use of this commercial explosive. In 1936 about 300,000,000 pounds of it were used in the United States for mining, quarrying, engineering works, harbor improvement, agriculture and other purposes. Seventy-one million pounds were used in the mining of coal, and about 53 million pounds in the mining of gold, silver, copper, lead, zinc, aluminum, and other non-ferrous metals. Some 20,500,000 pounds were

needed for the mining of iron. Twelve million pounds of dynamite are used each year by farmers to drain wet lands, to blast out stamps and boulders, and even to plant trees. Immense quantities are used to open up harbors, to blast foundations for skyscrapers in big cities, to build tunnels for subways and electrical systems.

It takes about 0.9 of a pound of dynamite for every ton of crude gold, silver, copper, lead, and zinc ore mined; for every ton of coal mined about 0.29 of a pound of explosive is used, and for every ton of iron ore, 0.37 pound.

(Note: Figures on use of dynamite from "Bulletin of Information" of Institute of Makers of Explosives, New York City).

Storing dynamite undergrown at United Paracale.

MARSMAN AND COMPANY, INC.

Producing Mines

Name	*Location*	*Type Property*	*Plant Capacity Daily*	*General Superintendent*
Itogon Mining Company	27 km S. of Baguio	Gold Lode	1,000 tons	Warren Gilkison
Suyoc Consolidated	98 km N. of Baguio	Gold Lode	200 "	L. M. Robinson
United Paracale	Paracale, Camarines Norte, 200 km Sw of Manila	Gold Lode	300 "	R. H. Canon
San Mauricio	15 km N. of Paracale	Gold Lode	300 "	H. L. Barr
Coco Grove	Paracale	Gold Placer	13,000 cubic yards	F. A. Nowacki
Hongkong Wolfram Project	Kowloon, Hongkong	Wolfram Lode		J. Gifford Hull
Mindanao Mining Company	Zamboanga, Zamboanga	Gold Placer		Frank Erno

Properties under Development

Name	*Location*	*Type Property*	*In Charge*
Gumaos Goldfields, Inc.	Camarines Norte	Gold Lode	A. W. Dixon
Tuba Project	Tayabas	Gold Lode	L. H. Hinckley

EDITORIAL

TOO MANY TAXES

A careful study of the proposed increase in taxes on the mining industry can not but emphasize the fact that any such measures, if passed, would defeat their own purpose by seriously hindering the development of the mineral resources of the country.

While the mining industry is willing to help the Commonwealth in any reasonable way, it should not be taxed so heavily that the very existence of many companies will be threatened. The present scale of taxes, adopted in November, 1936, was the result of careful planning and represents a rate of taxation that was considered fair to the mining operator and fair to the government.

In 1937 the mining industry paid the government more than ₱3,740,000 in overall taxes and fees; it is estimated that with the increase in gold output taking place this year, the production tax alone will be around ₱2,650,000 in 1938 and ₱3,150,000 in 1939 (as compared to around ₱2,150,000 in 1937). These latter figures represent the tax on gross production alone, and do not take into account income taxes and the many other indirect taxes.

Many of the Philippine gold producers are operating on a small margin of profit. Excessive taxation, and that is what any increase would be, would wipe out that margin and make it impossible

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THE MARSMAN MAGAZINE

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The magazine is sent to all stockholders of Marsman managed properties and to all staff members of the companies associated with the Marsman interests.

NOTE: All ore values, bullion figures, etc., given in this magazine are expressed in pesos based on gold at $35.00 an ounce and silver at the market price. Figures given in monthly reports are based on mine assays, and may differ to some extent from final mint or smelter returns.

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RALPH KEELER, *Editor and Business Manager*

for them to continue to operation. As the taxes are increased, the income of the various companies will be reduced, and income taxes will be lower. If the tax rates are left as they are, there will naturally be a steady increase in the amount paid as production and income tax. Increased taxation will more than likely mean that gold production will not be increased as is planned at the present. Direct and indirect taxes thus will not increase as they normally will under existing conditions. In addition, the financial benefit to the government resulting from the increased business which will follow higher output will be considerable.

Many companies are now mining and milling low grade ore which would have to be left untouched in the ground if taxes are raised. The government has everything to gain and nothing to lose by encouraging the steady growth of mining.

Around 30,000 people are employed directly in mining, and many more indirectly. During 1937 around ₱18,000,000 was paid in wages and salaries, almost every peso of which was spent in the Islands. The importance of the mining industry to the Commonwealth cannot be emphasized too strongly, especially when it is realized that mining is still in its infancy in the Philippines.

One example of the concrete value of mining to the country is that of one mining company in the Baguio district which is now paying around ₱250,000 a year to the city of Baguio for power which it buys from the city hydro plants. This represents about one-fourth of the entire income of the city (excluding insular aid). Many other similar cases could be given; one has but to visit Baguio, Camarines Norte, Masbate, Surigao, and other mining centers to realize the tremendous impetus mining has given to industry of all kinds.

Further, there is no present need for an increase in taxation. The Commonwealth is receiving millions from the United States this year. Its financial condition is excellent, and there is no sound reason for crippling a young industry by unwarranted tax boosts.

Matters of tax legislation should be thoroughly and carefully studied before any definite action is taken. It is significant to note that recent tax legislation in the United States is now being repealed by Congress because of its defects—an excellent example of the result of too hasty law-making.

The Philippine mining industry has just gone through a period of expansion and construction, that is already resulting in increased production and in increased revenue to the government. This expansion and construction was for the most part based on the assumption that the mining companies would be able to operate under the present tax rate. Any increases in taxation would upset the economic balance of the industry, and thus injure it seriously.

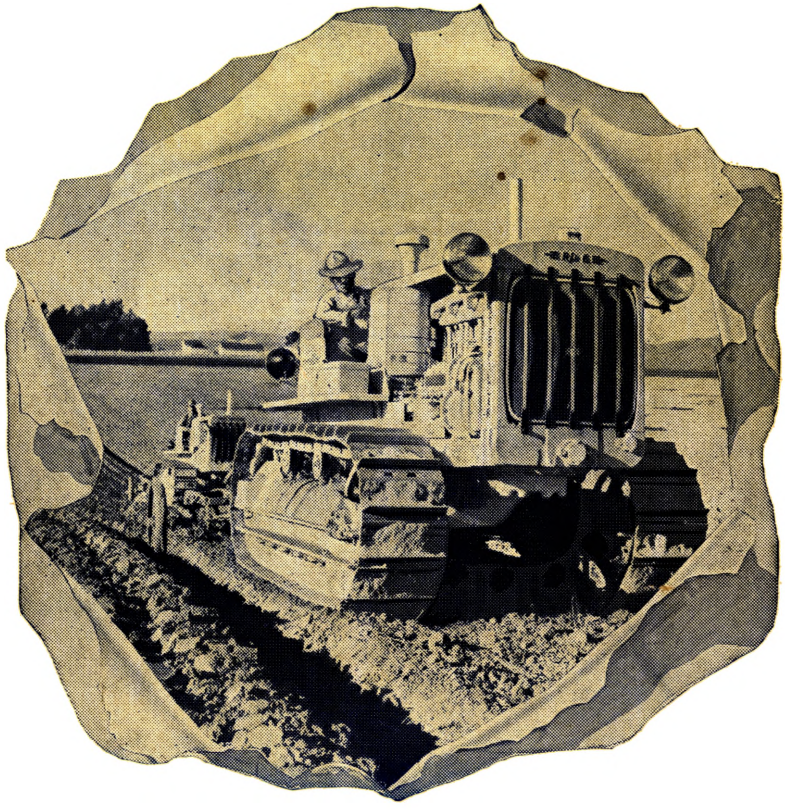
Mining operators do not believe that the government would willfully cripple minng, but they are fully aware of the general lack of understanding of the complexity of mining and of the nature of the problems which confront the operator. Mining is far from being the simple act of taking gold from an underground storehouse. It is a complicated, expensive, highly technical undertaking; and it has been truly said that for every peso taken from the ground at least two pesos have gone into it.

To insure the future of the mining industry, and with it substantial returns to the government, the assembly should not burden the industry with increased taxes.

Introducing—

GARGOYLE DELVAC OIL 3X

Approved by Caterpillar Tractor Co.



Courtesy of Pacific Commercial Co.

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- GARGOYLE DELVAC OIL 3X is a new lubricant designed specifically for Caterpillar Diesel Engines.
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Stocks of this factory-approved oil now available locally.

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