DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 3604

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Action on this document is recorded and controlled in Reports and Records Branch. Any movement of this document between divisions or offices of DMA or movement outside DMA must be reported to the Reports and Records Branch. Actions taken that affect status of the case must also be reported.

This document has been recorded as

Exploration Assistance

Any action taken to change the type of request for assistance must be promptly reported to the Reports and Records Branch. Use DMA Form 2 for submitting these reports.

Cys to USBM & USGS

Routing Slip

To:	700	Date	12/15/54
To:	Operating Conc.	Date	1/4/55
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CONTROLLED DOCUMENT

700

Ching
Ellis
Kilsgaard
Rodgers
Sedwick
Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

JAN 1 0 1955

Research Group,
a co-partnership composed of
Roland W. Snow,
John M. Harper, Jr.,
John H. Nutt, and
Ted Carpentier
1518 Paloma Street
Los Angeles 21, California

Re: Docket No. DMEA-3604 (Mercury)
The Micro Metals Mine
Esmeralda County, Nevada

Gentlemen:

Your application for aid in an exploration project and other information available to us in Washington concerning your above-named property have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

MChing/gla
1-4-54
cc to: Admr.'s Reading File
Operating Committee
Docket ✓
Messrs. H. M. Meyer, Rm. 2623
T. H. Kiilsgaard, Rm. 5224
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

R.C.G.

DOCKET COPY

Ching

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

January 4, 1955

Summary of Proposed Project

Object: Denial of application for an exploration project

Docket No.: DMEA-3604

Commodity: Mercury

Applicant: Research Group, a co-partnership
1518 Palonia Street
Los Angeles 21, California

Property: The Micro Metals Mine
The following 13 claims are owned:
Miracle of Values, Miracle of Values #1 through #3, Treasure Valley, Treasure Valley #1 through #8.
The following land is leased: 8½ sections of contiguous land in Range 36 East, Township 2 North, and in Range 36 East, Township 3 North.
Esmeralda County, Nevada

Date of application: November 26, 1954

Amount of application: $64,200

Work proposed: Bulk sampling operations on a desert alluvial deposit. No detailed program of work submitted. The project would require 9 months; cost broken down approximately as follows:

Labor, supervisions, consultants, operating equipment	$41,000.00
Rehabilitation and repairs	6,000.00
New buildings and installations	5,800.00
Miscellaneous	7,200.00
Contingencies	4,200.00
Total	$64,200.00

Field Team Report: The application was not referred to the Field Team for an examination and report because of the obvious lack of merit in the proposed project. In forwarding the application to the Washington Office the Executive Officer,

Field Team Report: (contd.)

DMEA Field Team, Region III, noted the lack of factual data regarding the deposits and the fact that the listed administrative expenses appeared ludicrous. He also enclosed University of Nevada Bulletin No. 4, entitled, "An Investigation as to the Presence of Commercial Quantities of Mercury and Gold in the Dry Lakes of Nevada" as a helpful means of appraising the application.

The bulletin lists some of the many fantastic claims in the past of rich deposits of gold and mercury in dry lakes of Nevada, of which Columbus Marsh, the locale of the subject Applicant's property, is the most prominent. The Bulletin goes on to show how these claims have invariably been disproved. It also points out the improbability of gold and cinnabar,because of their weight, being transported as products of erosion over the long distances to the lake bottoms without telltale evidence along the surrounding slopes.

Commodity Committee Members' Comments:

Geological Survey - E. L.Newcomb, December 17, 1954.

Pointed out the lack of data essential to an evaluation of the property. After studying University of Nevada Bulletin No. 4, agreed orally with Michael Ching that the application should be denied.

Bureau of Mines - Helena M. Meyer, December 22, 1954.

Pointed out that most mercury production from Esmeralda County has come from the Fish Lake Valley district, 40 miles southwest of the subject property. The nearest described property is the Castle Rock prospect, some 10 or 12 miles to the northeast, from which virtually no production was made. The application lacked sufficient data for a proper appraisal. After reading University of Nevada Bulletin No. 4, agreed orally with Michael Ching that the application should be denied.

Rare and Miscellaneous Metals Division - Michael Ching, January 3, 1955.

The Applicant's statement, "Sampling with our method has indicated values from 1 to 30 pounds of mercury per ton. Sampling has been conducted at a random basis and indicates general mineralization of the entire area . . .", is suspiciously similar to the many disproved claims cited in

Rare & Miscellaneous Metals Division - (continued)

University of Nevada Bulletin No. 4. Applicant fails to show why the expenditure of $64,200 for bulk sampling of the alluvial deposit is necessary when simple test pits or augur drill holes could easily be used to test this type of material. The operating experience and background of the Applicants are not impressive with respect to this type of operation. A requirement for high-priced metallurgical and electronics consultants for a simple exploration project is indicative of their abilities. It is recommended that the application be denied without a field referral.

Conclusions and Recommendations:

The history of the Columbus Marsh area and the nature of the information and proposed work outlined in the application leads to the conclusion that the proposed project is without merit. It is recommended that the application be denied.

Ernest Wm. Ellis

Ernest Wm. Ellis

12/23/54 gla

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 22 1954

December 22, 1954

Memorandum

To: E. W. Ellis, DMEA

From: Helena M. Meyer, Base Metals Branch

Subject: DMEA Docket No. 3604 - Mercury - Roland W. Snow, John M. Harper, Jr., John H. Nutt and Ted Carpentier - 1518 Paloma St., Los Angeles 21, California

Most of the production of mercury from Esmeralda County has come from the B & B and Red Rock mines in the Fish Lake Valley district, 40 miles southwest of Coaldale.

The applicant proposes to explore, by means not clearly described, a "desert alluvial deposit" which he claims contains mercury; his sampling, of which no details are given, indicates 1 to 30 pounds per ton. This will be a novelty, if true.

The nearest described property to the claims covered by the application, I believe, is the Castle Rock prospect, in the Gilbert district, about 6 miles north of Blair Junction, Secs. 21 and 28, T 3 N., R. 38E. It was described by Edgar H. Bailey and David A. Phoenix, in University of Nevada Bulletin 38, No. 5, December 1944, Quicksilver Deposits in Nevada. Production has been virtually none.

Perhaps the Regional Office of the Bureau of Mines, or that of the Geological Survey has unpublished information regarding the property covered by the application. There is little on the application on which to base a recommendation as to approval or denial, or even as to whether a field team investigation would be justified. I am willing to accept the views of the Field Team in regard to this aspect. Recent events in the mercury industry lead me to the conclusion that in most instances where mercury mineralization is known to exist anywhere nearby, field investigations should be made.

Helena M. Meyer

Helena M. Meyer

Attachment
Copy to: Minerals Division
Base Metals Branch
H. M. Meyer
Files

12/21/54 gla

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

Defense Minerals Administration
RECEIVED
DEC 17 1954

December 17, 1954

Re: DMEA-3604
Research Group
(Miracle of Values
Claims, etc.)
Esmeralda Co., Nev.
Mercury

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of application

This application lacks considerable data which is essential for even a preliminary evaluation.

There is a need for a general orientation of the applicants as to what DMEA requires in an application. I suspect the applicants are not fully aware of how the DMEA program functions or the type of assistance available under this program.

Further consideration of this application will be undertaken, if you receive additional geologic information on this property and a planned exploration proposal from the applicants.

E. L. Newcomb

E. L. Newcomb

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

December 17, 1954

Re: DMEA-3604
Research Group
(Miracle of Values
Claims, etc.)
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E. L. Newcomb

ELNewcomb:hln
G-12/17/54

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
H. M. Meyer, 2623 Interior

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

December 17, 1954

Re: DMEA-3604
Research Group
(Miracle of Values
Claims, etc.)
Esmeralda Co., Nev.
Mercury

Memorandum

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E. L. Newcomb

ELNewcomb:hlm
G-12/17/54

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
E. M. Mayer, 2623 Interior

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

December 17, 1954

Re: DMEA-3604
Research Group
(Miracle of Valmee
Claims, etc.)
Esmeralda Co., Nev.
Mercury

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Further consideration of this application will be undertaken, if you receive additional geologic information on this property and a planned exploration proposal from the applicants.

E. L. Newcomb

ELNewcomb:hlm
G-12/17/54

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
M. M. Mayer, 2623 Interior

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

420 Custom House
555 Battery Street
San Francisco 11, Calif.

DMEA-3 60 4

December 7, 1954

Memorandum

To: Defense Minerals Exploration Administration
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for Aid Forms MF-103 - Mercury Research Group (A co-partnership composed of Messrs. Ronald W. Snow, John M. Harper, Jr., John H. Nutt, and Ted Carpentier)
1518 Paloma Street, Los Angeles 21, California

Attached are three sets of MF-103 Forms and attachments making application for a loan for exploring for mercury in the vicinity of Columbus Marsh, Nevada. The fourth set has been retained for our records.

I hesitate to send this application as it appears to be incomplete on factual data relative to the deposits and the administrative expenses as set forth in the application are ludicrous.

The enclosed University of Nevada Bulletin No. 4 relative to the presence of mercury and gold in the dry lakes of Nevada will undoubtedly help you appraise the application.

S. RICKER

S. Ricker
Executive Officer
DMEA Field Team, Region III

Attachments

Copy to: Roscoe Smith, USGS

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

December 15, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region III.

DMEA-3604 Research Group

Robert E. Adams,
Chief, Operation's Control
and Statistics Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

December 15, 1954
Subject: DMEA-3604
Re: Exploration Assistance
Micro Metals Mine

Research Group
1518 Paloma St.
Los Angeles, Calif.

Gentlemen:

The receipt of your application dated November 26, 1954 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3604 and referred to the Rare and Miscellaneous Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

420 Custom House
555 Battery Street
San Francisco 11, Calif.

December 7, 1954

Memorandum

To: Defense Minerals Exploration Administration
Interior Building, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for Aid Forms MF-103 - Mercury Research Group (A co-partnership composed of Messrs. Ronald W. Snow, John M. Harper, Jr., John H. Nutt, and Ted Carpentier)
1518 Paloma Street, Los Angeles 21, California

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S. Ricker
Executive Officer
DMEA Field Team, Region III

Attachments

Copy to: Roscoe Smith, USGS

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

Defense Minerals Administration
RECEIVED
DEC 16 1957

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. 3604
Metal or Mineral Mercury
Date Received
Estimated Cost Not Given
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Research Group, a co-partnership, 1518 Paloma Street, Los Angeles 21, California, composed of Roland W. Snow, John M. Harper, Jr., John H. Nutt and Ted Carpentier.
See attached papers.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached papers.

(*b*) State any mine name by which the property is known.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached papers.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore
See attached papers.

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(*c*) The work will start within ..... days and be completed within ..... months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). See attached papers.

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? See attached papers.

(*b*) How do you propose to furnish your share of the costs?

[X] Money [X] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated November 26, 1954

RESEARCH GROUP
(Applicant)

By [signature]

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

MF-103 UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED.	Docket No. _____ Metal or Mineral _____ Date Received _____ Estimated Cost _____ Participation (Government %) _____

1. Names of applicants are as follows:

Roland W. Snow, 5110 Seventh Avenue, Los Angeles 43, California.
John M. Harper, Jr., 900 - 31st Street, Newport Beach, California.
Ted Carpentier, 2142 Hermosa Avenue, Hermosa Beach, California.
John H. Nutt, 479 Beverwil Drive, Beverly Hills, California.
All doing business as a co-partnership designated "Research Group", with offices at 1518 Paloma Street, Los Angeles 21, California.

3. (a) The legal description of the land upon which we wish to explore, including all land that may be benefited by the exploration, in our possession or control is as follows:

Miracle of Values Claim: All of the Southeast quarter of Section 12, Range 25 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 452, Esmeralda County, Nevada.

Miracle of Values #1 Claim: All of the Northeast quarter of Section 12, Range 35 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 452, Esmeralda County, Nevada.

Miracle of Values #2 Claim: All of the Southeast quarter of Section 1, Range 35 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 452, Esmeralda County, Nevada.

Miracle of Values #3 Claim: All of the Northeast Quarter of Section 13, Range 35 E., Township 2 North, Esmeralda County, Nevada.

NAME AND ADDRESS: Research Group, 1518 Paloma St., Los Angeles 21, Calif.

Recorded in Book 1-H of Official Records, Page 456, Esmeralda County, Nevada.

Treasure Valley Claim: All of the S.W. Quarter of Section 17, Range 36 E., Township 2 North, M.D.B.M., Esmeralda County, Nevada, Recorded in Book 1-H of Official Records, page 474, Esmeralda County, Nevada.

Treasure Valley #1 Claim: All of the Southeast Quarter of Section 18, Range 36 E., Township 2 North, M.D.B.M., Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 474, Esmeralda County, Nevada.

Treasure Valley #2 Claim: All of the Southwest Quarter of Section 18, Range 36 E., Township 2 North, M.D.B.M., Columbus Marsh, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 475, Esmeralda County, Nevada.

Treasure Valley #3 Claim: All of the Northeast Quarter of Section 19, Range 36 E,, Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 475, Esmeralda County, Nevada.

Treasure Valley #4 Claim: All of the Northwest Quarter of Section 20, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 476, Esmeralda County, Nevada.

Treasure Valley #5 Claim: All of the Northeast Quarter of Section 20, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 476, Esmeralda County, Nevada.

Treasure Valley #6 Claim: All of the Southwest Quarter of Section 20, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 476, Esmeralda County, Nevada.

Treasure Valley #7 Claim: All of the Northwest Quarter of Section 19, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 477, Esmeralda County,

NAME AND ADDRESS: Research Group, 1518 Paloma St., Los Angeles 21, Calif.

Nevada.

Treasure Valley #8 Claim: All of the Southeast Quarter of Section 17, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 477, Esmeralda County, Nevada.

Claims in that certain area known as Columbus Marsh in Esmeralda County, near Coaldale, Nevada, described as:

The Northwest One-quarter (1/4) of Section 21, Range 36 East, Township 2 North;

The North One-half (1/2) and the Southwest One-quarter (1/4) of Section 16, Range 36 East, Township 2 North;

All of Section 9, Range 36 East, Township 2 North;

All of Section 4, Range 36 East, Township 2 North;

All of Section 33, Range 36 East, Township 3 North;

The South One-half (1/2) of Section 28, Range 36 East, Township 3 North;

The South one-half (1/2) of Section 29, Range 36 East, Township 3 North;

The Southeast One-quarter (1/4) of Section 30, Range 36 East, Township 3 North;

All of Section 32, Range 36 East, Township 3 North;

All of Section 31, Range 36 East, Township 3 North;

The East One-half (1/2) of Section 5, Range 36 East, Township 2 North;

The East One-half (1/2) of Section 8, Range 36 East, Township 2 North;

The Northeast One-quarter (1/4) of Section 17, Range 36 East, Township 2 North.

(b) The name of the mine under which a portion of this property is known is "Micro Metals Mine".

(c) Our interest in the land is that of claimholders under the mining laws of the United States and the State of Nevada as to the following claims: Miracle of Values, Miracle of Values #1, Miracle

of Values #2, Miracle of Values #3, Treasure Valley, Treasure Valley #1, Treasure Valley #2, Treasure Valley #3, Treasure Valley #4, Treasure Valley #5, Treasure Valley #6, Treasure Valley #7 and Treasure Valley #8, and as Lessee as to claims in that certain area known as Columbus Marsh in Esmeralda County, near Coaldale, Nevada.

(d) We attach hereto a copy of the lease under which we are Lessee as to claims in Esmeralda County, near Coaldale, Nevada.

(e) Not applicable.

4. (a) All land and mine working are definitely accessible by automobile and are within 2 miles of a well-paved and traveled highway, to wit, Highway 6, Nevada. The property is improved with a mill building and several habitations in various conditions of repair. The mill building contains various elements of metallurgical equipment which have been used in experimental work. There is a well adjacent to the mill building which flows during a good portion of the year and is capable of producing unlimited water supply. Water, however, is salty and unfit for drinking purposes. Exploration operations have been conducted over the claims involved for a period of many years. Present applicants undertook to explore and evaluate the property in 1952. The well is subject to pumping by an existing gasoline-driven pump as well as by an electrically driven pump driven from the portable generating system. Interest of applicants in such operation is that of operator.

(b) Production to date has only been incidental to exploration and evaluation of the ore reserve involved and has been in limited quantity. There is, however, an accumulation of ore which is ready for evaluation located near the mill building.

(c) This is a desert alluvial deposit. Sampling with our method has indicated values from 1 to 30 pounds of mercury per ton. Sampling has been conducted at a random basis and indicates general mineralization of the entire area but we have had insufficient

funds and equipment with which to conduct a proper amount of exploration sampling to properly evaluate the production capabilities of the property.

(d) The property is accessible, as stated above, by automobile and truck, and the mill building is adjacent to resident structure. The mine is approximately 75 miles from Bishop, California, approximately 8 miles from Coaldale, Nevada, and approximately 45 miles from Tonopah, Nevada, and approximately 60 miles from Hawthorne, Nevada.

(e) There is sufficient mining manpower available from the Tonopah and Mina area. Materials and supplies are readily available from the various above named centers of population. Supplies are readily available from the above named centers of population. Certain equipment is now located on the claim and additional equipment is needed. There is ample water available for any type operation that might be conducted upon the property. There are 3 wells in open condition on the property. A water table from 3 feet to 16 feet is available in the wells with unlimited supply according to experience. Applicants have applied for mining water rights on 2 flowing springs in the immediate area which bear comparatively fresh water should it be needed in the operation. Power is available on the property with 7-1/2 portable kilo. regulated power supply and 15 kilo. regulated power supply.

5. (a) We wish to explore for mercury.

(b) As stated above, the mining claims are composed of alluvial deposits and we believe that there exist in these deposits certain areas richly impregnated with the mineral being sought, to wit, mercury, in the form of zones of enrichment. We propose to carry on bulk sampling operations to block out values and related areas on the above described claims.

(c) The work will start within 10 days and be completed within 9 months from the date of an exploration project contract. Work is being carried on in a small way at the present time, but

on an entirely inadequate basis for the bulk sampling program which we feel is necessary in order to properly evaluate the production possibilities of the property.

(d) The operating experience and background of the applicants is as follows:

Roland W. Snow: Born 1894. Successful retired contractor, builder and real estate developer, with a background of work for the Standard Oil Company in fire prevention and safety. He was 15 years with one of the largest real estate firms in the West. Married, owns own home and many other pieces of real property in Southern California and other places. Holder of various fraternal and Coast Guard Auxiliary offices. Manufacturing experience at one time.

John M. Harper, Jr. Born 1908. Record of successful mining exploration projects since 1927 in Northern Quebec, Northern Ontario, British Columbia, California and Cuba. Owner and operator of shipbuilding enterprises in Florida and California. At present part owner and operator of Lido Shipyards, Newport Beach, California. Present owner of certain mining interests in Quebec. Developer of one of the large gold mines of Quebec now producing 850 tons per day.

Ted Carpentier. Born 1920. Graduated from Northwestern University in 1943. Profession - Naval Architect and Industrial Designer. Presently involved in design of materials and implements under government contract, as Director of Industrial Design Engineering at Frank Mayer Engineering Company, 6442 Santa Monica Boulevard, Los Angeles, California. Record of complete design successfully constructed and operated in marine field and industrial field. Retained on contract basis by Hughes Aircraft Company in connection with experimental development of Hughes Flying Boat. Independent study of mineralogy and metallurgy as applied to the recovery of mercury.

John H. Nutt. Born 1908. Married, one child - daughter, 11 years old. A.B., Stanford University 1930, LL.B., University of Southern California 1935. Practicing Attorney, Member California Bar, Member A.S.B.E., Member of I.R.E. Thirty years background in transmission and reception of radio and electronic development work. President of JHN Engineering, Inc. (development work in electronics as well as construction and maintenance work in mechanical devices). Managing Partner of Nutt Brothers, a co-partnership engaged in the wholesale baking industry, Los Angeles. Independent study of mineralogy and metallurgy as applied to the recovery of mercury.

The work will be supervised by John M. Harper, Jr., primarily, whose background, as stated above, includes successful mining operations and explorations conducted under adverse conditions, and will include the cooperation of one James E. Cox, inventor and practical mining operator of many years experience.

6. (a) There will be no independent contract contemplated.

(b) It is proposed to use a staff of 3 Consultants, 1 Supervisor, 1 Assistant Supervisor, and 10 workers in the completion of the exploration work set forth above. The Consultants will be used on a part time basis covering the various facets of the problems under consideration. Their fees will be the going rate for Consultants of that type, to wit, Geological Consultants @ $100 to $150 per day, Metallurgical Consultants @ $50 to $150 per day, Electronic Consultants @ $50 to $150 per day. It will also be contemplated that 1 Payroll and and General Bookkeeper be employed at $300 to $500 per month with board. It is also contemplated that 1 Cook be employed at $75 to $150 per week. We presently contemplate 1 Supervisor at $750 to $1,000 per month, 1 Assistant Supervisor at $500 to $750 per month, 1 Electronic Specialist at $450 to $750 per month, 1 General Procurement Man and Truck Operator at $300 to $400 per month.

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(c) In general we will need electrical power generating equipment of substantial capacity in the neighborhood of 200 kilo., bulldozers, 1 carryall, 1 skiploader, lathe and shop tools, power checking equipment, several ball mills, rollers and associated rollers, classifying tables, classifying mechanism, water conducting apparatus, power conducting apparatus, residential facilities, cooking facilities.

(d) We shall need the following operating equipment which may be rented or purchased, and is presently owned and will be furnished by operators:

Skiploader and Trailer

Concentrating Table

Miscellaneous motors and equipment

Estimated total value approximately $10,000.00

(e) It will be necessary to rehabilitate existing housing facilities and to construct additional housing facilities at the mining site. It will also be necessary to construct tanks and pipe lines to bring in and store drinking and operating water and necessary fuel for operation. It is estimated that approximately $6,000.00 will be required in this connection.

(f) It will be necessary to build 1 bunk house and 1 cook house as well as toilet-bathing facilities. The bunk house will house approximately 15 persons. The exact dimensions and details of these structures will be made to comply with the existing rules and regulations of law pertinent thereto. Approximately $5,000.00 will be required in this connection.

It will also be necessary to construct a housing facility for the protection of movable equipment and some stationary equipment from the elements. This is estimated to consist of a 3 sided building approximately 20 x 40, costing approximately $800.00. It will be necessary to install one 25 H.P. deep well turbine pump on the existing well. It will be necessary to rent

or purchase a truck for the hauling of supplies and also the transportation of workers when required. It will also be necessary to procure various elements of common comfort for the convenience and use of the workers.

(g) The cost of repairs to and maintenance of operating equipment, analytical work, accounting, workmen's compensation and employer's liability insurance and payroll taxes is estimated at $800.00 per month. The cost of the 9 months project is estimated at $60,000.00.

(h) It would be estimated that an allowance of 7% of the total set forth above to cover contingencies not included therein would be ample.

7. (a) We are prepared to furnish our share of the cost of the proposed project in accordance with the regulations on government participation.

(b) We propose to furnish our share of the cost in the form of conveyance to the operating entity of equipment, supplies and services as well as cash if required.

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LEASE

THIS AGREEMENT made in Los Angeles, California, this 2nd day of June, 1953, of and concerning land and mining interests in Nevada, in these words:

PARTIES

LEONARD BECKER-JURGEN hereinafter referred to as Lessor.

ROLAND W. SNOW, JOHN H. NUTT, JOHN M. HARPER and TED CARPENTIER hereinafter referred to as Lessees.

FACTS

Lessor has for a period of years done the necessary work and performed the necessary legal measures to establish good and valid mining claims under the laws of the State of Nevada and the laws of the United States in that certain area known as Columbus Marsh in Esmeralda County, near Coaldale, Nevada. These claims roughly encompass five thousand four hundred and forty (5,440) acres and total some eight and one-half (8-1/2) sections of contiguous land, and are described as:

The Northwest One-quarter (1/4) of Section 21, Range 36 East, Township 2 North;

The North One-half (1/2) and the Southwest One-quarter (1/4) of Section 16, Range 36 East, Township 2 North;

All of Section 9, Range 36 East, Township 2 North;

All of Section 4, Range 36 East, Township 2 North;

All of Section 33, Range 36 East, Township 3 North;

The South One-half (1/2) of Section 28, Range 36 East, Township 3 North;

The South One-half (1/2) of Section 29, Range 36 East, Township 3 North;

The Southeast One-quarter (1/4) of Section 30, Range 36 East, Township 3 North;

All of Section 32, Range 36 East, Township 3 North;

All of Section 31, Range 36 East, Township 3 North;

The East One-half (1/2) of Section 5, Range 36 East, Township 2 North;

The East One-half (1/2) of Section 8, Range 36 East, Township 2 North;

The Northeast One-quarter (1/4) of Section 17, Range 36 East, Township 2 North.

In addition Lessor has certain interests in mining claims held by others of certain intangible nature.

Lessor also has certain small buildings, equipment, cabins, water facilities and water rights, and other improvements, the use of which is to be covered in this leasing arrangement.

All of said interests and claims described are hereinafter referred to as "the premises".

Lessees are a syndicate having under their control certain equipment and processes for the obtaining of valuable minerals. Lessees desire to enter into an arrangement with Lessor wherein all of Lessor's facilities shall be available to Lessees in return for rentals as hereinafter provided. Since certain of the metals which are to be produced by Lessees are of a type having limited demand in the metal market, it is the desire of both Lessees and Lessor to maintain, so far as practical, a situation where Lessees shall be the only ones producing

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on any property, interest, claim or facility under control of Lessor or in which Lessor shall hold an interest. Wording concerning claims actually under control of Lessor follows but wording concerning interests possessed by Lessor is impractical to be included in this Agreement and a statement of the intention of the parties hereto is included in lieu thereof for possible reference of a court of equity in the event a misunderstanding should arise.

On the same basis it is the intention of Lessees to proceed without reasonably avoidable delay in the prosecution of research, prospecting and production efforts on the premises and to continue the same with reasonable diligence during the term hereof, but such is not made a condition giving rise to forfeiture.

LEASING ARRANGEMENT

Lessor hereby leases to Lessees the premises, interests, facilities and claims described in paragraph "Facts" above for the following term and upon the following rentals and conditions:

1. TERM. This Lease shall be for a term to continue so long as minimums provided herein are met by Lessees.

2. RENTALS. Lessees shall pay Lessor on or before the fifteenth (15th) day of December, 1953, the sum of Five Hundred Dollars ($500.00) as monthly minimum royalties and rental in advance, and shall continue to make like payments in said amount on the 15th day of each and every successive month until June 15th, 1954, at which time

said payments shall be increased to One Thousand Dollars ($1,000.00) as monthly minimum royalties and rental in advance and shall continue in said sum on a monthly basis for each month thereafter during the term. It is understood that sums paid by Lessees to Lessor by way of production royalties shall be applied in satisfaction of said minimum requirements throughout the term of the Lease.

Lessees shall pay to Lessor by way of production royalties ten percent (10%) of the gross sale price at the site of mining operations of all minerals or other substances of value yielded by the ores mined hereunder. Said payments shall be made on the fifteenth (15th) day of each successive calendar month and shall be based upon the sale of such minerals and/or substances of value during the calendar month preceding said payment. Records of Lessees pertaining to the sale of said minerals and/or substances of value shall be available for inspection of Lessor at reasonable times.

3. GENERAL CONDITIONS. Lessor warrants title and control in compliance with mining laws of the premises and the rights, properties, claims and interests hereby leased, and guarantees to Lessees exclusive possession thereof for the purposes of this Lease except for such joint occupation as shall be appropriate between Lessor and Lessees.

Lessees agree to so conduct their operations as to bring about a minimum of inconvenience to Lessor in the necessary accomplishments of the objectives of this Lease.

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Commencing ninety (90) days after date active prospecting, mining and/or production operations shall be maintained upon the premises except so far as the same may be to any extent impractical or impossible, or excused by the Lessor.

Lessor agrees upon request to lend his advisory assistance and knowledge acquired through experience with the properties involved for the accomplishment of objectives of Lessees.

Lease of the premises, claims and facilities contemplated herein shall include the use of all appurtenances thereof which are the property of Lessor, with the understanding however that Lessees shall be responsible for damage thereto brought about through their usage thereof, except as hereinafter set forth.

Processes, equipment and other data concerning the operations of Lessees are to be regarded as secret and information pertaining thereto which shall come to the hands of Lessor shall be retained as confidential by Lessor.

Any condition which shall amount to an impossibility of performance by Lessees of the obligations to be performed hereunder, which impossibilities shall arise because of the destruction or inaccessibility for any reason of the subject matter of this Lease, shall excuse any performance by Lessees for such period as such inaccessibility or other impossibility shall continue.

Lessees shall pay before delinquency any and all taxes assessed upon equipment or property of Lessees and Lessor shall pay before delinquency any and all taxes

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assessed upon property of the Lessor.

Lessor assumes the risk of fire and other casualty loss on the buildings and facilities leased and Lessees assume the risk of fire and other casualty loss on their property.

Lessees shall assume responsibility for routine maintenance of the buildings leased but shall not be responsible for those items of major nature.

4. NOTICES. Notices may be delivered to Lessor by depositing the same in the registered United States mail addressed to Lessor at Coaldale via Tonopah, Nevada.

Notices may be delivered to Lessees by depositing same in the registered United States mail addressed to Lessees care of John H. Nutt, 1518 Paloma Avenue, Los Angeles 21, California.

5. TERMINATION. Lessees may terminate this Lease in its entirety at any time by delivering thirty (30) days notice of their election so to do to Lessor and shall in such event during the ensuing thirty (30) days remove from the leased premises such of their properties as they desire to remove, and shall thereupon deliver to Lessor an instrument acknowledging such cessation of Lessees' rights in said property.

Sums due to and from the parties shall be prorated as of the date of such termination.

Lessor may, in the event of Lessees' failure to make payment of minimum rentals, or in the event of Lessees' actual abandonment of operations, declare

upon thirty (30) days written notice his election to terminate this Lease at such date named in said notice, which shall be not less than thirty (30) days from the date thereof, and in the event that Lessees shall not have remedied said deficiency in said period before such indicated date of termination, this Lease shall thereupon terminate in all respects and Lessees shall be under obligation to vacate said premises. Said notice shall specify the acts constituting grounds for termination and must be shown to have been actually received by at least one of Lessees.

6. TERMS OF TENANCY OF BUILDINGS AND EQUIPMENT.

Lessees shall pay to Lessor on or before the fifteenth (15th) day of each calendar month, after taking occupancy thereof, as rental in advance, thirty dollars ($30.00) per month for the existing mill building and appurtenances and twenty dollars ($20.00) per month for the cabins and appurtenances other than Lessor's cabin, with the understanding that such tenancies shall continue at Lessees' option so long as Lessees shall not be in default on either their rental payments so set forth or the other performances due by them under the terms of this Lease. It is expressly understood, however, that the cabin, kitchen and other facilities immediately appurtenant thereto, now occupied by Lessor, shall remain under his exclusive control and in his exclusive possession.

It is further understood that certain property not the property of Lessor is stored in the mill building and that no right of usage of said property is granted by

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Lessor to Lessees. Lessees however shall have the right to rearrange the storage thereof as convenient to facilitate their operations, but shall assume no responsibility for the safety of said property.

Lessees shall be under duty to maintain said buildings in such manner as to return the same to Lessor at the termination of this Lease in the condition in which they now are, reasonable wear and tear and casualty damage as above mentioned excepted.

This instrument is made and executed in quadruplicate and shall be binding upon and inure to the benefit of the parties hereto, their heirs, assigns, transferees and successors in interest.

(s) Leonard Becker-Jurgen
Lessor

Approved as to form.

(s) Gail J. Burck
His Attorney

LESSEES:
ROLAND W. SNOW
JOHN H. NUTT
JOHN M. HARPER
TED CARPENTIER

By (s) Roland W. Snow

By (s) John H. Nutt

STATE OF CALIFORNIA, }
} ss.
County of Los Angeles. }

On this 2nd day of June, A.D., 1953, before me, JOHN H. NUTT, a Notary Public in and for said County and State, personally appeared LEONARD BECKER-JURGEN, known to me to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same.

WITNESS my hand and official seal.

(s) John H. Nutt
NOTARY PUBLIC in and for the County of Los Angeles, State of California.
(SEAL)

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Bulletin 36 C 4

An Investigation as to the Presence of Commercial Quantities of Mercury and Gold in the Dry Lakes of Nevada

By

JAY A. CARPENTER

PRICE 25 CENTS

PUBLICATION OF THE NEVADA STATE BUREAU OF MINES
AND THE MACKAY SCHOOL OF MINES
JAY A. CARPENTER, DIRECTOR

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AN INVESTIGATION AS TO THE PRESENCE OF COMMERCIAL QUANTITIES OF MERCURY AND GOLD IN THE DRY LAKES OF NEVADA

INTRODUCTION

In the last two decades there have been many public announcements of the discovery of commercial quantities of mercury and gold in the dry lakes of Nevada and the neighboring States.

Most of these lakes are barren alkali flats, sinks, or basins, dust or crust covered when dry and a slippery mud when wet. The surface, and for considerable depth, is for the most part a clayey silt carried down and deposited here from the erosion over countless centuries of the surrounding rocky terrain. These clays, sands, and muds contain soluble salts of sodium, and to a much less degree those of potassium, mainly as the chlorides, sulphates, and borates.

These dry lakes are for the most part on the public domain, and due to these soluble salts are subject to lease from the United States Government upon very easy terms as to work or payments required to hold the lease. In many cases the land is "railroad land" held under a purchase contract obtained after examination by the railroad's land department.

FANTASTIC CLAIMS OF GREAT POTENTIAL WEALTH

In the last decade these reputed valuable discoveries of mercury and gold have been reported in California at China Lake, Bristol Lake, Edom or Palm Springs Lake, Amboy Flats, Lavic Lake and Owens Lake, and in Nevada at Silver Lake, Rawhide Lake, Mud Lake, Migual Marsh, Leete Marsh, Teel's Marsh, and Columbus Marsh. Judging from these reported wide occurrences, the deposition of mercury and gold in dry lakes is not exceptional but rather quite general.

Of these occurrences, the greatest claims of potential wealth have been made for Columbus Marsh, 40 miles westerly from Tonopah, Nevada.

The following quotations are from letters written by enthusiastic parties who in turn quote men presumably ranking high in the mining profession:

"The Columbus Marsh is one of the greatest discoveries of minerals ever found. We checker-boarded 10 acres and cored 13 holes 20 feet deep and took 79 samples weighing 3,000 pounds, and they averaged $21.75 per ton. The highest test in gold was $125 per ton, and the lowest $6 per ton, and the mercury 8.0% for the highest and $24 per ton for the lowest. The assays are based on mercury at $1.25 per pound and gold at $35 an ounce."

"The mercury content was determined by retorting in sealed steel retorts mixing the dry pulp with iron filings and lime," and the gold "was recovered by amalgamation then driving the mercury off by heated nitric acid and weighing the button left."

The "accuracy and modest results obtained" of the above sampling at Columbus Marsh are supported by the reputed statements of at least three "prominent metallurgists and chemists."

The accompanying map shows several assays from each hole, with an indicated tonnage to a 20-foot depth over the 10 acres of 400,000 tons of an average value of $21.75.

Quoting again. "A well 255 feet showed values all the way down better than the 20 feet at the top so we do not know where the bottom is." "In addition to the above sampling more than 300 samples were taken at random on the various parts of the lake. The reports are that the samples taken (on the 10-acre tract) are the lowest general average heretofore taken." "Columbus Marsh is an area of about 30 square miles" and only "640 acres of it will produce 160 million tons averaging over $20 per ton."

Any mining engineer using his slide rule and acquainted with the phenomenal record of the Big Bonanza on the Comstock will be simply astounded by the above estimates of mineral wealth.

However, to quote: "The average value of $24 per ton was for gold and mercury alone, whereas, the greatest values contained in this material is platinum, which element, however, has so far escaped them all on account of its peculiar atomic structure." "By the use in the future of physio-electro chemistry in the sub-atomic physics of Columbus Marsh greater value in other precious metals will be obtained." Again it is stated, to quote, "much of the material from Columbus Marsh has been tested with the spectroscope and with blowpipe, etc. determining the presence of platinum. The materials were also subjected to high frequency effect and ionization, followed by polarization in magnetic fields; then separated by their values in the bombarding tube which visualized the results." The "results" were apparently a guarded secret.

Another consulting engineer states: "I have proven the existence of unbelievable values in the dry lakes of Nevada. The predominant commercial metals in evidence are mercury, gold, silver, and metals of the platinum group. The quantity of these metals proven to be present by my small test unit is startling and almost unbelievable to myself. The composite samples of material from surface to 20 feet in depth taken by myself on Columbus Marsh show an average mercury content of approximately 14 pounds per ton, with gold and silver values of approximately $2.90 per ton; samples taken from 220 to 325 feet in depth showed recoveries in excess of 100 pounds of mercury and $12 in gold and silver."

"Leete Marsh near Fernley proved values from surface to 20 feet averaging 16 pounds of mercury and $1.75 in gold throughout the northern or dry section of the lake. On Rawhide dry lake samples, reported to have been taken over an area of 8,000 acres and to a depth of 15 feet, we obtained an average recovery of 13 pounds of mercury per ton and $1.18 in gold values."

A mining man writes "I received a report upon a 17 pound sample of mud from the Migual Marsh in the Goodsprings District showing 5½ pounds mercury, $2.65 in gold, and $1.23 in platinum. The sample was taken from a bore hole by a six-inch auger and at a depth of 13 to 20 feet."

One "mining engineer" states that care must be taken in sampling for the mercury content. He states, quote, "I sampled one section of Columbus Dry Lakes. When these samples were run, I was scared to death almost for they showed mercury in percentages, and gold running into hundreds of dollars per yard. This was when it was WET and FRESH, and after we put it in the SUN TO DRY it seemed to lose its great values very rapidly, and the only conclusion I was able to come to was that the mercury salts were evaporated by the sun's rays."

Various and contradictory statements are made as to the form in which the gold and mercury occur in the lake muds.

In one case, both are considered to be in the metallic state easily recovered by amalgamation and retorting and easily determined by standard methods.

However, other statements read as follows:

"Ordinary quicksilver is recovered by retorting. It is impossible for me to determine what inhibiting element present in lake material prevents this normal reaction."

"The lakes which have been found to contain the most attractive values are those composed of volcanic ash or dust, in which the values are distributed in the shape of extremenly fine metallic salts. After precipitating, these salts during subsequent ages have been acted upon by complex saline solutions. The resultant metallic salts are of an extremely complex nature, making them irresponsive to the usual routine methods of analysis, and the majority of assayers will not deviate from their routine which has proven highly efficient when applied to values contained in igneous and sedimentary ores."

"I have termed the marsh material a chemical mud as the majority of the metallic values occur as chemical compounds."

"In commercial operation, gold and silver have been recovered averaging $3 a ton where repeated fire assays on this material showed twenty-three cents a ton. Properly conducted cyanide tests with unheard-of strengths of solution showed $3.15 a ton."

"The reason for these strange results is that the major quantity of the gold content is from one to seven-thousandths of a millimeter in diameter and incased in a black hydro-carbon humus of two to three times that diameter." "The specific gravity of the gold values has been found to be approximately 2.6, the normal weight of chalk, instead of 19.0, the normal weight of gold. This naturally precludes economic recovery by any of the old specific gravity methods."

PROPOSED METHODS OF METALLURGICAL TREATMENT

Many methods have been proposed and plants built for the recovery of the "valuable metals" from the dry lake muds. In practically every case there is required a special patented mechanical unit in order to cope with this extraordinary ore.

Some of the simpler units are vibrating concentrating tables, including amalgamating devices.

One device is described "as a simple yet effective dynamic impact machine which scrubs the gold, mercury, platinum and silver of a filament of carbon which adheres to the metal, thus allowing it (the metals) to come down in amalgamation; then it (the pulp) is run

through a syphon under 50 pounds pressure of water taking off through a trap the precipitates which are then refined for mercury and run through a retort for the balance of the metals, a very simple but highly effective procedure."

Other methods are based on electrolytic action. One such method is described as follows:

"After the material is completely disintegrated by agitation and screened, it is passed through the unit in a sodium chloride solution acting as the electrolyte.

"All dry lake waters, or waters under the lake beds which are available for operating purposes, have up-to-date shown sufficient sodium salts to meet all requirements without any further additions.

"The recovery unit or table is provided with a continuous flowing film of mercury over a silvered copper floor of the table, which floor represents the cathode for the electrolytic action. Graphite bars placed horizontally at regular intervals, with their lower surfaces submerged in the flowing stream of pulp are used as anodes.

"A direct current of the proper voltage is supplied to the table to bring about the desired electrolytic reactions.

"The material carried by the sodium electrolyte solution passes through the table between the anodes and the flowing mercury cathode. During this contact the metallic salts contained in the pulp are electrolytically decomposed to their metallic and component parts, the metallic particles being driven or 'electro-plated' into the flowing film of mercury from which they are recovered by practically orthodox methods.

"The foregoing is a brief outline of some of the salient features involved in our process (which is fully covered by patent application); however, the many details and necessary adjuncts in connection with its successful operation are not described."

ESTIMATES MADE OF THE COST OF PLANT AND PROCESSING

One advocate states: "The entire cost of handling materials and the recovery of their contained values in a plant treating 500 tons of raw material per day should not exceed 30 cents per ton, and the capital investment required is comparatively very small, as the material is found in such condition that it does not require costly mechanical units to prepare it for treatment."

Based on the expected high recovery for this exceptionally low cost, the net operating profits would be most intriguing. In some cases the machines or processes are offered for sale or for use under a royalty basis. This appears generous considering the ease of leasing dry lake areas.

In many cases the use of the patented machine or process and a lease on an acreage go together in one financial venture as, to quote, "we will enter into a deal with you and your associates by which we will give you a sublease on ..... acres of our land in the Columbus Salt Marsh, near Coaldale, Nevada; said land shall be as near the center of the property controlled by us as possible and shall conform

to all the terms imposed in our master lease with the United States Government, with no special terms and conditions imposed on us. The royalty shall be the same as in the master lease.

"You are to furnish the sum of $15,000 to be used for the erection and completion of a 150-yard plant. The capital shall first receive their money back out of 80 percent which will represent 100 percent of our gross, the other 20 percent being royalty to the landowners. The capital shall then receive 49 percent and we 51 percent of a corporation to be formed."

TECHNICAL INVESTIGATIONS AS TO THE PRESENCE OF MERCURY AND GOLD IN THE DRY LAKES

The claims made of a high content of mercury and gold in the dry lakes as set forth in the quotations above, are all made by those having leases on acreage, or having patented devices for the metallurgical treatment of the mud bottoms. It is but natural that self-interest causes exaggeration of statements. Such statements in turn naturally cause even conservative investors to investigate. The results of such investigations are as follows:

A reliable assayer of southern California states: "I have made a number of assays on the Columbus Marsh muds as well as hundreds of assays on the dried lakes in this part of the country, and I have never been able to find any of the values claimed to exist in them."

A reliable engineer writes: "One assayer in Los Angeles who assayed about 600 samples from Columbus Marsh advised me that these samples showed no traces of gold nor platinum by the standard methods of assay."

It is true that samples brought in to investor's offices by parties interested in leased acreage, have panned metallic mercury and assayed for gold, but new samples taken by the investor's engineers have failed to do so.

A reliable mining man of Tonopah states that four of his acquaintances took at different times their own samples from Columbus Marsh and they were unable by any known process to detect either gold or quicksilver in their samples.

Director Walter S. Palmer of the Nevada State Analytical Mining Laboratory states: "In 1937, we were brought samples of the desert basins in this State, including Columbus Marsh, to be assayed for gold and quicksilver and we were unable to get either metal."

All of the above checks were made by the accepted methods of assaying. However, the claim is often made that these standard methods fail to recover the metals that special new methods do. Professor Palmer states: "A method of fire assaying the lake muds for gold was described to me which was claimed would recover from four to six times as much gold as the ordinary fire assay. Using a sample which was presumed to give gold by the ordinary method of assaying, I followed the directions carefully as given me but the results were negative in every assay."

The most difficult cases to check are those in which the presumed mercury and gold content of the "chemical mud" can only be recovered

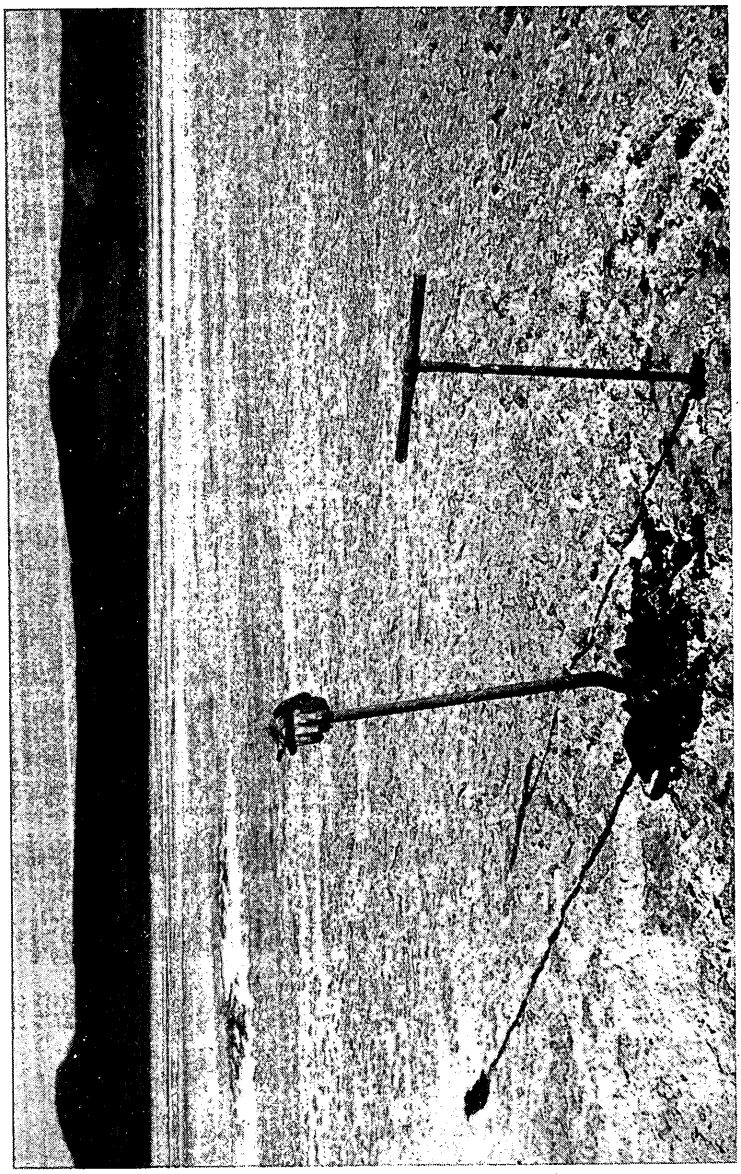

Figure 1. Leete Salt Flat.

by the special process and mechanical device of the patentee or designer, and who by manipulating his own tests can produce an apparent recovery of both metals.

An excellent study of such a process was made by Otis A. Kittle, a mature senior student of the Mackay School of Mines, formerly an attorney at law. Extracts from his thesis "The Dry Lake Mercury Fable" read as follows:

"The intermittent and unsubstantiated reports of mercury and precious metal-bearing dry-lake materials have been cropping up for the last six or seven years. The fact that these ever-recurring reports of fabulously rich concentrations have drawn nothing but incredulous denials from the majority of metallurgical and mining engineers has not served to disprove the contentions of a large clan of psuedo-metallurgists. In some cases even the names of eminently respectable members of the profession have been innocently mentioned in connection with dry lake mineral promotion schemes and contentions as to the likelihood of the values to be found.

"The fact that several such operations are currently fooling their sponsors has indicated the necessity for further experimentation to quantitatively and qualitatively affirm or disprove the contentions of these promoters, both as to the presence of precious metals in dry lake accumulations and as to their mystifying method of recovery. In investigating these recovery processes it is interesting to note that in practically every case the values claimed are supposed to be in such a complex and heretofore unisolated form that they are undeterminable by standard pyrometallurgical practice.

"The United States Bureau of Mines is on record with the following statement regarding these unassayable values:

" 'The Bureau of Mines has in past years investigated a great number of processes where the inventor has claimed to recover precious metal values which were not shown by the standard fire assay or recoverable by the accepted methods of ore treatment. We have never found that the claims for such processes could be substantiated in any degree; * * * '

"Articles appearing in current publications also indicate that a properly conducted fire assay will give as much gold as any other method.

"To add further evidence to the data already in print concerning the dry lake gold and mercury schemes, it was decided to perform a series of experiments based on the methods used by those making these fabulous claims, and on the basis of newly developed equipment in the field of metallurgical determination of minute quantities of elements.

MATERIAL

"The dry lake material tested consisted of six samples, five of which were taken with and under the supervision of Professor Walter S. Palmer, the writer, and a third person as witness from two auger-drilled test holes, one of which was twelve feet deep and the other seventeen feet deep. Both of these holes were drilled in the dry lake on which the old Leete Salt Works was located, situated about twelve miles northeast of Fernley, Nevada, on U. S. Highway 40. (See Figure 1.) The secret process metallurgists claimed that the sites of

both holes had been drilled and tested by their special method with substantial values shown in gold, silver, mercury, platinum, and associated rare metals.

"The sixth sample was taken from the bottom of a sixteen foot pit contiguous to a small recovery plant on Columbus Salt Marsh, situated about a mile west of Coaldale, Nevada. This small pilot installation was designed on the special principles of the new secret process. Supposedly, Columbus Salt Marsh contained around $1,000,000 per cubic acre in mercury, gold and other precious metals.

PROCEDURE

"The first test was made on the Columbus Marsh material. With the idea of following exactly the methods and procedure recommended, this test was made on the same apparatus upon which many claims of rich recoveries had been made. The owners of this device agreed to allow the writer and his associate facilities to make a complete test.

"Their apparatus consisted of a ten-gallon wooden receiving barrel set on end with a bladed propeller mixing device, which served to condition the pulp by mixing it thoroughly with water, salt, and vinegar. After an hour's conditioning, the mixture was released through a flow control cock into a long, narrow, wooden, U-shaped trough whose run-off end was sufficiently lower than the receiving end to allow free flow of the pulp. The trough bottom was lined with copper and designed as a succession of shallow steps slightly dipping in the direction of flow. A two-inch deep recess in the trough bottom six inches from the receiving end served as a mercury receiver. As the pulp flowed over this pocket, a small amount of mercury was constantly forced over the lip and down the trough. A second recess midway between the two ends of the trough served as an auxiliary mercury trap, while a third recess close to the run-off end of the trough served as the final trap from which the mercury was periodically removed by hand and replaced in the receiving trap. Four adjustable rubber weirs were placed at suitable intervals along the trough to retard the free flow of pulp and insure a maximum contact of pulp with the mercury covered copper plate which covered the entire trough bottom. Ten carbon anodes, connected in series, were arranged along the trough in such a fashion as to dip well into the slowly flowing pulp but without touching the amalgamating plate. The copper plate with its pouches full of mercury served as the cathode to complete a circuit fed by two six-volt storage batteries. The accompanying sketch will serve to clarify the foregoing description. (See Figure 2.)

"Before the test was started the barrel was thoroughly scoured, adhering mercury was scraped from the copper plate and mercury pockets, and a tailings receptacle was carefully cleaned. Ten pounds moist of the Columbus Marsh material was now placed in the barrel with five gallons of water, two pounds of salt, and one-half pint of vinegar. After agitation for forty minutes, the pulp was poured through a twenty mesh screen to eliminate mud lumps and gravel and replaced in the barrel. The mercury, weight 6 pounds, 2.5 ounces, was placed in the receiving trap, the amount in excess of the trap's capacity being allowed to overflow down the plate to the auxiliary and final mercury traps.

"Due to the type of construction of the trough unit, it was impossible to weigh the copper plate. Because of this no accurate check on increase of weight of the cathode could be made during the ensuing test. However, realizing the importance of this unknown factor without which the test remained totally inconclusive, the experiment began.

"To insure a fair trial the pulp was electrolyzed twice, consuming a period of seventy-five minutes. During this time the amperage ranged between ten and seventeen, varying approximately as the pulp electrolyte level was raised and lowered in the trough. When the last of the pulp was discharged the mercury was carefully removed from the traps and the copper bottom plate. The mercury now weighed 6

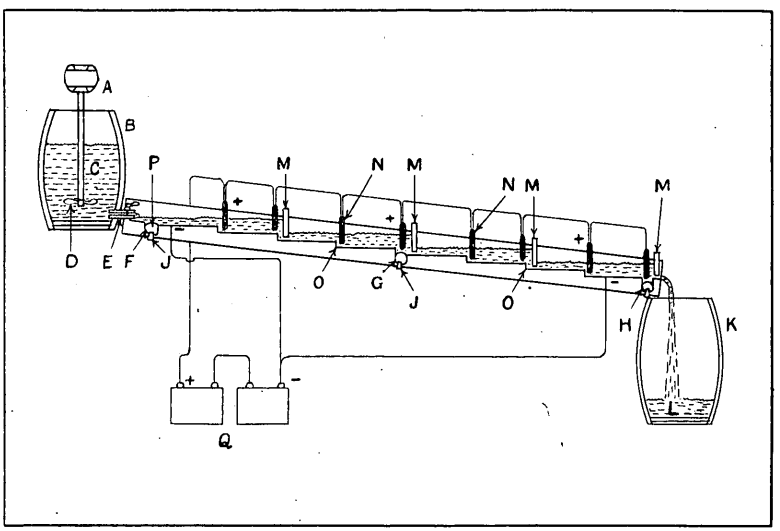

Figure 2. Longitudinal Section of Electrolytic Recovery Device.

A. Conditioning motor.
B. Received barrel.
C. Mixed pulp.
D. Conditioning propeller.
E. Flow control cock.
F. Mercury receiver pocket.
G. Auxiliary mercury trap.
H. Final trap.
J. Mercury pocket plugs.
K. Tailings barrel.
L. Discharge product.
M. Weirs.
N. Carbon anodes.
O. Copper plated steps.
P. Mercury.
Q. Storage batteries.

pounds, 2.81 ounces, indicating an increase of 0.31 ounces. During the test run and immediately thereafter, while the mercury was being weighed, there was ample visible evidence of the presence of considerable sodium mercury amalgam. In spite of the seemingly innocent use of vinegar in the electrolyte, the constant use of tumeric paper during the test indicated the presence of a strong base in the pulp. The fact that the promoter-operators complained of suffering many burns during the handling of the mercury gave some impetus to our suspicions that if any real increase in weight occurred it was probably due to metallic sodium forming a mercury amalgam.

"It is to be noted here that the increased weight of mercury of .31

oz., or practically three-tenths of one percent of the original amount used, indicated a recovery of 0.31 oz. of mercury from 10 pounds of the lake mud, or $3\frac{13}{16}$ pounds per ton. However, a method of determining a small amount of mercury by the use of a great quantity of it in the determination is subject to serious errors due to variation in the original weight of the mercury from mechanical losses or from included impurities.

"A sample of this same Columbus Marsh material was now tested by Professor Palmer to determine the presence of even a trace of mercury. When placed before the fluorescent screen and subjected to the argon-mercury quartz lamp, no evidence of even minute quantities of mercury was present.

"A sample of this same material was assayed for gold and silver with completely negative results.

"A working laboratory replica of the apparatus, as described and sketched, was now constructed by Professor Palmer and the writer with but one change. The trough was formed and shaped from a single sheet of copper which could be weighed separately both before and after the experiment was performd.

"A 10-pound composite sample, made up from the samples taken from the Leete Salt Marsh, was now run through the device in strict accordance with the procedure just described. The copper trough and the mercury were weighed before and after the test. In the half-hour period of the test, the 1,000 gram initial charge of mercury and the trough had gained one and one-half grams in weight, or an indicated $6\frac{1}{4}$ pounds per ton of ore. The instant the current was shut off decomposition of sodium made the mercury very active and the adhering water strongly basic. After setting three hours, the mercury was covered with a perceptible white coating of crystalline sodium hydroxide. After standing all night, and then being subjected to thirty minutes agitation in water, the gain in weight disappeared.

"A portion of this composite sample was assayed for gold and silver and subjected to the argon-mercury quartz lamp with negative results in both cases.

"It was now decided to test the device using a strong saline solution only. A 2,700-gram charge of mercury was used this time to determine how great an amount of sodium the mercury could absorb as amalgam under the given conditions. The amperage ranged from 18 to 20 throughout the three hours and five minutes of the test. At the end of two hours trough and mercury showed a gain in weight of 13 grams. At the end of the test trough and mercury showed a gain in weight of 16 grams. It is to be noted that at this point the amalgam was beginning to get mushy in texture. When the current was shut off the decomposition of the amalgam was so rapid that a current of 7 amperes was registered in a standard ammeter.

CONCLUSIONS

"Roscoe and Schorlemmer state that one part of sodium in 100 parts of mercury forms an amalgam having an oily consistency, but with 80 of mercury a pasty mass is obtained. According to this statement, the 6-pound charge of mercury in the first test could have absorbed as much as an ounce of sodium. Since the results of each

of the several experiments performed showed that the increase in weight was due to the formation of sodium amalgam, a simple example of standard electrolytic practice, it is to be concluded that the promoters' process is neither novel nor revolutionary; that the gold and other precious metal values claimed are not in the detritus of the many dry lakes and salt marshes throughout the country. Since, in every case, two A. T. duplicate assays showed negative results for gold, and the very sensitive argon-mercury lamp failed to show even a trace of mercury, one can only conclude that these metals are no more concentrated in dry lake detritus than they were in the rocks from which the detritus was originally eroded.

"The writer wishes to express his gratitude to Professor Walter S. Palmer, Director State Analytical Mining Laboratory, for his kind and intelligent supervision and direction of the experiments described."

The above description by Mr. Kittle indicates clearly how the inventor of a process or a mechanical device could through lack of proper technical knowledge deceive himself and become such an ardent crusader that avaricious investors become so enthused that they fail to seek good technical advice until their lost investment in subleases and machines has brought them to a sad and often pitiable realization of their folly.

Mr. Kittle did not attempt to check the reputed recovery of gold by this method. It would have entailed the double retorting of a large amount of mercury for the remote possibility of the recovery of a minute quantity of gold with the whole test as run subject inheritably to many errors.

Professor Walter S. Palmer with thirty continuous years experience in the detection and determination of minerals and metals has presented his conclusions as to the methods used for assaying for gold and the possible presence of gold in the dry lake bottoms in a letter to the Nevada State Bureau of Mines as follows:

> I have received your request for an outline of some of the data which I have collected and the tests which we have run in the State Analytical Laboratory bearing on the subject of the accuracy of the fire assay for gold and the occurrence of gold, silver, mercury, platinum, etc., in the detritus collected in the various dry lakes of this State.
>
> It was in 1913 that I first had my attention called to the fact that some people claim to have found methods of extracting gold from ores that could not be detected by the ordinary fire assay, and that with ores that showed gold on fire assay they could extract as much as three times as much by their secret process. I was informed that some years ago a man had a mill in the Grass Valley district of California and was buying ores from miners and paying them three times as much as their ores would show by ordinary assay. I was further informed that a little later officials were looking for this man for fraudulent promotion of an enterprise and sale of stock in the eastern part of the country.
>
> Since I was teaching fire assaying for gold and silver at that time I was naturally interested in the story and my attention has been called from time to time in recent years to

similar statements. Throughout the literature on the subject, however, one finds general agreement to one fact and that is, that the fire assay for gold is one of the most accurate of the determinations made on metals and this would not be so if there were substances containing an appreciable amount of gold and this gold could not be determined or detected by this method of assaying. The following statement taken from the book "The Sampling and Assay of the Precious Metals," by Ernest A. Smith, is typical of the remarks about the accuracy of the fire assay for gold: "An impression prevails that the results obtained by furnace methods are less accurate and reliable than those obtained by other methods. Although this is true of some of the dry methods that are now obsolete, the accuracy with which small amounts of gold and silver can be determined by the fire-assay probably exceeds that of any known method of analysis for any other metal."

About six years ago two of our alumni called attention to the fact that certain parties were claiming there was gold in the detritus of certain dry lakes of Southern California in a form that could not be detected by the ordinary fire assay, but could be extracted by certain parties with special machines which they had invented. I was interested in the claim about being unable to secure gold on fire assay and I secured a sample to test. I was unable to secure gold in fire assay. I asked one of these men what results they secured in their investigation and he said that they took in all about fifty samples and had them assayed by a reliable assayer in Los Angeles and the assayer found gold in just one sample of the lot and this sample had been purposely salted with gold before giving the samples to the assayer as a check to see whether the assayer would find it. He did. Last week I asked one of these men for further information and he informed me that up to the present time he has never been able to learn that any one operating such machines has ever produced and sold an ounce of gold produced from dry lake detritus.

In the Arizona Mining Journal of November 15, 1936, there is a very interesting article on the subject "Gold That Cannot Be Assayed by Fire." Considerable data is given to prove that a properly conducted fire assay will give as much gold as any other method. There is also considerable information given in the article to disprove the claim that the dry lakes of Southern California contain gold in a form that cannot be detected by fire assay.

Knowing these facts, I was interested when I heard that plants were being erected on Columbus Marsh in this State, where promoters expected to recover mercury, gold, silver and the platinum group of metals.

It is possible that certain areas around Columbus Marsh, and other marshes, might be found where tailing had accumulated from former milling operations that would show appreciable amounts of mercury and gold on sampling and

assaying. There are such areas for example around Washoe Lake, in Washoe Valley, south of Reno. They are due to the accumulation of tailing from mills that treated ores from the Comstock by amalgamation. One very large mill was located near the present Bowers Mansion, but there is now very little evidence that there was such a mill there at one time. All of the metals in this material can be easily detected and determined by the standard methods of analysis.

The dry lake material is detritus derived from the surrounding hills, weathered from the rocks exposed in those hills, to which in some instances there has been added tailing from mills in the vicinity, and is like tailing produced on milling ores. It will carry those substances found in the original rocks and ores milled. If standard methods of analysis, properly carried out, will not show the presence of gold, silver, mercury, platinum, etc. it is because these metals are either not present or they are in such small amounts as to be of no commercial importance and be comparable to the amount of gold in sea water or in ordinary country rock. It is a well established fact that both sea water and ordinary country rock do contain measurable amounts of gold and this gold can be detected and determined by the standard methods of analysis. It is simply a case of using more than the regular amount of material at the start of the analysis in order to have a weighable amount of the metal at the end of the determination. By using sufficient ore, for example, the platinum and palladium in the Ely, Nevada ores has been determined, although it is in very small amounts.

It has been claimed by some that the only way to secure gold from this dry lake material is to use very large amounts of cyanide and a long time of treatment. It is a well established and easily demonstrated fact that gold goes into solution in cyanide solutions very readily and quite quickly when very fine. It must be very fine in dry lake detritus because the material itself is very fine. Maximum rate of solubility of gold in cyanide solution is obtained with about 0.25 percent potassium cyanide (or its equivalent) in the solution and the rate of dissolution decreases with the stronger solutions to such an extent that with a fifteen percent cyanide solution one will find that the rate of dissolution is about equal to that of a solution containing only 0.01 percent cyanide. Therefore, the claim that large amounts of cyanide and long time of exposures are necessary are hardly supported by recorded facts. The figures quoted can be found in Metallurgy of Gold by T. K. Rose, an authority on the metallurgy of gold.

During the past two months two different parties have described their machines to me. One party said a machine which could treat six yards of material per hour would cost about $750. Since it is claimed that material carrying over sixty pounds of mercury per ton has been found it seems strange that one cannot find any record of any production by any of these machines. With sixty pound material and

present prices and claims of promoters, one should be able to produce about $8,500 worth of mercury per day, not counting anything for the gold, silver, platinum, iridium and other metals that some claim their machines will save. One party handling one make of machine said they did not wish to operate the machines but only to sell them. No doubt they have their reasons but from the figures quoted me I am sure the greater profit would be from operating the machines, at least until the market is so flooded with metal that there is no longer any demand for it. Costs of operation are quoted at less than a dollar per ton.

I believe there is no evidence or records that an ounce of gold or a pound of mercury has ever been extracted from the dry lake material and sold. There are published statements that no gold, silver, etc. has ever been produced and sold. It is my opinion that no commercial production will ever be made from any dry lake material, by any machine, unless that dry lake material will show the presence of gold, silver, mercury, platinum, etc. by properly conducted standard methods of analysis, to be in such amount as to warrant the application of methods for its recovery. No machine is going to recover sixty pounds of mercury per ton of material when standard assays show less than one pound per ton present, unless one has a machine that changes other elements into mercury and this is still impossible to accomplish and when it is perhaps we will not have to start with dry lake material but use the dirt in our back yards.

THE PROBABILITY OF COMMERCIAL QUANTITIES OF MERCURY AND GOLD IN THE DRY LAKES OF NEVADA

The usual explanation for the presumed presence of gold and mercury in the dry lakes is that of the erosion over ages of the surrounding terrain and the transportation of the weathered material containing the metals to the depressions below.

Clay is the most common alteration product of igneous rock, and is most easily transported long distances, accounting for its predominance in the lake bottoms.

In contrast gold almost always occurs in ores as metallic gold and mercury as cinnabar, both extremely resistent to change or to transportation from place of origin. This is an axiom among prospectors. By all probabilities then the gold, and the mercury as a sulphide, should be found on the slopes above the dry lakes, or at least as abundant along the old shore line as in the lake bottom.

It is hardly conceivable that the mountains of yesterday could have been so rich in gold and mercury ores compared with their barren remnants of today, as to fill the whole lake bottom with a high residue content. It is conceivable that the detritus of a restricted rich area may have reached a dry lake through one gulch. If so, conventional panning and assaying should determine this conclusively.

The most likely explanation for the proven presence of gold and mercury in the lake bottoms of Nevada is that in the early days of mining in Nevada, gold and silver ores were hauled to a source of

milling water which was most easily obtained from wells near the edge of the dry lakes.

In the "Mineral Resources of the States and Territories West of the Rocky Mountains" by Rossiter Raymond, published in 1869, there is on page 115 the following statement: "Until recently Columbus district has been without reduction works, but during the past year a small mill has been erected to work ores of the neighborhood. Water is found by sinking a few feet in the alkaline flat."

Thompson and West in their "History of Nevada," 1881, on pages 419 and 420 make similar mention of mills and water at Columbus Marsh.

In the Biennial Report of State Mineralogist, State of Nevada, 1875–1876 on page 35, the statement is made that ores from the "General Thomas" mine, the "Mount Deablo Mine," and the "Black Metallic Mine" are treated at Columbus Marsh mills.

As the ores of these mines had a high content of silver, the mills probably used the pan amalgamation process with the introduction and loss of much metallic mercury.

Below such mills at Virginia City, the Indians of those old days panned mercury from along tailing launders, and blanket plants recovered mercury and amalgam in the concentrate. Today, plants cyaniding the old tailings of these mills recover much mercury in retorting the zinc precipitate. Mud shoveled from the bottom of the Carson River below the site of old mills often gives surprising pannings of mercury and amalgam in addition to copper rivets and cut nails.

It is therefore conceivable that lake muds in a restricted area below old mills, no longer recognizable as such, might give assays for gold and mercury from a mixture of old tailing and lake mud. Such a discovery should not be expanded by the imagination from a mole hill into a mountain, or from a few borings to a wide lake bottom of limitless wealth.

CONCLUSIONS

The author of this bulletin as the Director of the State Bureau of Mines has been forced to give much time and study to this subject due to the requests, not only for accurate information, but even for investigation of processes and approval of recovery apparatus.

The aid of the Director of the State Analytical Laboratory and others in this investigation is gratefully acknowledged and appreciated.

In searching for definite published information, all that could be found was references from time to time over the years to discoveries of values in the dry lakes and to plants being erected. No scientific discussions were to be found, or descriptive articles on the results obtained from operating plants.

Much capital has been wasted in these ventures that should have gone into legitimate mining investments. Much of this was due to ignorance and cupidity, but fraudulent practice was often the underlying cause.

Fear of controversy and trouble should not stand in the way of the publication of an honest investigation of a controversial subject. The facts should be made available to the public.

In fairness to all, the claims of these proponents of great metallic

wealth available in the dry lakes have been set forth fully in this bulletin. To the trained mining and metallurgical engineer they appear impractical and visionary. To a tempted investor these claims or like claims should be like a red light at a crossing, as the promised results and wealth have not been produced. He should *stop* dreaming of quick riches, *look* for unbiased competent engineering advice, and *listen* to that advice.

Every engineer or metallurgist connected with these questionable ventures usually furnishes a sketch of his career connecting him prominently and successfully in the past with well-known companies and successful ventures; but this, even if proven, is no proof of present competency or reliability. The State and Federal governments employ experienced open-minded mining engineers to give advice to those who seek it and to recommend reliable competent experts if a special investigation is deemed necessary. Such excellent service has proven invaluable to many a citizen. This bulletin is therefore dedicated to be of service to public officials, advising engineers, and the investing public who along with the author have long felt the need of published data on this controversial subject.

UNIVERSITY OF NEVADA BULLETIN
GEOLOGY AND MINING SERIES

PUBLICATIONS OF THE NEVADA STATE BUREAU OF MINES AND THE MACKAY SCHOOL OF MINES

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(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved
Budget Bureau No. 42-R1035.2.

Defense Minerals Administration
RECEIVED
DEC 1 8 1951

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. 3604
Metal or Mineral mercury
Date Received
Estimated Cost Not Given
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Research Group, a co-partnership, 1518 Paloma Street, Los Angeles 21, California, composed of Roland W. Snow, John H. Harper, Jr., John H. Nutt and Ted Carpentier.
See attached papers.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached papers.

(*b*) State any mine name by which the property is known.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached papers.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore
See attached papers.

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(*c*) The work will start within ..... days and be completed within ..... months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). See attached papers.

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? See attached papers.

(*b*) How do you propose to furnish your share of the costs?

[x] Money [x] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated November 26, 1954

RESEARCH GROUP
(Applicant)

By [signature]

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

IEP-103 UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED.	Docket No. _____ Metal or Mineral _____ Date Received _____ Estimated Cost _____ Participation (Government %) _____

1. Names of applicants are as follows:

Roland W. Snow, 5110 Seventh Avenue, Los Angeles 43, California.
John H. Harper, Jr., 909 - 31st Street, Newport Beach, California.
Ted Carpentier, 2142 Hermosa Avenue, Hermosa Beach, California.
John E. Hutt, 479 Beverwil Drive, Beverly Hills, California.
All doing business as a co-partnership designated "Research Group", with offices at 1516 Paloma Street, Los Angeles 21, California.

3. (a) The legal description of the land upon which we wish to explore, including all land that may be benefited by the exploration, in our possession or control is as follows:

Miracle of Values Claim: All of the Southeast quarter of Section 12, Range 35 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 452, Esmeralda County, Nevada.

Miracle of Values #1 Claim: All of the Northeast quarter of Section 12, Range 35 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 452, Esmeralda County, Nevada.

Miracle of Values #2 Claim: All of the Southeast quarter of Section 1, Range 35 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 452, Esmeralda County, Nevada.

Miracle of Values #3 Claim: All of the Northeast Quarter of Section 13, Range 35 E., Township 2 North, Esmeralda County, Nevada.

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Recorded in Book 1-H of Official Records, Page 456, Esmeralda County, Nevada.

Treasure Valley Claim: All of the S.E. Quarter of Section 17, Range 36 E., Township 2 North, M.D.B.&M., Esmeralda County, Nevada, Recorded in Book 1-H of Official Records, page 474, Esmeralda County, Nevada.

Treasure Valley #1 Claim: All of the Southeast Quarter of Section 18, Range 36 E., Township 2 North, M.D.B.&M., Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 474, Esmeralda County, Nevada.

Treasure Valley #2 Claim: All of the Southwest Quarter of Section 18, Range 36 E., Township 2 North, M.D.B.&M., Columbus Marsh, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 475, Esmeralda County, Nevada.

Treasure Valley #3 Claim: All of the Northeast Quarter of Section 19, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 475, Esmeralda County, Nevada.

Treasure Valley #4 Claim: All of the Northwest Quarter of Section 20, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 476, Esmeralda County, Nevada.

Treasure Valley #5 Claim: All of the Northeast Quarter of Section 20, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 476, Esmeralda County, Nevada.

Treasure Valley #6 Claim: All of the Southwest Quarter of Section 20, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 476, Esmeralda County, Nevada.

Treasure Valley #7 Claim: All of the Northwest Quarter of Section 19, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 477, Esmeralda County,

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Nevada.

Treasure Valley #1 Claim: All of the Southeast Quarter of Section 17, Range 36 E., Township 2 North, Esmeralda County, Nevada. Recorded in Book 1-H of Official Records, page 477, Esmeralda County, Nevada.

Claims in that certain area known as Columbus Marsh in Esmeralda County, near Coaldale, Nevada, described as:

The Northwest One-quarter (1/4) of Section 21, Range 36 East, Township 2 North;

The North One-half (1/2) and the Southwest One-quarter (1/4) of Section 16, Range 36 East, Township 2 North;

All of Section 9, Range 36 East, Township 2 North;

All of Section 4, Range 36 East, Township 2 North;

All of Section 33, Range 36 East, Township 3 North;

The South One-half (1/2) of Section 28, Range 36 East, Township 3 North;

The South one-half (1/2) of Section 29, Range 36 East, Township 3 North;

The Southeast One-quarter (1/4) of Section 30, Range 36 East, Township 3 North;

All of Section 32, Range 36 East, Township 3 North;

All of Section 31, Range 36 East, Township 3 North;

The East One-half (1/2) of Section 5, Range 36 East, Township 2 North;

The East One-half (1/2) of Section 8, Range 36 East, Township 2 North;

The Northeast One-quarter (1/4) of Section 17, Range 36 East, Township 2 North.

(b) The name of the mine under which a portion of this property is known is "Micro Metals Mine".

(c) Our interest in the land is that of claimholders under the mining laws of the United States and the State of Nevada as to the following claims: Miracle of Values, Miracle of Values #1, Miracle

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of Values #2, Miracle of Values #3, Treasure Valley, Treasure Valley #1, Treasure Valley #2, Treasure Valley #3, Treasure Valley #4, Treasure Valley #5, Treasure Valley #6, Treasure Valley #7 and Treasure Valley #8, and as Lessee as to claims in that certain area known as Columbus Marsh in Esmeralda County, near Coaldale, Nevada.

(d) We attach hereto a copy of the lease under which we are Lessee as to claims in Esmeralda County, near Coaldale, Nevada.

(e) Not applicable.

4. (a) All land and mine working are definitely accessible by automobile and are within 2 miles of a well-paved and traveled highway, to wit, Highway 6, Nevada. The property is improved with a mill building and several habitations in various conditions of repair. The mill building contains various elements of metallurgical equipment which have been used in experimental work. There is a well adjacent to the mill building which flows during a good portion of the year and is capable of producing unlimited water supply. Water, however, is salty and unfit for drinking purposes. Exploration operations have been conducted over the claims involved for a period of many years. Present applicants undertook to explore and evaluate the property in 1952. The well is subject to pumping by an existing gasoline-driven pump as well as by an electrically driven pump driven from the portable generating system. Interest of applicants in such operation is that of operator.

(b) Production to date has only been incidental to exploration and evaluation of the ore reserve involved and has been in limited quantity. There is, however, an accumulation of ore which is ready for evaluation located near the mill building.

(c) This is a desert alluvial deposit. Sampling with our method has indicated values from 1 to 30 pounds of mercury per ton. Sampling has been conducted at a random basis and indicates general mineralization of the entire area but we have had insufficient

funds and equipment with which to conduct a proper amount of exploration sampling to properly evaluate the production capabilities of the property.

(d) The property is accessible, as stated above, by automobile and truck, and the mill building is adjacent to resident structure. The mine is approximately 75 miles from Bishop, California, approximately 8 miles from Goldfield, Nevada, and approximately 45 miles from Tonopah, Nevada, and approximately 60 miles from Hawthorne, Nevada.

(e) There is sufficient mining manpower available from the Tonopah and Mina area. Materials and supplies are readily available from the various above named centers of population. Supplies are readily available from the above named centers of population. Certain equipment is now located on the claim and additional equipment is needed. There is ample water available for any type operation that might be conducted upon the property. There are 3 wells in open condition on the property. A water table from 3 feet to 16 feet is available in the wells with unlimited supply according to experience. Applicants have applied for mining water rights on 2 flowing springs in the immediate area which bear comparatively fresh water should it be needed in the operation. Power is available on the property with 7-1/2 portable kilo. regulated power supply and 15 kilo. regulated power supply.

5. (a) We wish to explore for mercury.

(b) As stated above, the mining claims are composed of alluvial deposits and we believe that there exist in these deposits certain areas richly impregnated with the mineral being sought, to wit, mercury, in the form of zones of enrichment. We propose to carry on bulk sampling operations to block out values and related areas on the above described claims.

(c) The work will start within 10 days and be completed within 9 months from the date of an exploration project contract. Work is being carried on in a small way at the present time, but

on an entirely inadequate basis for the bulk sampling program which we feel is necessary in order to properly evaluate the production possibilities of the property.

(d) The operating experience and background of the applicants is as follows:

Roland W. Snow: Born 1894. Successful retired contractor, builder and real estate developer, with a background of work for the Standard Oil Company in fire prevention and safety. He was 15 years with one of the largest real estate firms in the West. Married, owns own home and many other pieces of real property in Southern California and other places. Holder of various fraternal and Coast Guard Auxiliary offices. Manufacturing experience at one time.

John H. Harper, Jr. Born 1908. Record of successful mining exploration projects since 1927 in Northern Quebec, Northern Ontario, British Columbia, California and Cuba. Owner and operator of shipbuilding enterprises in Florida and California. At present part owner and operator of Lido Shipyards, Newport Beach, California. Present owner of certain mining interests in Quebec. Developer of one of the large gold mines of Quebec now producing 850 tons per day.

Ted Carpentier. Born 1920. Graduated from Northwestern University in 1943. Profession - Naval Architect and Industrial Designer. Presently involved in design of materials and implements under government contract, as Director of Industrial Design Engineering at Frank Meyer Engineering Company, 6442 Santa Monica Boulevard, Los Angeles, California. Record of complete design successfully constructed and operated in marine field and industrial field. Retained on contract basis by Hughes Aircraft Company in connection with experimental development of Hughes Flying Boat. Independent study of mineralogy and metallurgy as applied to the recovery of mercury.

John H. Hutt. Born 1908. Married, one child - daughter, 11 years old. A.B., Stanford University 1930, LL.B., University of Southern California 1935. Practicing Attorney, Member California Bar, Member A.S.S.E., Member of I.R.E. Thirty years background in transmission and reception of radio and electronic development work. President of JHH Engineering, Inc. (development work in electronics as well as construction and maintenance work in mechanical devices). Managing Partner of Hutt Brothers, a co-partnership engaged in the wholesale baking industry, Los Angeles. Independent study of mineralogy and metallurgy as applied to the recovery of mercury.

The work will be supervised by John H. Harper, Jr., primarily, whose background, as stated above, includes successful mining operations and explorations conducted under adverse conditions, and will include the cooperation of one James E. Cox, inventor and practical mining operator of many years experience.

6. (a) There will be no independent contract contemplated.

(b) It is proposed to use a staff of 3 Consultants, 1 Supervisor, 1 Assistant Supervisor, and 10 workers in the completion of the exploration work set forth above. The Consultants will be used on a part time basis covering the various facets of the problems under consideration. Their fees will be the going rate for Consultants of that type, to wit, Geological Consultants @ $100 to $150 per day, Metallurgical Consultants @ $50 to $150 per day, Electronic Consultants @ $50 to $150 per day. It will also be contemplated that 1 Payroll and and General Bookkeeper be employed at $300 to $500 per month with board. It is also contemplated that 1 Cook be employed at $75 to $150 per week. We presently contemplate 1 Supervisor at $750 to $1,000 per month, 1 Assistant Supervisor at $500 to $750 per month, 1 Electronic Specialist at $450 to $750 per month, 1 General Procurement Man and Truck Operator at $300 to $400 per month.

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(c) In general we will need electrical power generating equipment of substantial capacity in the neighborhood of 200 kilo., bulldozers, 1 carryall, 1 skiploader, lathe and shop tools, power checking equipment, several ball mills, rollers and associated rollers, classifying tables, classifying mechanism, water conducting apparatus, power conducting apparatus, residential facilities, cooking facilities.

(d) We shall need the following operating equipment which may be rented or purchased, and is presently owned and will be furnished by operators:

Skiploader and Trailer

Concentrating Table

Miscellaneous motors and equipment

Estimated total value approximately $10,000.00

(e) It will be necessary to rehabilitate existing housing facilities and to construct additional housing facilities at the mining site. It will also be necessary to construct tanks and pipe lines to bring in and store drinking and operating water and necessary fuel for operation. It is estimated that approximately $6,000.00 will be required in this connection.

(f) It will be necessary to build 1 bunk house and 1 cook house as well as toilet-bathing facilities. The bunk house will house approximately 15 persons. The exact dimensions and details of those structures will be made to comply with the existing rules and regulations of law pertinent thereto. Approximately $5,000.00 will be required in this connection.

It will also be necessary to construct a housing facility for the protection of movable equipment and some stationary equipment from the elements. This is estimated to consist of a 3 sided building approximately 20 x 40, costing approximately $800.00. It will be necessary to install one 25 H.P. deep well turbine pump on the existing well. It will be necessary to rent

or purchase a truck for the hauling of supplies and also the transportation of workers when required. It will also be necessary to procure various elements of com on comfort for the convenience and use of the workers.

(g) The cost of repairs to and maintenance of operating equipment, analytical work, accounting, workmen's compensation and employer's liability insurance and payroll taxes is estimated at $800.00 per month. The cost of the 9 months project is estimated at $60,000.00.

(h) It would be estimated that an allowance of 7% of the total set forth above to cover contingencies not included therein would be ample.

7. (a) We are prepared to furnish our share of the cost of the proposed project in accordance with the regulations on government participation.

(b) We propose to furnish our share of the cost in the form of conveyance to the operating entity of equipment, supplies and services as well as cash if required.

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LEASE

THIS AGREEMENT made in Los Angeles, California, this 2nd day of June, 1953, of and concerning land and mining interests in Nevada, in those words:

PARTIES

LEONARD BECKER-JURGEN hereinafter referred to as Lessor.

ROLAND M. SHOW, JOHN H. IMPS, JOHN H. HARPER and FRED CARPENTER hereinafter referred to as Lessees.

FACTS

Lessor has for a period of years done the necessary work and performed the necessary legal measures to establish good and valid mining claims under the laws of the State of Nevada and the laws of the United States in that certain area known as Columbus Marsh in Esmeralda County, near Coaldale, Nevada. Those claims roughly encompass five thousand four hundred and forty (5,440) acres and total some eight and one-half (8-1/2) sections of contiguous land, and are described as:

The Northwest One-quarter (1/4) of Section 21, Range 36 East, Township 2 North;

The North One-half (1/2) and the Southwest One-quarter (1/4) of Section 16, Range 36 East, Township 2 North;

All of Section 9, Range 36 East, Township 2 North;

All of Section 4, Range 36 East, Township 2 North;

All of Section 33, Range 36 East, Township 3 North;

The South One-half (1/2) of Section 28, Range 36 East, Township 3 North;

The South One-half (1/2) of Section 29, Range 36 East, Township 3 North;

The Southeast One-quarter (1/4) of Section 30, Range 36 East, Township 3 North;

All of Section 32, Range 36 East, Township 3 North;

All of Section 31, Range 36 East, Township 3 North;

The East One-half (1/2) of Section 5, Range 36 East, Township 2 North;

The East One-half (1/2) of Section 8, Range 36 East, Township 2 North;

The Northeast One-quarter (1/4) of Section 17, Range 36 East, Township 2 North.

In addition Lessor has certain interests in mining claims held by others of certain intangible nature.

Lessor also has certain small buildings, equipment, cabins, water facilities and water rights, and other improvements, the use of which is to be covered in this leasing arrangement.

All of said interests and claims described are hereinafter referred to as "the premises".

Lessees are a syndicate having under their control certain equipment and processes for the obtaining of valuable minerals. Lessees desire to enter into an arrangement with Lessor wherein all of Lessor's facilities shall be available to Lessees in return for rentals as hereinafter provided. Since certain of the metals which are to be produced by Lessees are of a type having limited demand in the metal market, it is the desire of both Lessees and Lessor to maintain, so far as practical, a situation where Lessees shall be the only ones producing

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on any property, interest, claim or facility under control of Lessor or in which Lessor shall hold an interest. Wording concerning claims actually under control of Lessor follows but wording concerning interests possessed by Lessor is impractical to be included in this Agreement and a statement of the intention of the parties hereto is included in lieu thereof for possible reference of a court of equity in the event a misunderstanding should arise.

On the same basis it is the intention of Lessees to proceed without reasonably avoidable delay in the prosecution of research, prospecting and production efforts on the premises and to continue the same with reasonable diligence during the term hereof, but such is not made a condition giving rise to forfeiture.

LEASING ARRANGEMENT

Lessor hereby leases to Lessees the premises, interests, facilities and claims described in paragraph "Facts" above for the following term and upon the following rentals and conditions:

1. TERM. This Lease shall be for a term to continue so long as minimums provided herein are met by Lessees.

2. RENTALS. Lessees shall pay Lessor on or before the fifteenth (15th) day of December, 1953, the sum of Five Hundred Dollars ($500.00) as monthly minimum royalties and rental in advance, and shall continue to make like payments in said amount on the 15th day of each and every successive month until June 15th, 1954, at which time

said payments shall be increased to One Thousand Dollars ($1,000.00) as monthly minimum royalties and rental in advance and shall continue in said sum on a monthly basis for each month thereafter during the term. It is understood that sums paid by Lessees to Lessor by way of production royalties shall be applied in satisfaction of said minimum requirements throughout the term of the Lease.

Lessees shall pay to Lessor by way of production royalties ten percent (10%) of the gross sale price at the site of mining operations of all minerals or other substances of value yielded by the ores mined hereunder. Said payments shall be made on the fifteenth (15th) day of each successive calendar month and shall be based upon the sale of such minerals and/or substances of value during the calendar month preceding said payment. Records of Lessees pertaining to the sale of said minerals and/or substances of value shall be available for inspection of Lessor at reasonable times.

3. GENERAL CONDITIONS. Lessor warrants title and control in compliance with mining laws of the premises and the rights, properties, claims and interests hereby leased, and guarantees to Lessees exclusive possession thereof for the purposes of this Lease except for such joint occupation as shall be appropriate between Lessor and Lessees.

Lessees agree to so conduct their operations as to bring about a minimum of inconvenience to Lessor in the necessary accomplishments of the objectives of this Lease.

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Commencing ninety (90) days after date active prospecting, mining and/or production operations shall be maintained upon the premises except so far as the same may be to any extent impractical or impossible, or excused by the Lessor.

Lessor agrees upon request to lend his advisory assistance and knowledge acquired through experience with the properties involved for the accomplishment of objectives of Lessees.

Lease of the premises, claims and facilities contemplated herein shall include the use of all appurtenances thereof which are the property of Lessor, with the understanding however that Lessees shall be responsible for damage thereto brought about through their usage thereof, except as hereinafter set forth.

Processes, equipment and other data concerning the operations of Lessees are to be regarded as secret and information pertaining thereto which shall come to the hands of Lessor shall be retained as confidential by Lessor.

Any condition which shall amount to an impossibility of performance by Lessees of the obligations to be performed hereunder, which impossibilities shall arise because of the destruction or inaccessibility for any reason of the subject matter of this lease, shall excuse any performance by Lessees for such period as such inaccessibility or other impossibility shall continue.

Lessees shall pay before delinquency any and all taxes assessed upon equipment or property of Lessees and Lessor shall pay before delinquency any and all taxes

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assessed upon property of the Lessor.

Lessor assumes the risk of fire and other casualty loss on the buildings and facilities leased and Lessees assume the risk of fire and other casualty loss on their property.

Lessees shall assume responsibility for routine maintenance of the buildings leased but shall not be responsible for those items of major nature.

4. NOTICES. Notices may be delivered to Lessor by depositing the same in the registered United States mail addressed to Lessor at Goldfield via Tonopah, Nevada.

Notices may be delivered to Lessees by depositing same in the registered United States mail addressed to Lessees care of John R. Butt, 1518 Paloma Avenue, Los Angeles 21, California.

5. TERMINATION. Lessees may terminate this Lease in its entirety at any time by delivering thirty (30) days notice of their election so to do to Lessor and shall in such event during the ensuing thirty (30) days remove from the leased premises such of their properties as they desire to remove, and shall thereupon deliver to Lessor an instrument acknowledging such cessation of Lessees' rights in said property.

Sums due to and from the parties shall be prorated as of the date of such termination.

Lessor may, in the event of Lessees' failure to make payment of minimum rentals, or in the event of Lessees' actual abandonment of operations, declare

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upon thirty (30) days written notice his election to terminate this Lease at such date named in said notice, which shall be not less than thirty (30) days from the date thereof, and in the event that Lessees shall not have remedied said deficiency in said period before such indicated date of termination, this Lease shall thereupon terminate in all respects and Lessees shall be under obligation to vacate said premises. Said notice shall specify the acts constituting grounds for termination and must be shown to have been actually received by at least one of Lessees.

6. TERMS OF TENANCY OF BUILDINGS AND EQUIPMENT.

Lessees shall pay to Lessor on or before the fifteenth (15th) day of each calendar month, after taking occupancy thereof, as rental in advance, thirty dollars ($30.00) per month for the existing mill building and appurtenances and twenty dollars ($20.00) per month for the cabins and appurtenances other than Lessor's cabin, with the understanding that such tenancies shall continue at Lessees' option so long as Lessees shall not be in default on either their rental payments so set forth or the other performances due by them under the terms of this Lease. It is expressly understood, however, that the cabin, kitchen and other facilities immediately appurtenant thereto, now occupied by Lessor, shall remain under his exclusive control and in his exclusive possession.

It is further understood that certain property not the property of Lessor is stored in the mill building and that no right of usage of said property is granted by

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Lessor to Lessees. Lessees however shall have the right to rearrange the storage thereof as convenient to facilitate their operations, but shall assume no responsibility for the safety of said property.

Lessees shall be under duty to maintain said buildings in such manner as to return the same to Lessor at the termination of this Lease in the condition in which they now are, reasonable wear and tear and casualty damage as above mentioned excepted.

This instrument is made and executed in quadruplicate and shall be binding upon and inure to the benefit of the parties hereto, their heirs, assigns, transferees and successors in interest.

(s) Leonard Becker-Jurgen
Lessor

Approved as to form.

(s) Gail J. Burck
His Attorney

LESSEES:
ROLAND W. SNOW
JOHN H. HUTT
JOHN H. HARPER
THE CAMPBELLER

By (s) Roland W. Snow

By (s) John H. Hutt

STATE OF CALIFORNIA, }
County of Los Angeles. } ss.

On this 2nd day of June, A.D., 1953, before me, JOHN H. HUTT, a Notary Public in and for said County and State, personally appeared LEONARD BECKER-JURGEN, known to me to be the person whose name is subscribed to the within instrument and acknowledged that he executed the same.

WITNESS my hand and official seal.

(s) John H. Hutt
NOTARY PUBLIC in and for the County of Los Angeles, State of California.
(SEAL)

NAME AND ADDRESS: Research Group, 1213 Valeria St., Los Angeles 21, Calif.