TERRITORY OF ALASKA
DEPARTMENT OF MINES

Report

of the

Commissioner of Mines

for the

BIENNIUM ENDED DECEMBER 31, 1954

DEPARTMENT OF MINES STAFF ON DECEMBER 31, 1954

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January 10, 1955

Honorable B. Frank Heintzleman
Governor of Alaska
Juneau, Alaska

Sir:

I have the honor to submit to you, and through you to the Twenty-second Session of the Territorial Legislature, in accordance with Section 47-3-119, ACLA, 1949, the report of the Commissioner of Mines for the biennium ended December 31, 1954.

Respectfully submitted,

PHIL R. HOLDSWORTH
Commissioner of Mines

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THE DEPARTMENT OF MINES

Administrative and General Information

The Territorial Department of Mines, under the management and direction of the Commissioner of Mines, has charge of all matters affecting exploration, development and mining of the mineral resources of the Territory; the collection and dissemination of all official information relative to the mineral resources, and mines and mining projects of the Territory; and has charge of the administration of the laws with respect to all kinds of mining.

The Department of Mines conducts a continuing survey of the mineral resources and mining operations of the Territory and disseminates information in regard thereto with a view to perpetuate and assist prospectors and miners; safeguards the lives and health of miners; protects investors in the mining industry; and otherwise fosters and promotes the best interests of the mining, mineral and related industries of the Territory.

For the purpose of aiding bona fide miners and prospectors and stimulating mineral discoveries, the Department of Mines maintains four public offices in the Territory located at Ketchikan, College, Anchorage and Nome.

In view of the extreme need for increased mining production in Alaska, the Department is exerting every effort within its means to obtain basic information on mineral deposits of possible commercial importance and to disseminate this information to interested miners and venture capital. During the biennium, more time than ever before was spent in all offices in giving advice and assistance to exploration parties, researchers, and engineers or geologists representing mining companies who are looking for mining or investment opportunities.

The Department also works continually for needed changes in mining and land laws which will make new mining ventures easier to achieve.

Protection of investors was another field of endeavor in which the Department increased its activity during the biennium. At the request of past, present, and prospective investors, various organizations and individuals were investigated and reported on as to their reliability, reputation, or methods employed. This is a distinct service to the legitimate operators as it helps maintain a good reputation for Alaskan mining in general.

The staff of the Juneau office of the Department includes Phil R. Holdsworth, Commissioner of Mines; James A. Williams, Associate Mining Engineer; an Administrative Assistant; and a Clerk-Stenographer. Located in the Anchorage area are Martin W. Jasper, Associate Mining Engineer; Wiley D. Robinson, Associate Coal Mining Engineer; and Royle C. Rowe, Assayer. Robert H. Saunders, Associate Mining Engineer, and William F. Attwood, Assayer-Engineer, are stationed at College in the Fairbanks area. The Ketchikan office is run by Arthur E. Glover, Assayer-Engineer, and the Nome office by Peter O. Sandvik, Assayer-Engineer.

Several changes in personnel took place during the biennium. The change probably having the most marked effect on the operation of the Department was the one in which Martin W. Jasper, a very capable mining engineer of long experience, joined the Department at Anchorage where there has been no engineer before to help miners and prospectors of the Third Division. Royle C. Rowe also joined the staff at Anchorage after a training period at the Ketchikan office. It was fortunate, too, for all concerned that Peter O. Sandvik, former Anchorage assayer, was released from the Army and joined the Department again at Nome to replace Daniel Jones, who resigned on December 31, 1953, so that the Nome office could be kept in operation. Lowell Patten, at the College office, resigned in 1954 and was replaced by William F. Attwood. All Department positions are presently filled.

The new Anchorage building was completed, occupied, and opened to the public late in 1953. At Nome, the new assay office is nearing completion and will be ready for business early in the 1955 field season. A new building is being planned for the College office for which construction funds are being requested from the 1955 Legislature. The assay office situation at Ketchikan is

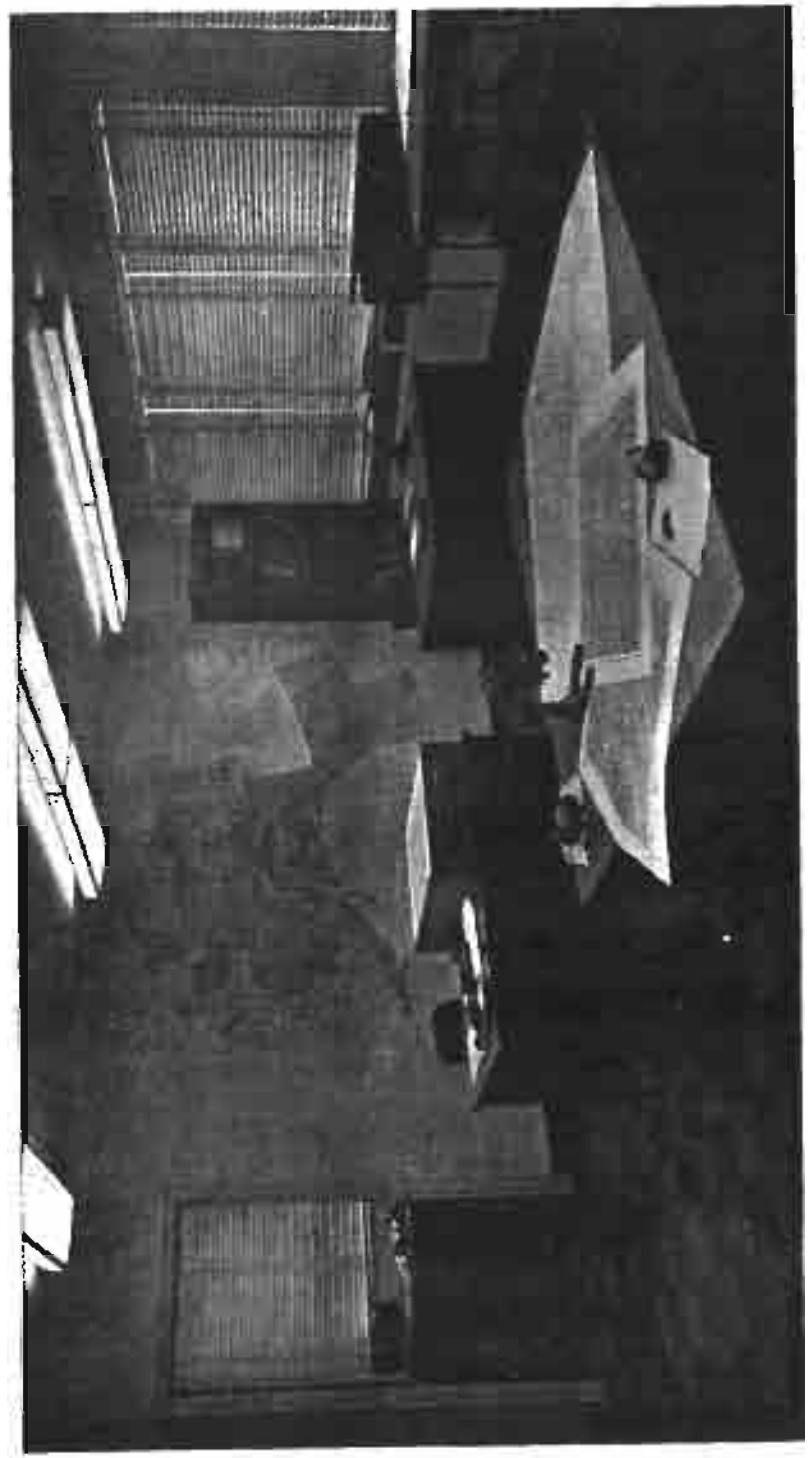

Photo by J. Malcolm Greany

Interior view of part of the TDM Juneau headquarters office in the new Territorial Office Building

presently unsettled, but the Department will attempt to "make do" there until 1957, and then request funds for a new assay building.

Libraries of Alaskan publications issued by the U. S. Geological Survey, U. S. Bureau of Mines and the Atomic Energy Commission are maintained at the assay offices and the Juneau headquarters. These libraries are open to the public and, in addition to these publications, the Juneau office has collected much additional information on various properties throughout the Territory resulting from examinations and reports by engineers of the Department. The offices also maintain collections of classified rocks and minerals, including those of Alaskan origin, as a means of ready reference or identification by the prospector and miner.

Several thousand inquiries in regard to the mining industry by visitors and by correspondence were answered during the biennium. Professional advice in the way of examinations and reports is offered to the prospector and miner by Departmental engineers. This service is offered to those who cannot afford the employment of a private consultant. Reports of examinations by TDM engineers for private individuals are for their information only, and results of same are not made public unless so authorized by the property owners. Many requests for this type of advice were received and resulting examinations made by members of the Department staff. Geophysical exploration projects on a moderate scale are also carried out by Department engineers.

As a result of action by the 1953 Legislature, four new activities or projects have been carried on by the Department of Mines during the past biennium. A complete bibliography or inventory of Alaskan mineral deposits, containing basic information on them and references to more detailed information, was started to fill the need for a simple, organized system of presenting this information to interested mining companies and venture capital. The completion of this project will take considerable time, depending on the personnel the Department is able to employ on it. The need for a central recording file to enable one to determine the legal status of mining ground throughout the Territory from one location is now being fulfilled by compliance with the provisions of Chapter 95, SLA 1953, which requires U. S. Commissioners to send to Juneau duplicate copies of mining recordings and other docu-

Photo by R. C. Rowe

The new Anchorage assay office at 329 - 2nd Avenue

ments affecting title to mining ground and paying the Commissioners for this service. The 1953 Legislature also created a Coal Miners Examining Board for the purpose of qualifying coal miners to assume positions of responsibility in the coal mines—a contribution to the safety of Alaskan coal miners that has long been needed. The Commissioner of Mines is chairman of this board, and the Associate Coal Mining Engineer is a member. To provide satisfactory enforcement of safety regulations in connection with all types of rock excavation, the 1953 Legislature re-defined the term "mining" to include rock work in connection with, but not limited to, the construction of water or highway tunnels or drains, or of underground sites for the housing of industrial plants or other facilities.

Since the Territory of Alaska joined the Interstate Oil Compact Commission as an associate (nonproducing) member, the Commissioner of Mines has been attending its meetings once a year as Alaska's official representative.

Cooperation with Federal Agencies

A close cooperative exchange of information with the Atomic Energy Commission on radioactive samples originating in Alaska was carried out by the Department of Mines. There has also been a free exchange of information with the U. S. Geological Survey and the U. S. Bureau of Mines, and some joint inspections or examinations have been made. Occasionally the Department of Mines has been able to make preliminary examinations of prospects, on short notice, as a means of justifying further investigation by the Defense Minerals Exploration Administration field team. During the biennium, the Department of Mines and the U. S. Bureau of Mines effected a formal signed agreement for the mutual cooperative interchange of information. This eliminates a certain amount of duplication of effort and is a saving of time and money.

Since the U. S. Bureau of Mines uses a system of region and mining district designations for their statistical reporting, and the U. S. Geological Survey now bases their geological information on their quadrangle system, the Department of Mines is adopting both systems in order to facilitate exchange of information with both agencies. In the text of this report, mining district

designations will be used in describing mining operations, etc., because the watershed boundaries of the districts seldom divide mining areas. In the appended tabulated list of active mining operations, both district and quadrangle designations are used in order that interested persons may also become familiar with the locations with respect to the USGS quadrangle maps which are now published for the entire Territory and are becoming very widely used.

The USGS has recently compiled an extensive card index to references in their bulletins concerning Alaskan mineral occurrences. This index, containing several thousand cards, facilitates the location of Geological Survey information on mineral deposits. They have been most cooperative in placing a reproduced copy of this card file in the Juneau office of the Territorial Department of Mines for the Department's use and information of the public. The USGS also sends to the Department copies of "open file" reports pertaining to Alaska that are not available for public distribution.

The Department of Mines has received excellent cooperation from the Alaska Road Commission when requesting, with proper justification, aid for mine operators. The Bureau of Land Management and the Forest Service have cooperated to the best of their ability in supplying information on the status of mineral lands and claims when requested.

Field Investigations

Field examinations and technical assistance were given by members of the Department of Mines staff to those requesting this service. Examinations were made, and reports written or professional advice given, on those properties listed in Table I.

TABLE I—Field Investigations

Region and Property	Chief Minerals	Location	Type of Examination	Examining Engineer & Year
Bristol Bay Region				
McNeil	Copper	Paint River	Geological	Jasper & Williams—1953
Cook Inlet-Susitna Region				
Tuxedni Bay	Iron	Cook Inlet	Reconnaissance	Jasper—1953
Moose Creek	Copper	North of Palmer	Engineering	Holdsworth & Jasper—1953
Jim Creek	Copper	Southwest of Palmer	Reconnaissance	Holdsworth & Jasper—1953
Fennimore	Copper	Sheep Mountain	Geological	Jasper—1953
Stipp	Alumina	S. Fork of Matanuska River	Geological	Jasper—1953
Knik River	Chromite	Eklutna to Knik Bridge	Geophysical Reconnaissance	Jasper & Williams—1953
Fabian & Moore	Clay	Fishhook Creek	Engineering	Jasper—1953
Wolverine Creek	Copper	Northeast of Palmer	Reconnaissance	Holdsworth—1953
Kathleen-Margaret	Copper	Maclaren River	Geological with USGS	Saunders—1953
Windy & White Creeks	Gold	Valdez Creek District	Reconnaissance	Saunders—1953
Gray	Copper	Little Susitna River	Engineering	Holdsworth—1954
Dunkle	Coal	Broad Pass	Engineering	Holdsworth—1954
Ready Cash	Gold-Copper-Lead	Ohio Creek	Geological	Jasper & Saunders—1954
Butte Creek	Copper	Valdez Creek District	Reconnaissance	Jasper & Saunders—1954
Monarch	Gold	Near Girdwood	Engineering	Jasper—1954
Shirley Lake	Radioactives	Near Skwentna River	Radiometric	Holdsworth & Jasper—1954
Lonesome Mine	Gold	Little Susitna River	General	Jasper—1954
Cantwell Area	Manganese	Jack Creek	General	Jasper & Saunders—1954
Copper River Region				
Midas	Copper	Vicinity of Valdez	Reconnaissance	Jasper—1953
Little Feller	Gold	Thompson Pass	Engineering	Jasper & Williams—1954
Fine Chance	Gold	Vicinity of Valdez	Engineering	Williams—1954
Middle Fork	Gold	Chistochina River	General	Williams—1954
Halvorson-Finnison	Nickel-Copper	Spirit Mountain	Geological	Jasper—1954
Strandberg	Copper	Mile 7, Cantwell Road	Reconnaissance	Jasper—1954
Four-in-One	Copper	Miners River	Engineering	Holdsworth&Williams—1954

Bering River	Coal	Bering River Coal Field	Reconnaissance	Williams—1954
Ibach	Copper	Ibek Creek	Geological	Williams—1954
Kenai Peninsula Region				
Kenai Chrome Co.	Chromite	Red Mountain	Geophysical	Jasper & Williams—1953
Seldovia Chrome Co.	Chromite	Fish Creek	Geophysical and Reconnaissance	Jasper & Williams—1953
Alaska Exploration & Development Co.	Gold	Nuka Bay	Engineering	Jasper—1953
Lynx Creek	Copper-Gold	Mile 61, Seward Highway	Reconnaissance	Jasper—1954
Kodiak Region				
Peninsula Exploration Co.	Copper	Sitkalidak Island	Geological	Jasper—1953
Kodiak Exploration Co.	Tungsten	Kodiak Island	Geological	Jasper—1954
Kuskokwim River Region				
DeCoursey Mine	Quicksilver	Aniak District	Engineering	Holdsworth & Jasper—1953 & 1954
Red Devil	Quicksilver	Aniak District	Engineering	Holdsworth & Jasper—1953 & 1954
Willis	Quicksilver	Willis Creek	Geological	Jasper—1954
Kolmakof	Quicksilver	Kuskokwim River	Geological	Jasper—1954
Konechney	Copper	Mission Creek	Reconnaissance	Jasper—1954
Northwestern Alaska Region				
Berg	Copper	Ruby Creek	Engineering	Saunders & Sandvik—1954
Sours	Chromite	Noatak District	Geological	Saunders & Sandvik—1954
Seward Peninsula Region				
Edwards	Antimony	Big Hurrah Creek	Geological	Williams & Saunders—1953
Zenda Mining Co.	Tin	Cape Mountain Area	Geophysical	Williams & Saunders—1953
Peace River	Radioactives	Koyuk District	Engineering	Jones—1953

U.S. Tin Corp.	Tin	Lost River	General	Holdsworth—1953 & 1954
Independence	Lead-Silver	Kugruk River	Reconnaissance	Saunders & Sandvik—1954
Kennedy	Pegmatite	Windy Creek	Reconnaissance	Sandvik—1954
Rocky Mountain Creek	Tungsten	Nome District	Reconnaissance with USGS	Sandvik—1954
Southeastern Alaska Region				
Maid of Mexico	Gold	Woewodski Island	Engineering	Williams & Glover—1953
Snettisham	Iron	Port Snettisham	Geophysical	Williams—1953
Red Bluff Bay	Chromite	Baranof Island	Geophysical	Holdsworth&Williams—1953
Bohemia Basin	Nickel	Yakobi Island	Reconnaissance	Holdsworth—1953
Funter Bay	Nickel-Copper	Admiralty Island	General	Holdsworth&Williams—1953 & 1954
Endicott River	Copper	Trib. to Lynn Canal	Reconnaissance	Holdsworth&Williams—1953
Roberts	Antimony	Camaano Point	Geological with USGS	Rowe—1953
Lillie-Pitcher	Molybdenum	Kosciusko Island	Geological	Holdsworth & Glover—1953
Fishery Point	Gold-Copper	Admiralty Island	Reconnaissance	Holdsworth&Williams—1954
K & D Lode	Gold-Antimony	Sunset Cove	Geological	Holdsworth—1954
Chuck River	Gold	Trib. to Windham Bay	Geological	Holdsworth—1954
Port Houghton	Copper	Petersburg District	Geological	Holdsworth—1954
Mount Parker	Gold	Glacier Bay	Engineering	Holdsworth—1954
Tidal Inlet	Iron	Glacier Bay	Reconnaissance	Holdsworth—1954
Dundas Bay	Copper	Cross Sound	Geological	Holdsworth—1954
Silver King	Silver-Lead	Excursion Inlet	Engineering	Holdsworth—1954
Heiner	Gold	Windham Bay	Engineering	Holdsworth&Williams—1954
Taylor Creek	Copper	Trib. to Windham Bay	Reconnaissance	Holdsworth&Williams—1954
Excursion Inlet	Copper	West side of Inlet	Reconnaissance	Williams—1954
Union Bay	Iron	Cleveland Peninsula	Reconnaissance	Holdsworth—1954
Tah Bay	Iron	Prince of Wales Island	Reconnaissance	Glover—1954
Kelp Island	Iron	Near Duke Island	Reconnaissance	Glover—1954
Coning Inlet	Lead-Silver-Zinc	Long Island	Geological	Glover—1954
Yukon River Region				
Wackwitz	Lead	Pedro Dome	Geological	Saunders—1953
Creighton Mine	Gold	Pedro Dome	General	Holdsworth&Saunders—1953
Alaska Metals Mining Co.	Tungsten	Gilmore Dome	General	Holdsworth&Saunders—1953

Vuyovich	Gold	Ester Dome	Engineering	Saunders—1953 & 1954
Spruce Hen	Tungsten	Head of Steel Creek	Geological	Saunders—1953
Old Griffin Prospect	Nickel	Livengood Vicinity	Geological	Saunders—1954
Middle Fork Koyukuk River	Radioactives	Koyukuk District	Reconnaissance	Saunders—1954
Ricks	Nickel	Upper Salcha River	Engineering	Saunders—1954

In addition to the above table, numerous other visits to mining properties, prospecting sites, and tunneling projects were made by Department of Mines personnel for the purposes of safety inspections and enforcement, accident investigations, and giving technical advice. The Commissioner of Mines visited many mining operations, coal mines, and oil well drilling sites. The Coal Mining Engineer inspected all active coal mines at least once a month for safety conditions.

Safety Inspections

Safety inspections were made at all properties visited by the Department engineers. Inspections were also made at tunnel sites not directly connected with mining—the Eklutna power project, the Ward Cove power project and Beaver Falls tunnels near Ketchikan, the Ketchikan city street tunnel, and the power project tunnel on Annette Island. Jurisdiction over safety matters in non-mining tunnels was given to the TDM by the 1953 Legislature.

Monthly inspections of coal mines were continued by the Associate Coal Mining Engineer stationed at Anchorage. The union-sponsored safety committees continued to work with the Department and mine management to keep the miners "safety conscious" and thus help to maintain a low accident rate in Alaskan coal mines.

The 82nd Congress, just before adjournment, passed a bill concerning coal mine safety which became Public Law 522. This law directs the U. S. Bureau of Mines to enforce the provisions of the Federal Coal Mine Safety Code, a duty which had previously been performed by State or Territorial agencies. The law provides for submission of a State or Territorial plan for approval by the Director, U. S. Bureau of Mines, before State or Territorial agencies can resume policing powers. The Department of Mines submitted a safety plan which was one of the first approved by the Bureau, and now is officially jointly responsible with the Bureau for the inspection and enforcement of safety conditions in Alaskan coal mines for the protection of the coal miners.

The biennium was disastrous in the matter of fatalities—three in the coal mines, four in metal mines, and two in placer mining activities. These accidents were largely of the freakish unavoidable type, but there were also those that were due to negligence on the part of workers or management. Details are included in a later section of the report. Comparative coal mine figures follow:

	Man Shifts	Nonfatal Accidents	Accidents Per M.M.H.
Strip	59,805	63	132
Underground	133,880	168	157
Total—Alaska	193,685	231	149
U. S. Coal—States			50

Assay Offices and Field Stations

The assay offices and field stations of the Department at Ketchikan, College, Anchorage and Nome performed analyses and mineral determinations during the biennium. This service is offered free of charge to bona fide prospectors and miners and serves to encourage the search for minerals in the Territory. The following tabulation compares the number of samples handled for the past four years:

	1951	1952	1953	1954
Gold and silver	666	861	1067	1630
Chemical analyses	400	643	805	1696
Coal analyses	3	10	29	7
Mineral identifications	433	496	852	743
Totals	1502	2010	2753	4076

The above table shows a continued trend of increasing prospecting activity which, if it continues, can only lead ultimately to new mineral discoveries of economic importance. It will be noted that the total volume of samples received and analyzed in 1954 was nearly triple that in 1951, and that the volume for the 1953-1954 biennium was nearly double that for the previous biennium. The rate of increase of chemical assays is greater than that of gold and silver, indicating that the most rapid increase is in the prospecting for base metals and strategic minerals. These assays were made mostly for the following metals in the order of their frequency: copper, nickel, lead, mercury, iron, zinc, chromium, tungsten, cobalt, and antimony. Nearly all samples received are checked for radioactivity whether it is specifically requested or not.

The new Department of Mines building at Anchorage, which houses the assay office and laboratory and offices of the two mining engineers stationed there, was completed and put into operation late in 1953. Official "open house" was held during the 1954 Anchorage Fur Rendezvous. The work load at Anchorage in the way of samples received and requests for advice and field assistance has increased greatly since the new building has been in use, and the Department feels that a fair share of this increased prospecting interest and activity in the Third Division is due to the enlarged facilities and new personnel there.

A new assay office will be ready for business at Nome early in the 1955 field season. A building was purchased and moved on to a full-sized concrete basement, which was built by the Department on a lot being donated by the city. Some interior work remains to be done on the building, but assaying equipment will be installed and ready for analyses of samples when they start arriving next field season.

The present assay office at College is, and has been for many years, housed in quarters which are entirely inadequate for the large work load at that location. It is in the basenemt of the old college power plant. Plans are now under way for the construction of a building which will provide suitable space for the College assay and field offices on the campus. Funds are being requested from the 1955 Legislature for this purpose.

At Ketchikan, the fate of the present assay office quarters is unsettled. The city owns the lot and building, and has agreed to sell the lot for a car parking enterprise. The prospective buyers are now apparently delaying, and the transaction is "hanging in the balance." The Department of Mines hopes to be able to maintain the same arrangement as at present until 1957, when it intends to request funds for a new building at Ketchikan.

New Activities

At the suggestion of various individuals and companies concerned with Alaska's mining industry, the Department of Mines has started a complete inventory, or bibliography, of all mineral deposits worthy of note in the Territory. This project is for the benefit of interested mining men, companies, or venture capital who wish to start or invest in mining enterprises in Alaska. There is at present much factual information on the mineral occurrences, but it is in several different locations and much of it unorganized. The inventory will contain basic mineralogical, geological, and engineering information on all deposits, and will give references to detailed geological and engineering reports so that they may be easily found for those who are interested. The references will be to all USGS and USBM bulletins, reports, etc., in addition to TDM reports and reports by private engineers and geologists. The USGS card file, mentioned earlier, will be of considerable assistance in this work. An index to the inventory will

be prepared to enable one to see quickly the deposits of certain classifications within certain districts, or those within certain size or development restrictions, etc. The importance and need of having organized economic mineral, mining, and land status information readily available for the many who are interested cannot be overestimated. It may also be used to attract the attention of venture capital that otherwise might go elsewhere. This work is being done under a special appropriation by the 1953 Legislature. It is a long-range program, just fairly started, which will require a few years' work and research, and the 1955 Legislature is being requested for sufficient funds to place full-time personnel on it.

The central recording work is also new and made possible by a law passed by the 1953 Legislature. It fills the need of being able to determine the status of unpatented mining claims from one central location, rather than having to travel around the Territory to the various recording precinct offices, and then quite often not being able to find the desired records. One of the first things a prospective investor needs to know is the status of the ground. The new law requires the U. S. Commissioners, who are Mining Recorders, to send to the Department of Mines Juneau office duplicate copies of all location certificates, affidavits of assessment work, and other instruments affecting title to mining ground. The Recorders are paid for this service. The documents are filed and cross-referenced four ways: by location, name of owner, name of claim, name of mineral. It is a valuable file, and several State mining departments have enviously expressed the desire and need for a system like Alaska's. Since the records only date back to April of 1953, the file will be even more valuable in a few more years. This central recording file is used by the TDM for reference and statistical purposes, but is not treated as public information.

Another activity legislated into effect in 1953 is the Coal Miners Examining Board. The Department of Mines is responsible for this board, and the Commissioner of Mines and the Associate Coal Mining Engineer are chairman and member, respectively. Two other members are chosen from the industry by the industry: one from the operators and one from the coal miners' union. There has long been a need for this board, the purpose of which is to ex-

amine applicants who wish to obtain supervisory positions in the coal mines to determnie if they have sufficient experience and knowledge for the safety of the men who work under them. Reciprocity certificates are granted those who hold "papers" from State coal miners examining boards.

The Territorial Department of Mines has for the past one and a half years published a monthly mining news and information bulletin called the **TDM Bulletin.** It has been widely praised by all who have read it, with very few exceptions, and has received national recognition by the mining industry. In it, the Department gives news of monthly mining developments about the Territory, mineral and equipment information for prospectors, mineral market information, occasional articles on mining law, and almost anything else that it is felt will be of interest and help to the Alaskan prospector and miner. It advises prospective investment capital of promising mineral deposits. The circulation is growing larger every month and includes a large number of Stateside mining companies that have expressed interest in Alaska. The **TDM Bulletin** is free to anyone who is genuinely interested in Alaskan prospecting and mining.

The field activities of the Department of Mines have changed somewhat during the last biennium to include frequent search for and examination of old abandoned prospects which might be of interest under today's changed economic picture. The Department usually endeavors to interest private prospectors in the venture first, and failing this, goes out to personally examine the prospect to determine if an attempt should be made to interest mining companies in developing it. If a prospect does appear to have possibilities, an attempt is made to release the information on an equal, impartial basis.

As mentioned twice earlier, the Department now also inspects and enforces safety measures in hydroelectric and other tunnels and excavations that are not for the purpose of obtaining minerals.

THE MINING INDUSTRY

Alaska's total mineral production, dollar-wise, for the 1953-1954 biennium increased by 6% over that of 1951-1952. This increase was caused by the coal mining industry, which raised its tonnage to 1,514,471 for this biennium, which was 28% over that of the previous biennium. However, due to the rise in coal prices, the value of coal mined during the biennium increased by 74%. Coal production reached a peak in 1953 and is now on the decrease. Gold and silver production increased about 5.5%. This was due to the large placer operations, for the smaller operations are decreasing in number. Increases in tin, mercury, building stone, and chromite occurred during the biennium. Sand and gravel mining decreased by 12.5% and 16% in tonnage and value, respectively, because of the tapering off of the construction industry. Very little tungsten and lead were mined during the biennium, and no antimony, zinc, or pumice. Gold remains the most important mineral, followed closely in value by coal, then sand and gravel, platinum, tin, mercury, building stone, chromite, silver, jade, and copper, in that order.

Adverse economic conditions are still the greatest enemy of the existing mining industry. In gold mining, the situation of the fixed price and the continuously rising operating costs has put more of the small placer operations out of business and has finally closed the last fully active lode mine in the Territory. At the end of the biennium, only a very few small intermittent lode gold operations remained with insignificant production.

Base metal production for this biennium increased from practically no production in the previous biennium, but it was still the result of only three mines for the whole Territory: U. S. Tin Corporation, DeCoursey Mountain Mining Company's Red Devil mercury mine, and the Kenai Chrome Company mine. Of these three, the Red Devil mine was closed by a fire late in 1954, dropping the number of base metal producers to two at the close of the biennium. The U. S. Tin Corporation mine is now in steady year-around production, and is developing into a paying proposition. Kenai Chrome Company production will be increased in 1955.

Prospecting and exploration activities, particularly for iron, copper, mercury, and radioactives, have shown a sudden increase during the biennium that is not far short of phenomenal. Notable in this increase is the returning to grub-staking arrangements and the new practice of outright hiring of prospectors. As never before, qualified Alaskans are being hired or grubstaked, both as prospectors and consultants, by large "outside" mining companies and local investment groups. As a result of all this, a few valuable discoveries, or rediscoveries of old prospects now valuable under today's changed conditions, are believed to have been made. However, greater numbers of prospectors are yet needed for the establishment of a healthy mining industry. The prospecting picture, particularly in the Second and Fourth Divisions, is far from what it should be.

The biennium saw little activity in nonmetallics. Several concerns are looking for sulfur. An asbestos deposit was discovered and staked. McKinley Stone Company of Anchorage quarried some building stone. Jade was brought out of the Kobuk country, mica was being developed in Southeast Alaska, and limestone was being staked.

Coal production in 1954 dropped an estimated 24% in tonnage from its 1953 peak. This was due to large stockpiles on hand in early 1954, smaller military contracts than usual, and some customers converting to oil.

In spite of the increased amount of radiometric prospecting and a pair of small "rushes," no radioactive deposits of commercial value have been found. Specimens of highgrade uranium-bearing material have turned up, but efforts to trace them to their source have so far been unsuccessful. A large number of U. S. Geological Survey Trace Elements reports on their radioactive work in Alaska is now available. The Territorial Department of Mines published a brief information circular on uranium as a further guide to those interested. Many parts of Alaska are geologically favorable for uranium deposition, and discoveries of importance will yet be made.

The Defense Minerals Exploration Administration continued to participate in financial aid to develop Alaskan mines. Following is a list of the operations which received aid from this agency

during the biennium in the total amount of $362,599. This is a considerable decrease from the sum of $928,000 for the previous biennium.

Alaska Metals Mining Company, tungsten, Fairbanks District

Alaska Tin Corporation, tin, Port Clarence District

Red Mountain Mining Company, platinum, Goodnews Bay District

Alaska Copper Mines, copper, Valdez Creek District

Pacific Northern Minerals Company, tungsten, Hyder District

DeCoursey Mountain Mining Company, mercury, Aniak District

Zenda Gold Mining Company, tin, Port Clarence District

Two of the above loans were additions to loans made in the previous biennium. The U. S. Tin Corporation continues to receive financial aid from the Defense Minerals Procurement Administration against its production.

The Reconstruction Finance Corporation gave no help to mines during the biennium, and is now out of business as far as future transactions are concerned. It was hoped by some that the newly-created Federal Small Business Administration would be of help to the miner, but those hopes have faded.

Eight major oil firms and a number of smaller organizations, Alaskan and Stateside, are actively engaged in Alaskan oil ventures. Four actual drilling projects are under way at the close of the biennium, and more are on the way. Applications for oil leases covering nearly 4,000,000 acres of Alaskan land have been made, and much geological and geophysical petroleum exploration is being conducted. Like uranium, oil production is only a matter of time.

A much needed first-aid and mine-rescue program was reactivated by the U. S. Bureau of Mines during the biennium. They rehabilitated their mine rescue car so that it can be effectively used in case of emergency, and gave mine-rescue and first-aid courses at the coal mines and the U. S. Smelting Refining and Mining Company placer operations. This was a definite contribution to the mining industry.

Future and Needs of the Industry

The future of gold mining is well known. It can only continue to decrease under the present fixed price and high operating costs, and apparently neither of these will change in the foreseeable future. Government and defense construction is not slowing as fast as was earlier expected, so the competition from this industry is still in existence, though diminishing.

Coal mining, second to gold mining in importance, appears to be in definite danger of losing the battle with oil for the Territorial market. Carelessness of the operators in not delivering a clean product to the consumer is partly to blame. New installations favor oil heat, and old installations are converting to oil.

The future of base metal mining looks encouraging, which is good, for there is practically none in Alaska at present. The increased interest in Alaska's metal deposits and prospects, if continued, means eventual new operations and increased production.

Although Alaska still needs more prospectors, the prospecting situation is improving. Not for many years has there been the amount of prospecting in the Territory as during the past biennium and particularly during 1954. Certainly never has there been the organized prospecting with scientific methods and instruments by substantial companies and qualified groups as in the past year. Although there is no new production yet, and there may not be for another year or two, prospecting such as that of 1954 can only lead ultimately to discoveries of commercially important ore deposits which will lead to new production, the amount depending on how the economic picture has changed by then. For Alaska's geology is right. Given the prospectors, economics become the controlling factor. As the government construction continues to taper off, economics become more favorable for mining. If a few profitable operating base metal mines can be brought into existence again, the apathy and pessimism of the past few decades will be displaced by a healthy optimism and an increased interest in prospecting for additional worthwhile deposits. Many things are needed to help bring this about.

The more important needs are outlined in the following section under "Basic Requirements." They deal with prospecting, mineral resources information, the patented land problem, tax

incentives, and economic and political conditions. Other problems include land withdrawals, Indian claims, discriminatory government purchase programs, and noncompulsory assessment work affidavits.

Withdrawn land is holding up Alaska's mineral development in several places. The Naval Petroleum Reserve No. 4 situation is discussed under "Oil and Gas." A U. S. Bureau of Indian Affairs (ANS) site of 320 acres on the Klukwan placer iron deposit will put an end to that promised large mining operation if not released. Canadian interests would like to try mining the sulfur on Makushin Volcano, Unalaska Island, but it is within a military withdrawal.

For many years the Indian claims, or aboriginal rights claims, have confronted Alaska, and clear title to much mining land depends on the settlement of these claims. Yet, the settlement continues to be delayed each year and seems no closer than before. Until a settlement is reached, no one can be certain he has clear title to the claims he wishes to mine. It can be seen that it will be a boost to the future of mining to have this problem eliminated as soon as possible.

The General Services Administration mineral purchasing program is of little help to the small Alaskan miner, and parts of it are definitely discriminatory against the Alaskan. For example, a letter from GSA informed the Department of Mines, "The Domestic Mica Program applies only to mica mined in the 48 States and does not include mica mined in Alaska." This sort of thing is infinitely unfair to the Alaskan miner and a deterrent to the Alaskan mining industry. There are in Alaska innumerable small deposits of tungsten, antimony, lead, tin, mercury, molybdenum, manganese, zinc, copper, and chromium, which could be worked if a market were available for the ores in small lots. The Federal Defense Minerals Administration should initiate a buying program in the Territory.

On the subject of aid to the mining industry, the Territorial Department of Mines believes strongly that, in Alaska at least, if the Government would set up local ore purchasing depots with guaranteed minimum prices, rather than the present system of loans against future production, many small mines would come

into existence, a definite boost to the Territory's economy would result and, last but not least, the Government and the tax payers would then be getting something for their money which at present, in most cases, they do not.

At present, the filing of assessment work affidavits showing that the required annual work on claims has been done is not required by law. Hence, it is often impossible to know the actual ownership status of mining ground. Confusion sets in, developments are halted, and the Territory is the loser of another possible mining operation. An important case in point is the Yakobi Island nickel controversy. When no assessment work affidavits were filed for two years, Canadian interests, thinking the ground had been abandoned, staked it and started laying plans for exploration and development. The former holder then declared he had been doing the assessment work, was in fact still holding the ground legally, and had been negotiating a deal on the property at the time with a nickel company. So the matter went to court and is still there, but if either party could have proceeded with his announced plans, the Territory would be having a nickel exploration program there today which could have developed into a large producing operation. Compulsory assessment work affidavits would prevent this sort of thing from happening, and they should be legislated into effect. Then there would be no further misunderstandings between prospectors and claim holders, and production would result instead of lawsuits.

To take fullest advantage of the new roads, clearings, and bedrock exposures resulting from the greatly expanding logging industry in Southeast Alaska, some effort should be devoted to geological and economic mineral reconnaissance over these areas. Cooperation of the logging companies and the U. S. Forest Service should be sought in an effort to have logged-off areas reasonably free of impediments to travel after the logging operations are concluded. Unless some effort is made along this line, these areas become almost impassable after a short period of years, and efforts to prospect such lands are well-nigh hopeless.

With the amount of oil exploration and drilling in Alaska, oil production is assured. The Territory should be prepared to assume the responsibilities involved in the production of oil, and proper conservation measures should be adopted for the future good of

the industry, and revenue to Alaska. The time to legislate these matters into effect is now. Later, after production is under way, it will be more difficult to achieve because of added resistance by oil producers. Alaska is now an associate member of the Interstate Oil Compact Commission and can avail itself of the operational and legal advice offered by this organization, gained through many years of experience. This will be of great help in our legislation of oil matters and in administering the necessary conservation measures after they are adopted. The Territorial Department of Mines recommends that the proper conservation laws be passed by the 1955 Legislature, and that before the following Legislature in 1957, oil and gas operators be called to public hearings to discuss field rules and regulations to be administered by a Territorial commission. Taxes from production would pay the cost of the administration. Until there is production, there would be no cost.

Basic Requirements for Development of a Sound Mining Industry

There are several requirements that are basic for the development of a sound mining industry in the Territory of Alaska.

First, active groups of real down-to-earth, economically-minded, hard-working prospectors are necessary. These men, or the people backing and directing them, must be aware of the current and present-day importance of all minerals, the existing labor, materials, and transportation problems and costs, etc., as well as possessing a good basic knowledge of mineralogy and geology. As stated earlier, it appears that this requirement is on its way to fulfillment, but mostly in the planning or "being considered" stage thus far.

Second, all known information on the mineral resources of Alaska, including the economic features of the mineral deposits, accessibility, operating and marketing costs, land ownership, etc., should be made available to interested mine operators and venture capital. This will be accomplished as rapidly as possible by the Territorial Department of Mines, depending on appropriations and personnel.

Third, the patented land problem must be cleared up. At present, if the owners of patented mining claims are dead or cannot be found, there is no legal way of obtaining the ground for exploration or mining. If the owner is a defunct corporation, the method is expensive, time-consuming, and uncertain. This situation has blocked many mining developments in Alaska, and will continue to block them until there is a change. A workable land registration law or a small patented claim tax are solutions to the problem.

Fourth, and of prime importance, is a worthwhile incentive which can be offered to investment capital to attract its interest to the Territory's mineral resources. The incentive, of course, is a tax structure favorable to prospective investment capital. The Territory was quite generous in this respect when the 1953 Legislature granted a 3-1/2 year mining tax exemption to all new mining operations. But the Territorial tax is small in comparison to the Federal tax. If the Federal Government would follow the example set by the Dominion of Canada in this matter, the effect would soon be shown in an increase in mining in Alaska.

Other requirements are improvements in economic and political conditions. Everyone is familiar by now with the difficulties and high costs in Alaska of securing efficient labor, equipment, supplies, and dependable transportation. Politically, the attitude of several of the Federal agencies toward Alaskan mining is not helpful and often a deterrent. The Secretary of the Interior spoke truly when he said in a recent address at a chemists' association meeting at New York City, ". . . . History has shown that even the most promising ideas and discoveries will come to naught if the economic and political climate in which they can grow and come to fruition is lacking."

The best example of the workings of such a system is our neighbor—Canada. The provinces and the Dominion have applied all of the above principles, in various ways, with the result that Canadian mining has shown a phenomenal growth since World War II, and American capital is going into these Canadian developments by the billions of dollars. Alaska's mineral resources and geology are comparable to those of western Canada. A comparison of the mining industries and the environments in which they operate will give one the answer to the question, "Why is Alaska's mining industry at a standstill?"

Prospecting and Exploration

The biennium has been notable for the increase of prospectors in the field, particularly in 1954. The important feature of this increase is that much of the prospecting is done, or backed by, substantial companies and qualified individuals using scientific methods and instruments. Grubstaking arrangements are coming back again and the outright hiring of prospectors as in Canada. Qualified Alaskans are being hired more than before by large "outside" mining companies and investment groups on retainer bases as prospectors and consultants. During the season of 1954, venture capital expended by companies supporting trained prospectors in the field amounted to something in the neighborhood of $80,000. In 1953, it was practically nil. Geophysical exploration, both ground and aerial, has increased. This includes radiometric prospecting with counters. A number of large mining companies, American and Canadian, have spent considerable time in the Territorial Department of Mines Juneau office studying the files of reports on Alaskan prospects and properties with a view toward learning of possible mineral deposits that would appear sufficiently favorable to warrant the investment of money in further exploration.

Particular attention was devoted to the search for iron and copper deposits throughout the length of Southeast Alaska. The iron companies have been systematically searching the shoreline areas of the First Division for iron indications with magnetic methods. One of the companies has also been acquiring high-calcium limestone claims. In the spring of 1955, field crews should be arriving to map, drill, and do other work necessary to prove the merit of the acquired iron deposits.

Granby and Newmont are currently engaged in developing large copper holdings near the headwaters of the Leduc River, on the mainland east of Ketchikan, a short distance inside of Canadian territory. Hopes that this property may become an important copper producer are reported to be very bright, and as a result, numerous prospectors have been combing the Alaskan side of the border, in this same general area, and some promising discoveries have been reported. Juan Munoz, trained prospector, spent the summer of 1954 prospecting Southeast Alaska for an Anchorage group called Coast Range Exploration Company. U. S.

Steel of Pittsburgh, W. S. Moore Company of Duluth, Northwest Ventures, Ltd., of Vancouver, B. C. and others, were active in iron and copper, and B. C. Mica Company of Vancouver, B. C. spent the 1954 season developing mica deposits on Sitklan Island. Douglas Mining and Development Company of Vancouver, B. C. is investigating a gold-silver-copper-molybdenum-manganese property near Texas Creek in the Hyder District.

During the biennium, aerial magnetometer surveys were flown over the nickel deposits at Yakobi Island and at Funter Bay, and over the iron deposit at Port Snettisham. Several years ago, the U. S. Geological Survey flew an aerial magnetic survey over the southern part of Prince of Wales Island, and the resulting aeromagnetic map was released this past season. This map was used to an advantage by many in the prospecting of that area. The USGS in 1954 flew a combination magnetic and radiometric survey over the Seward Peninsula and several other parts of Alaska. The TDM has a ground magnetometer and uses it to assist in exploration where it appears likely that magnetic work will help solve the problem.

In the Third Division, Strandberg and Sons had two prospectors exploring copper prospects in the Talkeetna Mountains in 1954. Two prospectors from Chitina were exploring the Spirit Mountain nickel deposit in the lower Copper River country and found an extension hitherto unknown. Northern Pyrites Company, a subsidiary of Texas Gulf Sulphur, completed a geophysical electromagnetic exploration project on two sulfide deposits on Latouche Island. Bear Creek Mining Company, Kennecott subsidiary, investigated the Orange Hill copper deposit in the Chistochina District with geological and geophysical methods in 1953. They made other investigations in 1954.

In the Fourth Division, prospecting in the mercury belt of the lower Kuskokwim country increased many times as a result of the successful operation of the Red Devil mercury mine. Prospectors have found new deposits and are doing more exploration work on old prospects.

Both the Third and Fourth Divisions were scenes of considerable private radioactive prospecting, both ground and aerial. Many groups and individuals are buying scintillation or high-

powered Geiger counters and installing them in small planes for aerial radiometric traversing. This trend is growing by leaps and bounds, and recent flurries of interest over possible "strikes" have insured that the trend will continue.

Another new method of prospecting introduced into the Territory is geochemical, or soil sampling. It has been used experimentally by several, by at least one actual prospector in Southeast Alaska, and by a U. S. Geological Survey geologist in the course of his investigations. Two University of Alaska School of Mines faculty members taught a two-weeks course in geochemical prospecting in 1954 which was very well attended, and it is also being taught in the University of Alaska Mining Extension courses which are given in the various towns of the Territory each winter. Very briefly, the method involves careful and systematic sampling of soils in a favorable area, and the samples, when properly analyzed, usually show indications of nearby mineralization. If many prospectors adopt geochemical work and use it carefully and wisely, discoveries are almost sure to result. Territorial Department of Mines assayers will assist field prospectors in setting up their solutions and give advice on analysis procedures when needed.

Precious Metals

Lode Mining

Alaska's lode gold mining has dwindled to almost nothing. In this whole Territory, known the world over for its huge low-grade hardrock gold mines and smaller highgrade operations that once produced fabulous amounts of gold, there is now not a single steadily-operating lode gold mine. The reasons for this situation are well known and are as follows: greatly increased costs in taxes, equipment, and supplies; undependability and high cost of labor; and the fixed price of gold. Very few of the many known gold lodes that exist in the Territory can be profitably mined under the present economic conditions.

In the First Division there was no significant gold lode production during the biennium other than a retreatment of Alaska Juneau mill tailings late in 1954 by Howard Hayes with a sluicing setup, and a cleanup of the Hirst Chichagof mill by the Island Cove Mining Company. Lode gold prospects being actively developed are those of Robert Novatney at Helm Bay in the Ketchikan

District; Herman Kloss at Sunset Cove in the Juneau District; and "Rocky" Johnson in the vicinity of Ketchikan. The owners of the Mount Parker Mine (formerly the Leroy Mine) are planning some exploration work to determine if the mine can be reopened. Larry Heiner and son did some work on a gold lode in the Petersburg District, recovering the values with a small sluicebox. A flurry of interest was shown in some of the gold lode properties around Berners Bay during 1953, but nothing developed. The Alaska Juneau Gold Mining Company continues to keep a maintenance crew on its properties, though its maintenance is falling behind, in the hopes of changing conditions which will enable it to once more get back into production. This company has changed its corporate papers so that it may also engage in other types of activity, such as possibly the manufacture of pulp. A few lode gold mines in other districts about the Territory are also keeping maintenance men on the payroll.

In the Second Division, the Big Hurrah Mine near Solomon was the scene of rehabilitation activity which nearly put it back into operation. Late in 1954, moving ground and caving in the shaft forced the property to close down. The financial backers of the Big Hurrah are reportedly considering another attempt at opening the old producer in 1955, starting first with a diamond drilling program.

In the famous Willow Creek District of the Third Division, the Gold Cord Mine was intermittently operated during the biennium by two men, and two other individuals operated the Lonesome Mine for a short time in 1954. None of the lode gold properties on the Kenai Peninsula were active, and nothing further has been reported from the small operation at Terror Bay, Kodiak Island, which was active the previous biennium. Some development was carried on at the Dutch Hills Exploration and Development property near Bird Creek in the Yentna District in 1953. This property was under option for a short time in 1954 to Toronto mining interests.

In the Fourth Division, the Territory's one steady hardrock gold mine of the previous biennium was finally forced to shut down because of increasing costs late in 1954. This property is the old Creighton Mine on Pedro Dome in the Fairbanks District. The Summit Claim in the Chandalar may be mined in the near

future by Ed Toussaint, who is reportedly buying some milling equipment for the property. Malter Lindgren and Associates milled a small amount of gold ore from a prospect on Bedrock Creek, tributary to Cleary Creek, in 1954. Development work is being carried on at the Nixon Fork Mine in the McGrath District. Work at the Eagle Creek Mine in the same district has apparently been dropped. Only a few individuals engaged in a little sporadic gold lode prospecting in this Division.

Placer Mining

Placer gold mining is caught in the same ever-tightening squeeze between increasing costs and the fixed price for gold as the lode mining, and although it is also decreasing, it has not diminished, fortunately, to the status of lode mining. Gold production in Alaska, which is practically all by placer mining, increased from $8,419,495 in 1952 to $8,882,405 in 1953, a rise of 5.5%. The Bureau of Mines estimates a production of $8,847,790 for 1954, which indicates a leveling off of placer production in spite of the decreasing number of operations. This can probably be explained by the fact that among the smaller operations, though fewer, a higher percentage is now mechanized.

Alaska's decrease in placer mining has not been the same in all Divisions. The greatest decline during the biennium occurred in the Second Division where the number of operations shrank from 53 producers in 1953 to 34 in 1954. The least decline was in the Fourth Division, where incidentally, most of the placer mining is located. Reasons for the greater decrease in the Second Division include (1) more severe operating and transportation problems, and (2) less available excavating equipment. In explanation of (2) above, Seward Peninsula mining received a boost after the war when surplus bulldozers, etc., were made available at low prices. Military and construction operations have since been greatly curtailed, the original surplus and other equipment is becoming worn out, there is no more to replace it, and few of the Seward Peninsula operators can afford to replace it with new equipment. In the Fourth Division, government operations have continued on a somewhat reduced scale, and surplus military and used contracting equipment continues to be available from time to time.

Placer operators continue to have difficulty in securing sufficient dependable labor for the wages they are able to pay because of the competition of the high-paying defense and road construction projects. This condition is gradually improving, however, as the construction work is easing off some and more workers are coming into the Territory. Most operators are learning to mine or dredge with fewer men by more efficient methods and curtailment of parts of the operation. Also, the Alaskan Eskimo from the northern portions of Alaska is being employed in increasing numbers and used in jobs which were formerly filled by white men only.

A feature of placer gold deposits which helps placer operations continue in the face of rising costs is that they can usually be selectively mined to take the richest part of the paystreak, leaving the rest behind. The richest part is quite often the center of the deposit, and this will be mined or dredged, abandoning the "side pay" because it will not be profitable to mine it under the present circumstances. The tragedy of this situation is that the abandoned side pay will in most cases never be mined because of its poorness and its position after the rest of the deposit is mined. Thus, the Territory will ultimately lose millions of dollars in gold production.

Small operations have become more efficient by adopting improvements to their excavating equipment, doing away with hydraulic giants or nozzles where a sluice plate is practical, better and cheaper stripping methods, automatic giants, etc. Few small operations have more than a two- or three-man crew now, where six- to ten-man crews were once common.

One money and time-saving device developed during the biennium is a U-shaped bulldozer blade that is reported to be highly successful. With the open end of the U-shaped blade forward, the bulldozer tractor can transport a much larger load of gravel to the sluicebox on each pass.

An outstanding example of the ingenuity of some of the placer miners by which they manage to stay in business is the small homemade dredge built by Elmer Straub and Earl Towner of Nome. This dredge was constructed in 1950, and has been digging successfully on Buster Creek ever since. It was fabricated from

surplus tractor parts, pipe, corrugated iron, oil drums, and other odds and ends. The bucket chain was made from old tractor tracks, and the original buckets were from an earth excavator and were later improved upon. This dredge is operated by one man in normal operation. In addition to its low initial and operating costs, it has a tremendous advantage of mobility in that it can be moved from one creek to another in a very few days. Straub and Towner are now designing a second small dredge which will be even more mobile than the first.

Some of the operations and conditions of placer mining will be mentioned here, and a complete list of operations active during the biennium is included at the end of the report.

First Division:

Gold placer mining in Southeastern Alaska was limited to a very few small operations. Stanton Price continued his novel operation at Windham Bay, which runs itself a large portion of the time. Howard Hayes went back to placering the Alaska Juneau mill tailings late in 1954 with a bulldozer and sluicebox setup. A very small hand operation mined a few yards on Montana Creek, north of Juneau.

Second Division:

Placer mining decreased in the Second Division during the biennium. The U.S.S.R. & M. operations in the Nome District were seriously curtailed by the loss of two dredges, one by capsizing in the spring of 1953, and the other after only five days of digging in the spring of 1954 as a result of a cave-in of the bank which broke the bucket ladder on the large No. 5 dredge. The damage from this latest accident will be repaired in time to allow No. 5 to commence digging at the beginning of the 1955 mining season. Also the number of smaller operations has decreased in nearly all of the mining districts. The total number of producing operations was 53 in 1953 and 34 in 1954, a drop of 35%. Probably the most important single factor in this marked decrease is the increasingly unfavorable relationship of costs and income from production.

Council District: The Alaska Placer Company dredge on the Niukluk River was taken over and operated by Coplin Consolidated Enterprises during the 1954 season. William Munz on Rock

Creek mined with a small bulldozer outfit. Two small one-man hand operations, Ed Benick on Ophir Creek and C. V. Olson on Daniels Creek, continued in 1953 and 1954, while the Dutch Creek Mining Company, a producer in 1953, did not mine in 1954.

Fairhaven District: The Casa de Paga Gold Company continued mining with its two flume dredges on the Inmachuk River, and the Mining Division of Havenstrite Oil Company continued its dozer-dragline operation on Candle Creek. Fred Weinard on Mud Creek as well as several other smaller operators were active during both seasons of the biennium. Sankovich and Peterson on Glacier Creek and George R. Miller on Eldorado Creek ceased operations after the 1953 season.

Kiana District: The Helcolicon Mines dredge on Klery Creek has been repurchased by Lammers Exploration Company, the original owner, but no further work has been attempted since this last transaction. Theodore Westlake has continued his small hand operation on Klery Creek.

Kougarok District: N. B. Tweet and Sons mined as usual with their dozer-dragline outfit on the Kougarok River, and Atlas Mines continued operations on Dahl Creek. Rainbow Mining Company on Goose Creek was purchased by Frank Whaley from S. A. Montague. Of thirteen operations in this district in the 1953 season, only six survived to mine again in 1954.

Koyuk District: Sweepstake Mines and S. A. Tucker operated on Sweepstakes Creek in 1953 but were not active in 1954. Patrick Bliss, who worked on Dahl Creek in the Kougarok District in 1953, had a bulldozer operation on Sweepstakes Creek during 1954.

Marshall District: Lars Ostnes and Company on Willow Creek and Wade Hampton Mining Company on Disappointment Creek were active with bulldozer operations in 1953, but only the Ostnes operation remained in 1954.

Nome District: The U.S.S.R. & M. Company continued as the major producer in the Second Division with their dredging operations in the Nome area despite the loss of two dredges. Lee Brothers again operated on Solomon River with two flume dredges, and Kougarok Freight and Mining Company continued mining with their small homemade dredge on Buster Creek. Basin

Creek Mining Company has completed construction of a washing plant and is mining again on Basin Creek. Hirk Edwards completed mining on the Quigley property and moved his dozer operation down the Solomon River to ground leased from Lee Brothers on the Frisco Bench. Ace Mining Company continued with their bulldozer operation on Darling Creek and several small scale hand operations were active in various parts of the district.

Port Clarence District: Small hand operations were continued by H. Johnson and Olaf Martinson on Gold Run Creek. John Vlaar mined on Windy Creek in 1953.

Shungnak District: William Thomas and Al Stout as Kobuk Mines have leased the property of Ted Tronstad and Sig Goodwik on Dahl Creek and are mining with a bulldozer and sluiceplate. Ted Tronstad, who has been hydraulicking on his upper claims and also recovering jade, will not operate next season. Fred Johnson also continued mining on Dahl Creek.

Third Division:

Yentna District: This is the only district in the Third Division which is still a fairly active placer camp. Included within the Talkeetna Recording Precinct, it lists several operations that are steady producers each summer. Collinsville Mines has the largest operation in the district with a dragline and crew of ten on Mills and Twin Creeks. The Alaska Exploration and Mining Company and C. W. Bradley are operating hydraulic plants on Bird and Cache Creeks, respectively. Halvor Erickson, Harold Stanton, A. J. Taraski, and Hamburg and Gliska were all operating as usual. Nugget Creek Mining Company took over the old Cache Creek Mining Company's ground on Cache Creek in 1953, and Barge and Blair leased the same claims in 1954.

Chistochina District: This once highly productive district produced very little during the biennium. The Slate Creek Placers (Louis Elmer) operated in 1953 only, and the other producers consisted of only a few small scale hand operations. Mines Ventures on the Middle Fork spent the biennium in moving in equipment and preparing for a fair-sized operation with an elevated mechanical washing plant.

Hope District: The Hope District was also once a fairly large producer of placer gold, but little mining has been done there for

many years. O'Brien and Dunsmuir, known as the "Two Jims," are still carrying on with their underground sluicing operation at Surprise Creek.

Kodiak District: Formerly the scene of beach placering from time to time, no activity is evident at present.

Nelchina District: Only one operation was active during the biennium—that of Belanger and Cameron on Albert Creek. The Crosby brothers attempted a placer operation on upper Caribou Creek, but were unable to make it pay.

Nizina District: Walter Holmes operated a one-man hydraulic setup as usual.

Seward District: A placer operation was reported on the shore of Resurrection Bay, but the operator is not known.

Valdez Creek District: Only one small operation is now active in this district which is another formerly large placer camp.

Yakataga District. Two small beach placer operations are reported to be still active on the Yakataga beach.

Fourth Division:

Most of Alaska's placer operations are in the Fourth Division. In the Division as a whole, placer mining seems to be continuing about on the same scale as in the preceding biennium. Old operations are giving up the struggle, but new operations are starting up, some of which are mining mechanically where hand mining was the practice before.

Fairbanks District: The Fairbanks District remains the highest gold producing district in Alaska because of the large-scale operations of the Fairbanks Branch of the U.S.S.R. & M. Company. In 1953 the company started its dredge on Pedro Creek, and it operated six dredges throughout the biennium. The Brinker-Johnson Mining Company was inactive in 1953; in 1954 the company had a drill crew at work on Pasco Creek, tributary of Salcha River. The Gold Stream Mining Company began stripping on Goldstream Creek in 1953 and mined during 1954. Aside from these changes, placer mining continued about the same as in the preceding biennium.

Aniak District: There were two less active operations than in the preceding biennium. New York-Alaska Gold Dredging Company continued to mine with two dredges and a dragline-bulldozer operation. Only other operators were Canyon Creek Mining Company on Marvel Creek, Russel Schaeffer on Mukshulik Creek, and Donlin Placers (Bob Lyman) on Donlin Creek.

Bonnifield District: In this formerly active district, only one operation is now listed—that of the Chena Mining Company on Jackson Creek. Nels Jackson, an old-timer who was active in the district for many years, died during the biennium.

Chandalar District: For the first time since 1950, and the second time in the history of the district, a mechanized placer operation was active in the Chandalar. It was the Chandalar Mining Company (Hugh Matheson, Jr., formerly of Ophir,) on Big Creek. Old-timers Amero and Anderson are still active on Big and Tobin Creeks, respectively.

Circle District: The Circle Dredging Company bought the dredge formerly owned by the Berry Dredging Company and operated it throughout the biennium. Alluvial Golds, Inc. and Gold Placers, Inc. operated in alternate years as has been their practice since they adopted "solar thawing" as a means of thawing their ground. Timberline Placers started mining in 1953 on Porcupine Creek and operated both years. Paul Bittner operated an hydraulic mine on Deadwood Creek during 1953 and 1954. The P.R. and H. Mining Company started a new mining operation on Mastodon Creek in 1953. Frasca and Hering started mining in 1953 on Eagle Creek adjacent to the ground mined by Frasca and Gibson in previous years. Other operations in the Circle District continued as in the preceding biennium.

Eagle District: This is another once very active placer district which has declined to little mining. Only three small scale hand operations remain.

Fortymile District: In 1953 the U.S.S.R. & M. Company began stripping on its dredging ground on Mosquito Fork. Two new placer operations started in 1953 and mined throughout the biennium; they were: Dan Manske on Ingle Creek and George Robinson on Wade Creek. A suction dredge was built on Mosquito Fork in 1952 and 1953, but it apparently proved to be unsuc-

cessful and in 1954 it was dismantled. Frank Barrett mined on Stonehouse Creek in 1953, and he was reported to be prospecting on Mosquito Fork in 1954. Several other operations continued as in the previous biennium.

Goodnews Bay District: Goodnews Bay Mining Company continued its platinum mining operations as in the preceding biennium. Red Mountain Mining Company was drilling on McCann Creek. Mumtrak Miners started a new operation on Wattamuse Creek.

Hot Springs District: Active operations included Archie Pringle on Rhode Island Creek, Tony Lanning on Omega Creek, Enstrom and MacDougal on American Creek, Johnson and Isaacson on Eureka Creek, and Strandberg and Sons on Eureka Creek. Larson and Suckling are reported to be drift mining on Woodchopper Creek during the winters.

Hughes District: Strandberg and Sons continued to mine with their washing plant setup on Indian River, and L. F. James was engaged in a one-man operation on Felix Fork.

Iditarod District: This district gained a dredging operation this biennium, but lost some smaller operations. John Ogriz started up and operated the old Reilly Investment Company dredge on Otter Creek which had been idle for several years. Pat Savage moved his operation from Flat Creek to the Ruby District; John Bouquier and the Hatten and Turner operation were reported no longer mining. The North American Gold Dredging Company, Miscovich Brothers, Harry Agoff, Gus Backstrom, and Jules Stuver were all mining as usual. Harry Francis mined on Flat Creek in 1953.

Innoko District: The Ophir Dredging Company operated their dredge on upper Ganes Creek as usual, and Tom Wollard operated the small dredge on lower Ganes Creek by himself in 1954. Other operations were active on Bedrock Creek and Little Creek. Pat Savage mined on Spruce Creek in 1953 only, and Gus Uotila mined on Ophir Creek as usual. Eric Hard was busy again on Bear Creek, the Fullerton Brothers on Colorado Creek, and Strandberg and Sons also on Colorado Creek.

Kantishna District: The only placer operation still active in the Kantishna was that of Burnette and Hunter on Crooked Creek.

Koyukuk District: Several changes have taken place in this district. Slate Creek Mining Company started on Slate Creek in 1954, as did the A. and S. Mining Company on Mascot Creek where Vincent Knorr mined by hand in 1953. The Myrtle Creek Exploration Company took over the Myrtle Creek Mining Company and mined there in 1953, then Prospectors, Inc. acquired the property in 1954, took out a small cut and prospected the rest of the season. Joe Tauber was sniping on lower Myrtle Creek in 1954, and Andy Schwaesdall did the same in 1953. Miller and Sons quit mining after 1953. The Bott brothers mined Eightmile Creek in 1953, then transferred their activities to the Valdez Creek District. Other operations remained the same. Denny O'Keefe is still sinking placer prospect shafts in Denny's Gulch during the winters.

McGrath District: Placer activity has ceased in this district The Strandberg and Sons' dredge on Candle Creek was not operated during the biennium.

Melozitna District: The one active placer operation in this district is "Tuffy" Edgington's Iditarod Operating Company on Golden Creek.

Rampart District: Little change transpired in the Rampart during the biennium. Hunter Creek Mining Company, Quail Creek Mining Company, Little Minook Mining Company, and the Swanson Brothers mined as usual.

Ruby District: Pat Savage moved in from the Innoko and Iditarod Districts to mine on Long Creek in 1954. The Miscovich Brothers have only been engaged in ditch construction at Poorman, Flat and Timber Creeks but plan to get back into production there in the near future. Clarence Zaiser mined on Greenstone Creek and Long Creek Mining Company on Long Creek as usual. Granite Creek Mining Company (William Carlo) mined during the biennium also.

Tolovana District: In 1953, Callahan Zinc-Lead Company operated the dredge of Livengood Placers, Inc. on Livengood Creek. The dredge was idle during 1954, and at the end of the 1954 season it was sold to the U.S.S.R. & M. Company. Other operators in the district were Jurich and Carr on Lillian Creek, Ben Falls on Wilbur Creek, and Olive Creek Mines on Olive Creek.

Coal

Production of coal for the 1953-1954 biennium again reached an all-time high. The 1,514,471 tons produced came from ten underground and strip operations, and was a 28% increase over the previous biennium. A list of the coal operators active in the Territory during the biennium may be found in the tabulation at the end of this report.

Matanuska Field:

The Evan Jones Coal Company continued to mine both strip and underground coal, operating the heavy-media coal cleaning plant throughout the biennium. Evan Jones has also been buying the coal produced by Mrak Coal Company, operating in the same general area, for cleaning in their plant. A homemade continuous miner, dubbed the "doughnut cutter," was moved from a Washington State mine and given a trial run with reasonable success.

The Buffalo Coal Mine never actually reached the production stage. Available RFC funds, allotted for completion of surface plant, were "frozen" early in 1953 and operations were suspended in March of that year.

The Houston Coal Mine operated for a short period both in 1953 and 1954, cleaning up the available strip coal at their present site.

The Pioneer Coal Mine operated on a small scale throughout the biennium at several locations on their lease.

Kenai Field:

Kibby and Eden produced a small amount of coal from their operation near Homer. A few tons were trucked to Anchorage and sold there.

Point Barrow Field:

Coal for use by the Eskimo inhabitants in the vicinity of Point Barrow continued to be mined at the rate of 1,000 tons per year by the Alaska Native Service from the Meade River Mine.

Nenana Field:

Late in June, 1953, the Healy River Coal Mine (Lathrop interests) was sold to Suntrana Mining Company, a group of Anchorage businessmen. One member of this group also designed a new type

continuous miner. One unit was fabricated in an "outside" shop and under test in the mine at the close of the biennium. The underground fire at Healy gave no trouble until late in 1954, when a small break-through required sealing. This occurred in an area where no minable coal was involved.

The Usibelli Coal Mine continued its stripping operation and late in 1954 began underground operations as well. A new heavy-media coal cleaning plant was installed and is ready to handle the output from both strip and underground operations in the spring of 1955.

Arctic Coal Company, after a long delay, was finally granted a lease on Lignite Creek. The company was awarded a contract for part of the military coal requirements for 1955, and an access road was under construction at the close of the biennium.

Broad Pass Field:

Some exploration was conducted in 1954 by Hinchey and Dunkle on Coal Creek near Broad Pass station on The Alaska Railroad, but no production resulted.

The present production capacity of currently established coal mine installations in the Territory is approximately 6,000 tons per day. This capacity is well above the apparent demand and it will be necessary for those operators who intend to remain in business to conduct an efficient operation producing a clean product, if they intend to sell their product on the highly competitive market.

There has been considerable talk about the possible export of Alaskan coal. The grade of coal necessary to meet export specifications is found in very few places in the Territory. Investment capital is at present interested in the Arctic coal region and the Bering River area in this respect.

Coal Miners Examining Board

Chapter 21, SLA 1953, established a Territorial Coal Miners Examining Board composed of the Commissioner of Mines as chairman and three members as follows: the Territorial Coal Mine Inspector, one member from the industry representing management, and one representing labor. The industry selected Mr.

Harry Hill to represent management and Mr. Erwin C. Doyle to represent labor. These names were then submitted to the Legislature for confirmation, as required by Chapter 21.

The Coal Miners Examining Board held two meetings during the biennium to give written examinations to applicants for issuing "Certificates of Competency" as coal mine foremen or firebosses to those persons applying and passing said examinations. Provision is also made whereby certificates may be issued on a reciprocity basis to qualified men holding papers from some recognized State. The Board decided, however, that the issuance of reciprocity certificates would be made only after an oral examination of each applicant.

The first meeting of the Coal Miners Examining Board was held at the TDM Anchorage office October 5-9, 1953. Certificates were issued to the following successful applicants upon written examination:

FIRST CLASS	SECOND CLASS
Andrew Costa	William D. Jarvinen
Wesley J. Norbo	John J. Vlahovich
William Hermann	Harold E. Monahan
James R. Harris	
Ezra Hersh, Jr.	
John W. Dawson	

Certificates were issued to the following applicants on a reciprocity basis:

FIRST CLASS	SECOND CLASS
Wiley D. Robinson	Eino E. Wakkuri
Raymond L. Ellis	Francis J. Ord
Harvey H. Hiber	Edward B. Norris
Carl A. Sandell	Walter C. Briski
Archie Browning	William Kotila
George W. Johnson	
Thomas L. Cinkovich	
Andrew R. Norris	
Peter Gallagher	
Thomas M. Smith	

The second meeting of the Coal Miners Examining Board was held at the TDM Anchorage office December 10-11, 1954. Certificates were issued to the following successful applicants upon written examination:

FIRST CLASS	SECOND CLASS
George Vlahovich	Robert W. Norris
Herman V. Boulanger	Joseph J. Mondak, Jr.

Certificates were issued to the following applicants on a reciprocity basis:

FIRST CLASS	SECOND CLASS
William M. Paterson	Frederick H. Savage
Charles J. Kloss	Virgil E. Wilkinson
John D. Harris	

Base Metals

Alaska has known and potential deposits of many metals which are in great demand, and they should be developed as secure sources of supply which are safe in the changing world conditions and also as a means of contributing toward a basic and self-sufficient economy for the Territory. The most important metal, and one which is not found in significant quantities elsewhere in the world except where it is within easy reach of the Soviet or Soviet-dominated countries, is tin. Tin is followed in approximate order of importance by nickel, tungsten, cobalt, chromium, manganese, titanium, mercury, molybdenum, beryllium, copper, iron, antimony, lead, and zinc.

Tin is found in placer deposits in many locations throughout Alaska. The area of most importance, however, is the Seward Peninsula, where considerable placer mining has been done strictly for the tin content of the gravels, and lode tin deposits are common. In 1953, the only tin placer mining operation still producing was that of the Northern Tin Company on Buck Creek. They did not mine again in 1954. The Zenda Gold Mining Company concluded an extensive placer tin drilling program on the creeks near Cape Mountain in 1953, and was inactive in 1954. Their plans for getting into production are not known. The Alaska Tin Corporation carried out a placer and lode tin exploration program on Ear Mountain during the biennium with the help of DMEA financing. A group of Seattle financiers announced that they planned to institute a drilling program on the old Empire lode tin property on Cape Mountain.

The U. S. Tin Corporation lode tin mine at Lost River, 90 miles northwest of Nome, produced intermittently in 1953 and steadily through 1954. A 9,000-foot pipeline was installed for a water supply, and heating cables were attached, in addition to insulation, to keep it from freezing. A number of changes and additions were made to the milling equipment. Shipments in 1954

totalled 321 tons of tin concentrates, and the operation, which was partly financed by DMEA and DMPA loans, was beginning to be economically sound at the close of the biennium. It was mining and milling at that time 100 tons of cassiterite ore per day averaging not lower than 1.3% tin, and often considerably higher. At 70% recovery (tin is notoriously difficult to mill) this is a production of at least 1,800 pounds of tin per day in the form of concentrates. This mine is actually a "test case" whether it was so intended or not. If all the problems can be ironed out and sufficient facts can be learned about lode tin mining in this extremely difficult area, it will make possible the mining of some of the other tin lodes of the district. The nation would benefit strategically and the Territory economically.

Placer tin has also been found to exist in the Hot Springs District, Melozitna District, Fairbanks District, and others. Several years ago, a piece of tin "float" was found on the beach in St. James Bay, Lynn Canal, Southeastern Alaska, which indicates a possible source of lode tin somewhere in that district.

Nickel, as found in the deposits of Southeastern Alaska, is generally associated with copper, and occasionally cobalt. The more important occurrences are found as disseminated sulphide mineralization in a norite stock. In some cases concentrations of the sulphide minerals—pentlandite, chalcopyrite and pyrrhotite—are found in relatively small pods. An interesting belt of nickel prospects, which the Department of Mines has long advocated is worthy of intensive exploration, extends from Yakobi Island south along the west coasts of Chichagof and Baranof Islands to Snipe Bay.

The Admiralty Alaska Gold Mining Company is still exploring its much publicized deposit at Funter Bay on Admiralty Island. The ore body as developed so far is very promising, averaging around 1% nickel, 1% copper and 0.25% cobalt. The work is being financed by DMEA participating loans. An aerial magnetometer survey was flown over the property and surrounding area in 1954, which indicated other promising structures and resulted in the staking of 38 more claims by the company.

The large Yakobi Island deposits that were staked in 1952 by Canadian interests are in litigation. The former holder of the

property asserts that he was still legally holding the ground when the Canadians staked it. The District Court in Juneau found in favor of the Canadians, and the case was appealed to the Ninth Circuit Court of Appeals in San Francisco where it now waits to be heard. The Canadian people flew an aerial magnetometer survey of the Yakobi area in 1953.

Two Chitina prospectors found an extension to the Spirit Mountain nickel deposit in the Copper River country, and have interested a Stateside mining company in it. Dean Ricks has an interesting nickel prospect in the Salcha River area, and another prospect was investigated by the Department near Livengood.

Tungsten is found throughout the Territory. It is usually in the form of scheelite. All tungsten shipped from the Territory during the biennium was in the nature of a by-product from gold placer operations. Russel Schaeffer recovered scheelite (also cinnabar) as a by-product from his placer operation on Mukshulik Creek in the Aniak District. Slightly less than a ton of scheelite was mined from the Rocky Mountain Creek lode deposit in the Nome District, but this has not yet been shipped. A group of prospectors from Elfin Cove have relocated the Apex El Nido property, a former tungsten producer on Lisianski Inlet, and plan to open it up if possible.

Exploration work under a DMEA loan by Alaska Metals Mining Company on a lode tungsten deposit on Gilmore Dome in the Fairbanks District is still going forward, but on a reduced scale in 1954. A loan was also granted the Pacific Northern Minerals Company for an exploration project at the Riverside Mine near Hyder with the expectation of putting it back into production. The Riverside vein also carries lead and silver. Some rehabilitation work has already been done. A neighboring tungsten property, the Mountainview, was explored further by Arthur Moa, owner. Lloyd Lounsbury and David Dittman prospected scheelite deposits on Tungsten Hill and Gilmore Creek, respectively, in the Fairbanks District, in 1953, but not in 1954. The Kodiak Exploration Company is working on a tungsten prospect on Kodiak Island.

Chromium comes from the mineral chromite, deposits of which are found near Seldovia in the Homer District on the Kenai Peninsula, at Red Bluff Bay in the Chichagof District, and near Eklutna between Anchorage and Palmer. Only the Homer Dis-

trict deposits appear to have commercial importance at present. The Kenai Chrome Company has been mining the Star No. 4 ore body on Red Mountain for two summers, but has been able to make only one shipment of 3,000 tons to the Stateside GSA purchase depot. Shipments will be stepped up next year by use of better shipping facilities, and production is expected to increase to 80 tons per day in 1955 from 60 in 1954. Extremely deep snow forces closure of the property for five or six months each winter.

Interest was shown in the old Chrome Queen Mine, and other chrome deposits in the Red Mountain area were prospected by Seldovia Chrome Company, but no production resulted. This company, owned by Bill Lyons, plans further work in the area and eventual shipments of ore. Road construction by both companies, the Alaska Road Commission, and the Territory is improving the transportation picture of the district.

Manganese is a metal of growing importance. Many deposits of manganese have been known in Alaska for several years, but only one has been considered of commercial value. The increasing need for the metal will undoubtedly increase the importance of Alaska's deposits to possible investors. The Sunrise Group held by Henry "Tiger" Olson near Taku Harbor is the best looking manganese prospect now known in the Territory. A Canadian group took an option on this property in 1953, but to date there has been no action taken toward exploration or development. An interesting prospect is held by T. Hungerford on Kuiu Island.

Titanium is becoming more important as an alloying metal each day. In the form of ilmenite, it is associated with the magnetite iron deposits of Southeastern Alaska. Concentrations of ilmenite in an igneous magma have been reported in the Yakataga District and it is also found in the upper bench of the beaches of this same area. However, since deposits of 15 to 20% titanium oxide are reported numerous in Eastern Canada, an Alaskan deposit would probably have to approach 25% to be of economic interest.

Mercury, known more popularly as quicksilver, has caused much activity in the cinnabar belt along the Kuskokwim River in the Aniak District. The DeCoursey Mountain Mining Company of Anchorage, with DMEA help. put the Red Devil Mine into production in 1953, and with the record high price of mercury in 1954, was doing very well when a disastrous fire late in the year closed

the operation down. They flew the flasks of mercury in to Anchorage with a company-owned plane. The company has also been actively engaged in a development program on the DeCoursey Mountain property preparatory to putting it into production also. At the close of the biennium, the DeCoursey Mountain Mining Company was reportedly making a deal with a reputable Canadian concern in which the new group would take over their properties with a view toward exploration and production on a much larger scale. This same Canadian group is reportedly interested in other mercury prospects along the extensive Kuskokwim Valley belt.

The saying that is often repeated by the Department of Mines among others about how one successful operation in a district will stimulate prospecting and lead to other operations has been well proven in the Aniak District. As a result of the success of the Red Devil operation, prospecting activity on the district's mercury deposits has multiplied many times, and other producers are only a matter of time. Russel Schaeffer has turned from placer mining to sinking on a mercury lode. George and Oswald Willis and the Western Alaska Mining Company are each developing cinnabar lodes in this district. Robert Guck has been prospecting on the Kisaralik River. Other prospectors are also actively hunting for mercury. The Wren, Waskey and Wolfe prospect near Aleknagik is still being developed.

Molybdenum is found in nearly every section of the Territory, although no deposits of definite economic importance are presently known. The Rock Creek prospect in the Chistochina District was recently relocated by David Vietti and associates of Valdez. From a report contained in a U. S. Geological Survey bulletin on molybdenum deposits, an old prospect on Canyon Creek in the Nizina District is well worth investigating.

Beryllium is a metal derived from the mineral beryl and is in high demand. Small amounts of beryl have been reported in the Kigluaik and Bendeleben Mountains of the Seward Peninsula. Prospectors should watch for this mineral, the source of which is usually pegmatites.

Copper is the most widely sought base metal in Alaska today. The production of this metal has a long history in the Territory, and the time is near when copper will once again be produced

here. From the first years of the century when copper was mined in Prince William Sound and on Prince of Wales Island in the Ketchikan District until the famous Kennecott Mine in the Nizina District was forced to close in 1938, Alaska was an important producer of copper. The Prince William Sound and the Nizina Districts are still the most promising areas, but copper may be produced in either the Ketchikan District or the Valdez Creek District first. Copper is also found in the Chisana, Bristol Bay, Alaska Peninsula, Willow Creek, Yentna, Kodiak, Seward Peninsula, and many other districts about the Territory. Mining companies are interested in obtaining large lowgrade deposits as well as higher grade ore. Present-day operators are very pleased with deposits running 30 or 40 feet in width and several hundred feet in length and assaying 2 to 3%, even though found some distance from tidewater.

In 1953, the Delano Mining Company was driving a drift on a copper prospect owned by Martin Radovan in the Nizina District, and Bear Creek Mining Company, exploration subsidiary of Kennecott Copper Company, was conducting geological and geophysical exploratory work on the Orange Hill deposit in the Chistochina District. Henry Schultz continued development work on his copper prospect in the Nizina District through the biennium, and Rhinehart Berg did the same on his prospect in the Shungnak District. Peninsula Exploration Company is still developing its copper deposit on Sitkalidak Island in the Kodiak District, but have had no success yet in securing a DMEA loan.

Quite a controversy arose in 1953 between two rival staking groups over the large and promising Moose Creek copper show north of Palmer. Whether this case will go to court is not yet known. Albertson and Pettyjohn turned their copper discovery on the Maclaren River over to Alaska Copper Mines, Inc. early in 1954, and this company has since been pushing an aggressive underground exploration program on the large vein. The new Denali Highway, being built through the Valdez Creek District from Paxson to Mt. McKinley, is opening up promising copper country. Already a new discovery has been made on the route, and more will be found as the road progresses and prospecting increases in the vicinity.

Iron—With the gradual depletion of iron ore reserves in the United States and the movement of the steel industry toward the West Coast, the search for iron ore has increased tremendously during the biennium. U. S. Steel and another major iron mining company have been literally combing the shoreline areas of Southeastern Alaska for iron deposits, and other iron or steel companies are active in the hunt to a lesser degree. A deposit in the Third Division has also been considered briefly by two companies, but since one of the first requisites of an iron ore deposit unless abnormally large is cheap transportation, the search is not likely to spread northward until the First Division is rather thoroughly covered. Among the favorable bodies of magnetite are those at Klukwan, Port Snettisham, Union Bay, Duke Island, and several on Prince of Wales Island. These deposits are all too lowgrade to be shipped without beneficiation or concentration, however, and considering the low unit-price of iron ores, beneficiation will probably be too expensive until large amounts of low-cost electrical power are made available locally. To be considered also for the future is the probability of electrical smelting furnaces being built in Alaska in connection with the various proposed large hydroelectric developments.

The Klukwan deposit, owned by the Alaska Iron Company, is leased to Quebec Metallurgical Industries, a Canadian subsidiary of Ventures, Ltd. A local incorporation has been effected to handle their business on this side of the boundary. In 1953, large scale sampling and testing were done on the placer portion of the deposit by QMI, but little was done in 1954 because of conflicting activities of the U. S. Army and contractors on the construction of the Haines-to-Fairbanks fuel pipeline. The company reports plans for considerable activity at the prospect in 1955, though, and production at an early date if an Indian Bureau claim to some of the ground is relinquished. They plan to mine the placer deposit first, which contains many hundreds of millions of tons of iron-bearing gravel.

The Snettisham deposit, held by W. S. Pekovich and Robert Coughlin of Juneau, was drilled quite extensively by the Bureau of Mines during the biennium. Results will be available soon. Mr. Pekovich had an aerial magnetometer survey flown over this property at the same time as the one of the Funter Bay nickel pro-

perty was made. The owners are also having the Snettisham prospect patented—a group of sixteen claims.

A magnetite deposit at Tuxedni Bay, Cook Inlet, was reportedly staked in 1954 by an Anchorage man for California interests.

Antimony production in Alaska was zero for the biennium. the price remains up, but there seem to be no purchasers. Foreign imports are blamed. Alaska contains antimony deposits in all sections. Earl Pilgrim carried out an exploration program at the Stampede Mine in the Kantishna throughout the biennium with DMEA assistance. George Roberts also had DMEA help on exploratory work done on his antimony prospect at Camaano Point, north of Ketchikan, in 1953. Native antimony, a rare occurrence, is found in the K & D Lode, owned by Herman Kloss at Sunset Cove, Petersburg District. Howard Sparks was prospecting for antimony near Fairbanks in 1953. A good market would beyond doubt create many small antimony mining enterprises in Alaska.

Lead and **zinc**, like antimony, are found in practically all parts of Alaska, but the low prices at present will not pay the cost of mining and shipping. Pure lead or zinc will not bring sufficient returns to pay the shipping costs alone from interior Alaska or the Seward Peninsula. The main hope for lead and zinc mining is the deposits that carry associated metals such as silver or copper in sufficient quantity to "sweeten" the ore considerably. Such a deposit, for example, is the L. C. Berg lead-zinc prospect in Berg Basin east of Wrangell, which contains ore high in silver content. The Mt. Eielson zinc-lead property in the Kantishna, formerly owned by O. M. Grant, is now held by Harold Herning of Fairbanks. Considerable interest has been shown in this property, and it is probable that some sort of deal will be made for it soon and activity of at least exploratory nature will result.

In 1953, Fred Wackwitz of Fairbanks shipped some lead-silver ore mined from his prospect on Pedro Dome in 1952, but the smelter returns just barely paid the shipping charges, leaving him nothing for his mining costs. Also in 1953, the Canadian concern of Brewis Red Lake Mines staked a number of lead-zinc claims in the area east of Wrangell, intending to develop them as soon as a road can be built.

In 1954, the Neal W. Foster lead prospect in the Darby Mountains on the Seward Peninsula was drilled by the Bureau of Mines. Much interest is being shown in the old Independence lead-silver mine, an early producer also on the Seward Peninsula at the confluence of Independence Creek and the Kugruk River. The mine is still full of water, however. Archie Ferguson of Kotzebue plans to open it up. The Riverside lead-zinc mine near Hyder will probably be put back into operation, as already mentioned under the tungsten section. An interesting possibility that should be investigated is a long abandoned lead-silver prospect high on a mountainside on the west side of Lynn Canal near the Lynn Sisters. A sample from this prospect was assayed at several hundred ounces of silver per ton in addition to the lead. On the Excursion Inlet side of this peninsula is a promising highgrade lead-silver property, the Silver King, owned by Charles Parker of Gustavus. For some obscure reason, lead and zinc assays were requested oftener in proportion to the more important and higher priced metals in 1954 than they were in 1953.

Bismuth is occasionally found in placer concentrates in a few sections of Alaska, but the only known deposit of worthwhile possibilities is that of Native Bismuth, Inc. on Charley Creek in the Nome District and is in conjunction with a placer gold deposit. More exploration work needs to be done to determine its extent and value.

A deposit of gibbsite, which carries aluminum, was investigated during the biennium. It lies in the Willow Creek District. Deposits of the barium minerals, barite and witherite, are known in various sections of the Territory.

Radioactives

Uranium was the most discussed element in the Territory as the biennium ended—even surpassing the subject of oil which was probably uppermost in the public mind until October of 1954. The upsurge of interest in radioactives was largely the result of two possible "strikes" which fired the public's imagination with the help of the newspapers. Inquiries about radioactives became so numerous that the Department of Mines prepared an information circular on uranium in Alaska to better answer the many questions.

One small "rush" was to Shirley Lake, 110 miles northwest of Anchorage on the Skwentna River. An area was found there that is definitely above normal in radioactivity. Most of the staking was done by a group calling themselves the United Six Company, and they continued to prospect there with combined aerial and ground radiometric traversing, and later by core drilling with one of the small Canadian Packsack diamond drills. No ore of commercial grade has yet been found, but the possibilities are still good.

The second flurry of interest was centered in the Nixon Fork country northeast of McGrath. Two pilots, Jerry Church and Ed Steger, found a radioactive area there and started an influx of about 30 prospectors who staked a total of about 35 claims. As with the Shirley Lake area, above-normal radioactivity was found, but the highgrade samples have not yet been isolated. However, a U. S. Geological Survey Trace Elements Unit report dated 1949 states that the area is favorable and suggests that geochemical prospecting might be more successful there than radiometric traversing.

The remaining radioactive news for the biennium was mostly in 1953. As a result of a favorable Trace Elements report on work done there in earlier years, Elmer Straub and Bill Munz of Nome went into the Peace River vicinity of the Seward Peninsula with a bulldozer and systematically cut trenches through the radioactive area until a mechanical breakdown halted the work. Samples from the cuts were checked carefully, but commercial grade material was not detected. This did not eliminate the area, though, and a U. S. Bureau of Mines crew sampled further in that part of the country in 1954.

Weakly radioactive sands were dredged from the area adjacent to the Juneau airport during the construction project there in 1953. While not of commercial value, it indicates a possible nearby source. The radioactive area in the vicinity of Salmon Bay, Prince of Wales Island, is still of interest.

From time to time, stories of "hot" finds have come to the attention of the Department, and highgrade samples have been brought in to the offices. Most of the stories turn out to be only rumors, and quite often the samples have found their way up

from the States or over from Canada. However, many parts of Alaska are geologically favorable for the occurrence of uranium minerals, and with continued prospecting, it is only a matter of time before deposits of commercial value are found. At least a few of the "hot" samples have originated in the Territory. For example, the Kennedy zeunerite prospect on Brooks Mountain, Seward Peninsula, was the source of many specimens of commercial grade ore until the surface material was nearly all "sampled." The type of formation of the Kennedy prospect is favorable to greater deposition at depth, and it must be thoroughly drilled to determine its ultimate worth. Nothing was done on this prospect during the biennium.

As mentioned under "Prospecting and Exploration," private radiometric prospecting, by air and on the ground, has had a remarkable growth during the year 1954. Many individuals or local groups have purchased scintillometers or high-powered Geiger counters and installed them in light planes for radiometric aerial traversing. This development was only in the talking stage in 1953. An enterprising person in Fairbanks was reported to have installed a radioactive device on his house top against which pilots may calibrate their aerial counters while in flight. Dealers in counters have done an unprecedented business.

In addition to assaying radioactive samples for equivalent uranium content, Department of Mines assayers assist prospectors further by maintaining samples of known radioactive strengths, or percentages, so they may check their counters to determine their working order. The U. S. Geological Survey Trace Elements Unit maintains a laboratory at College during the summer months which also assays and analyzes radioactive samples free of charge.

The Atomic Energy Commission several years ago set up a $10,000 bonus for the first 20 tons of 20% uranium oxide ore from a single mining location.

In 1951, the Territorial Legislature matched this bonus with an equal one, so that an Alaskan qualifying would receive both bonuses totalling $20,000 plus bonus rates per pound which would run the total up several more thousands of dollars. To date, no one has received either bonus to the best of the Department's knowledge.

Nonmetallics

Among strategic nonmetallic minerals, mica and asbestos are the most important. Sulfur, though not necessarily strategic, is in growing demand. Alaska has deposits of all three of these. Also in the Territory are deposits of clay, jade, pumice, graphite, building stone of many types, silica, rare earths, gypsum, and unlimited reserves of high-calcium limestone. Other deposits include garnet, marble, fluorite, calcite, kyanite, and bentonite.

Mica deposits on Sitklan Island south of Ketchikan are being developed by the B. C. Mica Company of Vancouver, B. C. Another deposit at Nakat Inlet in the same district is being prospected by Frank Blasher of Hyder. Mica is reported to exist in other locations about the Territory. The market is good and prices are high, particularly for the strategic grades, but they must be sold to private purchasers because the GSA mica purchasing program is limited to the 48 States.

Asbestos deposits in the Territory are fairly wide spread, but the asbestos on the Kobuk River is the best known so far. Several tons of Kobuk asbestos were shipped during the war when shipping cost was no deterrent, but since then there has been no production because of the remoteness of the area. A deposit on Bear Creek, Admiralty Island, has been known for many years and is held by Harold DeRoux of Juneau. More development work needs to be done to determine the prospect's worth. A large deposit is reported to exist north of the Yukon River in the vicinity of Rampart. Samples of asbestos, mostly of poor grade, are sent into the assay offices quite often from nearly all parts of Alaska. A new asbestos deposit in the Mentasta Pass area was located in 1954 by Lowell Patten of College. Samples from this deposit appear to be of good commercial grade.

Sulfur is being actively sought in Alaska by at least two large Stateside sulfur producers. The Territory's chief hopes for sulfur production lie in its myriad pyrite deposits, although the volcanic sulfur deposits along the Alaska Peninsula and Aleutian Islands are being investigated as possibilities. With the advent of new metallurgical processes, which allow the iron in pyrite to be saved as well as the sulfur, pyrite deposits have taken on a definite increase of importance. Chalcopyrite is even better, if in sufficiently large quantity, because copper can then also be produced in addition to the sulfur and iron. Any sulfide deposit at least 20 feet wide by 100 feet long and approaching 70% pyrite (total added sulfur and iron content) is of possible commercial value. Northern Pyrites Company is paying $170,000 for an option on two sulfide deposits on Latouche Island. Geophysical exploration was completed on the deposits by them in 1954. Interest is being shown in several other pyrite prospects.

Clay deposits are fairly well limited to the Anchorage and Willow Creek Districts and the railbelt. A number of them were investigated during the biennium. Clay is used for a large variety of industrial purposes. Basic Building Products, Inc. of Anchorage have most of the equipment installed in a new plant for the manufacture of brick, tile, clay pipe, and associated products. A few brick were manufactured before the close of the biennium.

Jade is valuable for lapidary and jewelry work and sells well when cut and polished. The only known Alaskan source is along the Kobuk River in the Shungnak District. Gene Joiner's Empire Jade Company has been making small shipments from there, and Sig Goodwick has been recovering jade in addition to the gold from his placer operation on Dahl Creek, tributary to the Kobuk. Jade has been reported to exist in Southeast Alaska, but this has not been confirmed.

Pumice is a light volcanic mineral that can be used to an advantage in lightweight concrete aggregates. Pumice has been mined on Augustine Island for use in the Anchorage area. Recently-passed legislation has made it legal to mine this material within Katmai National Monument. A pumice deposit on Behm Canal, near Ketchikan, was staked recently. Certain types of shale which exist in the Anchorage and Matanuska areas can also be used for lightweight aggregates by first bloating them.

Graphite exists in a large deposit in the Imruk Basin of the Seward Peninsula. The construction firm of Stock and Grove endeavored to investigate this graphite in 1953, but certain missing information caused them to lose interest. In 1954, a very good sample of graphite was submitted from the Haines area.

Building stone of several varieties is being located and quarried in small amounts near transportation routes in the Third and Fourth Divisions by the McKinley Stone Company (formerly Great

Northern Stone Company) of Anchorage. They do all kinds of masonry work, make monuments, walls, chimneys, etc. Other building groups in the Anchorage area are employing stone in their construction.

Gypsum deposits are well known in the vicinity of Iyoukeen Cove, Chichagof Island. Held by Harold DeRoux of Juneau, these deposits are considered fairly extensive and some interest in them is aroused from time to time. The extremely low unit price for gypsum has prevented any real activity during the biennium, however.

Rare earths, including parisite, containing many of the very rare elements plus some radioactivity exist on northern Prince of Wales Island in the vicinity of Salmon Bay and elsewhere. Considerable excitement was aroused by this discovery in the preceding biennium, but died down later when it was learned that the radioactivity originated mostly from thorium rather than uranium. There is, however, a small uranium content. Activity on these prospects may increase again.

Limestone is the country rock for a large share of Southeastern Alaska, much of which is high-calcium limestone, and as such, is suitable for use as a flux in iron smelting and also could be used in the processing of aluminum, if the proposed aluminum plant ever becomes a reality in this section. U. S. Steel, in their quest for iron ore in Alaska, has been staking their legal amount of limestone claims. Limestone has also been staked in the vicinity of Haines.

Oil and Gas

Exploration for oil and gas by private enterprise in Alaska has literally mushroomed during the biennium. Applications for oil leases on almost four million acres have been received by Bureau of Land Management offices at Anchorage and Fairbanks. From the two major oil concerns active in the Territory in 1952, the number increased to eight in 1954, in addition to several local Alaskan organizations and minor Stateside firms. These companies expended between 3 and 4 millions dollars in exploration activities in Alaska in 1954. With an annual expenditure at this rate, it is only a matter of time before the first well is brought in. Alaska's oil consumption rate of 6,000 to 8,000 barrels per day and

her easy accessibility by water transportation to other markets well justify continued aggressive exploration on the part of private enterprise in the search for oil and gas.

The eight major companies active in Alaska in 1954 were as follows:

Humble Oil Company
Ohio Oil Company
Phillips Petroleum Company
Richfield Oil Company
Shell Oil Company
Standard Oil Company of California
The Texas Company
Union Oil Company

A complete tabulated list of oil activities is given at the end of the report. Geologists have designated the various areas or regional structures considered favorable to oil as oil provinces.

Phillips and Kerr-McGee started drilling after intensive geological investigation in the Katalla-Yakataga province near Icy Bay in 1953. Their second hole was down to 6,550 feet on December 1, 1954. Results on the first hole, which was abandoned at a depth of 4,800 feet, are not known other than by rumor. Kerr-McGee dropped out of the venture in early 1954, leaving Phillips alone in the field. A total of twelve wells are to be drilled within ten years under a special agreement with the Interior Department involving nearly one million acres.

The Iniskin Unit Operators, representing the Havenstrite Oil Company of Los Angeles, are the next most active drilling operation. They brought a huge rotary rig into their old pre-war drilling site at Iniskin Bay on the Alaska Peninsula in 1954, and drilled rapidly to a depth of 5,100 feet when an earthquake in October filled 600 feet of the hole and caused a casing failure. Little progress was made after that, and the operation closed down for the winter in November.

The third company actually drilling for oil is the Alaska Oil and Gas Development Company of Anchorage. They drilled through both seasons of the biennium with a cable drill rig near Eureka on the Glenn Highway, and reached a depth of nearly 2,700 feet before stopping for the winter in 1954. Promising gas indications have been reported by the company from time to time during the drilling.

The fourth and last company in the process of drilling is the Anchorage Oil and Gas Company which is drilling for gas in the Houston area (Upper Cook Inlet province).

The Shell Oil Company has been doing extensive geological exploration with a total of four geological field parties. Two of them were on the Alaska Peninsula near Becharof Lake, one on Iniskin Peninsula, and one on Kenai Peninsula.

Standard Oil Company of California had three geologists conducting survey work both in the Katalla-Yakataga province and the Cook Inlet-Alaska Peninsula province. Extensive seismic exploration was conducted on the Kenai Peninsula by the Robert H. Ray Company under contract with Standard. The company has entered into a special agreement with the Interior Department guaranteeing certain annual expenditures for exploration, as well as the drilling of two wells in 1959 and 1960. An area of 750,000 acres on the Kenai Peninsula is involved.

Preliminary geological work in the Kateel River area by Fairbanks Oil and Gas Company resulted in simultaneous lease applications by two groups. A partnership between Texota Oil Company of Fort Worth and Brooks-Scanlon Oil Company of Minneapolis comprise one group, while the other is a Fairbanks organization known as the Texas-Yukon Oil Company.

The Alaska Gulf Oil and Gas Company of Anchorage has optioned acreage in the Cook Inlet province to a Bakersfield, California, group which plans to drill in 1955.

The Texas Company, Ohio Oil Company, and Union Oil Company all engaged in preliminary reconnaissance investigations in Alaska in 1954 and laid plans for more extensive work here in 1955.

Richfield Oil Company leased 90,000 acres on the Kenai Peninsula late in 1954.

The U. S. Navy's oil and gas exploration work on Naval Petroleum Reserve No. 4 has ceased. This reserve and the Interior Department withdrawal known as PLO 82 consist of about 48 million acres and include practically all of Alaska north of the crest of the Brooks Range from the Canadian Boundary to Cape Lisburne. It appeared for a time that the Republican administration would

abide by their announced intention of opening up resources for private development and release this area for the benefit of Alaska. Criticism on the part of Stateside newspapermen and others accusing the administration of a "give-away" program has apparently delayed this release. At least two major oil concerns, Ohio and Union Oil Companies, have publicly announced an interest in the release of this northern acreage so that they might start developments toward production there.

Another facet of the situation is the possibility of piping natural gas from the Gubik gas field to the railbelt should this withdrawn area be released. The Gubik gas field is about 7,000 acres of proven structure estimated to contain 300 billion cubic feet of gas. Anyone interested in going into this possibility in detail is urged to read the Alaska Development Board report **Possibility of Commercial Development of Gubik Gas Field and Use of Natural Gas as a Source of Heat and Power in the Railbelt Area of Alaska.**

LAWS AND REGULATIONS PERTAINING TO LOCATING AND LEASING MINERAL GROUND

Under the present mining laws, all mineral deposits except oil, gas, and coal may be located and held by staking mineral claims on the public domain. Public domain includes all government-owned lands which have not been withdrawn or reserved for some purpose. The University of Alaska has compiled a map showing the larger withdrawn areas and the recording precincts in the Territory, which may be purchased from the University Bookstore.

Mining claims are of two types: placer and lode. They are staked under slightly different regulations, but in either case a prospector must make a discovery of valuable mineral on or in the ground before he may stake it.

Placer claims are staked on ground where the mineral is not "in place"; that is, where it has been moved from its original position in bedrock by erosion and weathering agencies to another location in an unconsolidated deposit, usually in an ancient or present stream bed. In Alaska there is a limit on the staking of placer claims to two per month in any one recording precinct. Claims may be staked for others by power of attorney, but in the case of placer claims they cannot be staked in any manner so that any one person may accumulate more than the legal limit. The size of a placer claim can be no larger than twenty acres, and the dimensions are ordinarily 1,320 by 660 feet, but it cannot be longer than 1,320 feet. It must be marked by a post or monument at each corner and angle of the boundary lines and the boundary lines must be marked on the ground. A location notice must be posted on the claim giving the name of the claim, name of the locator, date of location, and description of claim. The location notice may be posted on one of the corner posts. A location certificate must be recorded, with the recorder of the recording precinct in which the claim is located, within ninety days of the location. The certificate contains the same information as the location notice with the addition of the description of the actual geographical situation of the claim sufficiently clear to enable another person to find the location.

Lode claims are staked where the valuable mineral is "in place", undisturbed in its original position in a vein or lode in bedrock. There is no restriction on the number of lode claims that may be staked, but the locator should remember that assessment work must be done for each of his claims if he is to hold them. The dimensions of lode claims cannot be longer than 1,500 feet along the vein nor extend more than 300 feet from the vein on either side. Thus the correct size of the lode claim, when possible, is 1,500 by 600 feet with the vein outcrop (called the apex) running through the center of the claim. The end lines of the lode claim must be parallel if the miner is to have his extralateral rights which entitle him to follow the vein down after it passes out from under the side lines, but require him to remain between the downward vertical extensions of the end lines. Thus, if the claim is properly staked, he may follow the vein as deep as he wishes, regardless of which way it dips, but he cannot mine more than 1,500 feet, or his claim length, of the vein laterally.

A minimum of seven posts or monuments is required to follow legal requirements in locating a lode claim. One post must be on each corner, one in the center of each end line where the line crosses the apex of the vein, and one at the discovery point on which the location notice is posted. The discovery point must be within the claim, and not on one of the boundary lines. As with the placer claim, posts are also required at any angle of the boundary lines, and all boundary lines should be marked. Practically the same information is written on the lode location notice as the placer, and forms for each may be purchased from various printing concerns in the Territory. Claim location certificates must be recorded at the recorder's office within ninety days after the date of location.

To legally hold claims after they are staked and recorded, $100 worth of assessment work must be done on each claim each year. This work must be done in such a way as to improve the claim or benefit it. Work for a group of claims that are contiguous may all be done on one claim. Cost of tools purchased or transportation expense of tools or personnel to or from the claim is not chargeable to assessment work. The annual deadline for completion of assessment work is July 1st at noon, but work is not required for the assessment year during which the claim is staked.

An affidavit stating that the assessment work has been done should be recorded each year as proof that the claim is being legally held.

After $500 worth of work has been done on a claim, the holder may apply for a patent. This gives him full title to the ground and relieves him of the necessity of doing the annual assessment work. The process of obtaining a patent is lengthy and rather expensive, the details of which may be obtained from the Bureau of Land Management.

A small book entitled **Alaska Mining Laws** by Henry Roden may be purchased from the Daily Alaska Empire Printing Company, Juneau, Alaska, for $2.00.

Oil and coal lands are not staked like other minerals, but are acquired by leases obtained from the Bureau of Land Management. In the case of oil and gas in Alaska, an individual may apply for a lease on one or more tracts of unproven land by paying the initial fees and rentals. Leases are for a five-year period, with a single five-year extension, or as long as production occurs. Rental is 25 cents per acre for the first year; second and third year rental waived; 25 cents per acre for fourth and succeeding years. Upon discovery, rental is $1.00 per acre plus 12½% royalty (5% for the first ten years for the first producer in a new area). An individual or corporation may lease up to 100,000 acres on this basis, the maximum acreage per tract being 2,560 and the minimum 640.

A development company may be formed which may obtain options from lessees up to as much as 200,000 acres for a two-year period.

On known or producing geologic structures, lands are leased only after competitive bidding on leases with a maximum size of 640 acres to a total of 15,360 acres for a person or corporation. The term of the lease is five years and as long thereafter as production continues in paying quantities. Rental is $1.00 per acre per year with royalty rate of 12½% to 25%.

There are no designated producing structures in Alaska at the present time.

The Secretary of the Interior is authorized to survey the public lands in Alaska known to be valuable for their deposits of coal and to divide the unreserved coal lands and coal deposits into leasing blocks or tracts of 40 acres each, or multiples thereof, in such form as will permit the most economical mining of the coal therein, not exceeding 2,560 acres in any block, and to offer such blocks for lease.

A lease may be issued for a period of not more than 50 years, subject to renewal on such terms and conditions as the law at the time of renewal may authorize, and it confers upon the lessee the exclusive right to mine and dispose of all the coal and associated minerals in the tract leased. He must covenant to invest in actual mining operations upon the land not less than $100 for each acre involved, of which amount not less than one-fifth must be expended during the first year of the lease and a like sum in each of the next succeeding four years.

The Secretary of the Interior is authorized to issue coal-prospecting permits to applicants qualified to hold coal leases where prospecting or exploratory work is necessary to determine the existence or workability of coal deposits in an unclaimed, undeveloped area in Alaska. Permits are issued for terms of not exceeding four years and may not include more than 2,560 acres. If within the life of the permit, the permittee shows that the land contains coal in commercial quantity, he is entitled to a lease of the land.

Limited licenses or permits are issued, granting the right to prospect for, mine, and dispose of coal belonging to the United States, on specified tracts not exceeding 10 acres, and for not more than an area reasonably sufficient to supply the quantity of coal needed, to any one person or association of persons in any one coal field for a period of two years without payment of royalty for the coal mined or for the land occupied.

TABLE II

Mineral Production of Alaska, 1952-1954

	1952		1953		1954 (1)	
	Quantity	Value	Quantity	Value	Quantity	Value
Antimony ore ....short tons	420	(2)	.....	.....	.....	.....
Chromite ....short tons	.....	.....	.....	.....	3,360	$146,000
Clay ....short tons	.....	.....	.....	.....	.....	(2)
Coal, bituminous ....short tons	686,218	$5,779,423	861,471	$8,451,542	653,000	8,162,500
Gold ....troy ounces	240,557	8,419,495	253,783	8,882,405	252,794	8,847,790
Lead ....short tons	1	386	9	2,240	.....	.....
Mercury ....flasks, 76 lb.	28	5,575	40	7,721	1,023	270,584
Sand and gravel ....short tons	10,781,926	8,650,582	7,689,014	5,079,681	7,750,000	5,119,710
Silver ....troy ounces	32,986	29,854	35,387	32,027	35,140	31,803
Stone ....short tons	(2)	(2)	47,086	169,711	49,000	176,610
Tin ....long tons	82	220,956	49	105,917	170	342,000
Tungsten (60% concentrates) ....short tons	8	(2)	3	(2)	.....	.....
Undistributed (3)	.....	3,195,336	.....	1,520,782	.....	1,231,350
(4)						
Total		$26,302,000		$24,252,000		$24,328,000

(1) All figures for 1954 are preliminary and subject to revision.

(2) Value included with "Undistributed".

(3) Includes platinum, gem stones, and other minerals whose values must be concealed to avoid disclosing individual company incomes.

(4) No zinc produced during 1952 to 1954. An estimated four tons of copper was produced by three small operations late in 1954, but figures were not yet available.

Note: Above statistics with the exception of the 1954 coal figures prepared by William H. Kerns, Mineral Industry, Division, U. S. Bureau of Mines, Region I, P. O. Box 560, Juneau, Alaska.

TABLE III

Average Metal Prices as Quoted by E. & M. J.

	1952	1953	1954	12/29/54
Copper, domestic, f.o.b. refinery	24.200	28.798	29.694	29.700
Copper, foreign, f.o.b. refinery	31.746	30.845	29.884	31.050
Lead, common, New York	16.467	13.489	14.054	15.000
Lead, common, St. Louis	16.266	13.288	13.840	14.800
Zinc, Prime Western, St. Louis	16.215	10.855	10.681	11.500
Tin, Straits, New York	120.473	98.845	91.844	87.500
Silver, foreign, New York	84.941	85.188	85.250	85.250
Quicksilver (per flask 76-lb.)	$199.097	$193.032	$264.383	$322.000
Antimony, N.Y. (cases)	45.524	37.402	31.970	31.970
Platinum, refined	$ 90.000	$ 91.238	$ 83.835	$ 78.000
Cadmium (producers' quotation)	224.095	199.439	172.500	170.000
Aluminum, 99 plus percent, ingot	19.410	20.931	21.784	22.200
Magnesium, ingot	24.500	26.535	27.000	27.000
Nickel, electrolytic	56.500	59.888	60.453	64.500

EMPLOYMENT AND ACCIDENTS AT MINES

The following Table IV reveals the trend of employment in the mining industry from 1914, the first year for which records are available, through 1954. Accidents and employment at the various types of mines are shown for each year of the biennium in Table V. The number of man-shifts, number of accidents, and resulting time lost at mines of various types in Alaska, during each year for which records are available, are indicated in Table VI.

Fatalities

Nine fatalities resulted from accidents in mines or on mining properties during the biennium, four in 1953 and five in 1954. Three were in coal mines, four were in underground lode mines, and two were connected with placer operations. Roof falls, which are the greatest single cause of mining accidents and deaths in coal and metal mines alike, accounted for two of the fatalities. Falling rock also caused one death in an open pit. Three fatalities were the result of two underground blasting accidents, and one more underground death was the result of a transportation accident. The remaining two fatalities resulted from what might be termed as freakish accidents in connection with placer mining machinery or equipment. Investigations revealed the following facts:

Kasper Kaiser, Buffalo Coal Mining Company, January 21, 1953. Kaiser and three others were being hoisted out of the mine in a skip. One wheel of the skip apparently locked, due to improper lubrication or a broken bearing, and combined with an uneven track and improperly balanced load caused the skip to jump the track and bounce from one side of the slope to the other before it could be stopped. Kaiser's skull was crushed, apparently between the skip and a tie. The deceased then fell 175 feet down the slope. The three others were injured, two of them hospitalized.

Herbert A. Pierce, Evan Jones Coal Company, May 21, 1953. While working, the deceased and his working partner noticed some coal sloughing from the roof nearby. They cut a hitch for a timber, then cut the timber. By the time the timber was cut to size, the hitch had filled with loose coal. While Pierce was cleaning out the hitch, a roof fall occurred without warning which resulted in his death. The piece of coal that fell on him was three feet wide by two feet thick by an undetermined length. The accident was a result of insufficient timbering protection against known bad roof conditions.

Doyle E. Burchett, Erickson Placers, Inc., July 22, 1953. A travelling pilot placer machine about 18 feet high was being moved from the city of Nome out to the placer ground. At the outskirts of Nome, the deceased climbed to the top of the machine to check clearance of power lines. He slipped and/or lost his balance and fell the full distance to the ground, landing on his head. Death occurred within 10 minutes from contusion of the brain and fracture of the skull. The accident was apparently due entirely to carelessness of the deceased.

James Allio, U. S. Tin Corporation, October 23, 1953. Allio and another miner were lighting a round of 22 loaded holes in the face of a drift in the Lost River Mine. Using a "spitter" cut from a length of fuse, they failed to "spit" all the fuses and waited too long before retreating from the face. The shots started to explode when they were 20 feet from the face and Allio died an hour later from injuries caused by flying pieces of rock. The other miner was also badly injured, but lived. This fatality was due to carelessness and poor judgment on the part of the miners, one of whom was a miner of 15 years' experience. Fuse blasting is safe when properly handled.

Donald Weyanna, U. S. Tin Corporation, May 26, 1954. The deceased and a brother were mucking out a subdrift in the Lost River Mine when the accident occurred. They had blasted three holes that had not gone off when the round had been fired, and were cleaning up after this second blast when a small amount of rock fell from the roof and struck the deceased, causing head injuries from which he died shortly thereafter. This accident resulted from the carelessness of the two miners in not barring down the loose rock from overhead before commencing with the mucking. They were reportedly miners of two years' experience at Lost River.

Ernest C. Rivers, Usibelli Coal Mine, Inc., June 6, 1954. The accident occurred when the deceased, employed as a bulldozer operator, was bulldozing loose material away from underneath a highwall of overburden 40 feet high. An overhanging piece of frozen sandstone weighing about four tons fell from the highwall onto the bulldozer and crushed the operator. The unsafe practices of working under a highwall with overhanging material and operating a tractor without an adequate overhead canopy for protection, were the causes of this accident. A similar accident happened a few months earlier at the same mine, resulting in serious injuries to another bulldozer operator.

Alfred Davis and Joe Morrisey, Kenai Chrome Company, June 25, 1954. As both miners were killed, and there was no one near them at or just before the accident, the exact reasons for the accident are largely matters of conjecture. They were blasting a round of holes in the face of a drift, using caps and fuses. One shot was heard to explode considerably ahead of the rest. For some reason neither of the deceased got away from the face and both caught the full force of the blasting. It is not considered that the equipment or working conditions were defective or unsafe.

Winston W. Spencer, Goodnews Bay Mining Company, September 21, 1954. Deceased was one of a party engaged in pulling an electric cable from power pole cross arms. The cable was partly rolled on a reel which was mounted on a "go-devil" being pulled by a tractor, and Spencer was one of two men holding the reel to prevent it from turning as it pulled the cable. The cable suddenly became jammed on one of the cross arms, and before the tractor

could be stopped, the reel was pulled off the "go-devil". Spencer moved with the reel, either under his own power or because he was caught by the pipe which was protruding from the center of the reel a short distance. As the reel reached the ground, he either lost his footing or was thrown so that he fell in the path of the reel. One side of the reel rolled over his head, or struck it, crushing the skull in the area of contact. He died a short time later.

TABLE IV

Employment at Mines, 1914 to 1954, Inclusive

Number of Men Employed at:

Year	Placers	Lode Mines and Milling Plants	Coal and Other Mines	Totals
1914	4,400	3,500	140	8,040
1915	4,400	3,850	160	8,410
1916	4,050	4,200	340	8,590
1917	3,550	3,220	270	7,040
1918	3,000	1,897	400	5,297
1919	2,180	1,757	310	4,247
1920	1,990	1,880	360	4,230
1921	2,150	1,681	400	4,231
1922	2,198	1,623	280	4,101
1923	2,080	1,500	270	3,851
1924	2,500	1,978	175	4,653
1925	2,700	1,745	116	4,561
1926	2,332	1,663	108	4,103
1927	2,325	1,930	114	4,141
1928	2,234	1,668	109	4,011
1929	2,354	1,605	89	4,048
1930	2,220	1,502	98	3,820
1931	2,163	1,323	78	3,564
1932	2,180	1,496	78	3,754
1933	2,063	1,246	68	3,377
1934	2,195	1,451	79	3,725
1935	2,323	1,665	89	4,077
1936	2,605	1,867	105	4,577
1937	3,136	1,957	92	5,185
1938	3,470	2,071	218	5,759
1939	3,928	1,986	229	6,143
1940	4,240	1,974	149	6,363
1941	3,965	1,805	218	5,988
1942	2,175	1,065	249	3,489
1943	556	581	312	1,449
1944	658	489	393	1,540
1945	903	238	309	1,450
1946	1,694	446	334	2,474
1947	1,824	384	280	2,488
1948	1,938	309	267	2,514
1949	1,838	262	323	2,423
1950	1,722	243	297	2,262
1951	1,219	202	287	1,708
1952	1,286	222	404	1,912
1953	1,460	270	394	2,124
1954	1,356	299	345	2,000

TABLE V

Summary of Accidents and Employment at Mines in Alaska 1953-1954

Number of Mines	Group	Number of Men Employed	(1953) Number Shifts Worked	Results of Accidents: Fatal	Results of Accidents: Nonfatal	Total Time Lost Days
	PLACER MINES:					
24	Dredges	961	219,000	0	53	616
105	Nonfloat	361	49,800	1	0	0
27	Hydraulic	41	4,920	0	0	0
41	Small scale hand	46	5,060	0	0	0
13	Others*	51	5,610	0	0	0
210		1,460	284,390	1	53	616
	COAL MINES:					
6	Underground	275	82,441	2	126	1,573
5	Strip	119	30,195	0	34	476
11		394	112,636	2	160	2,049
	LODE MINES:					
61	Metal**	255	30,750	1	11	93
2	Nonmetal	3	360	0	0	0
63		258	31,010	1	11	93
	MILLS:					
2	Metal	12	3,480	0	1	5
286	Totals	2,124	431,516	4	225	2,763
			(1954)			
	PLACER MINES:					
23	Dredges	907	206,800	1	46	374
96	Nonfloat	333	45,900	0	0	0
24	Hydraulic	36	4,320	0	0	0
28	Small scale hand	31	3,410	0	0	0
17	Others*	49	5,390	0	0	0
188		1,356	265,820	1	46	374
	COAL MINES:					
4	Underground	248	51,439	0	42	542
5	Strip	97	29,610	1	29	506
9		345	81,049	1	71	1,048
	LODE MINES:					
65	Metal**	267	36,000	3	16	88
4	Nonmetal	11	1,320	0	0	0
69		278	37,320	3	16	88
	MILLS:					
2	Metal	21	6,090	0	4	102
168	Totals	2,000	390,279	5	137	1,612

* Includes prospectors and placer drift operations.

** Includes prospectors and intermittent operations.

For explanation of placer mining classifications, see footnotes at end of List of Alaska Mining Operations.

TABLE VI

Summary of Man-Shifts Worked, Fatal and Nonfatal Accidents, and Time Lost in All Mines in Alaska

Year	Man-Shifts Worked at			Fatalities			Nonfatal Accidents			Time Lost (Days)		
	Placer Mines	Lode Mines and Mills	Coal Mines	Placer Mines	Lode Mines and Mills	Coal Mines	Placer Mines	Lode Mines and Mills	Coal Mines	Placer Mines	Lode Mines and Mills	Coal Mines
1912				6	6							
1913				10	15							
1914				5	14							
1915				4	19							
1916				7	22		27	736				
1917				9	24		11	705				
1918				1	12		0	199				
1919				0	13		5	350	5			
1920				0	9		0	302			2,831	
1921		568,615	103,389	0	12		0	249			3,519	471
1922		537,180	55,309	0	5	0	0	252			4,344	250
1923	84,948	618,359	66,927	2	9	0	7	230	42	394	3,991	673
1924	117,545	468,890	51,398	0	16	0	30	327	6	560	4,882	75
1925	405,000	592,326	34,353	0	6	0	0	303	5	No report	5,639	109
1926	418,744	563,992	51,398	1	6	1	90	365	10	1,042	5,308	75
1927	418,235	555,155	34,915	2	7	1	178	259	13	3,267	4,819	445
1928	445,707	559,081	32,766	3	6	0	152	302	2	2,048	5,981	19
1929	420,249	524,836	25,525	5	9	0	142	255	6	1,657	4,301	197
1930	484,301	486,515	30,101	0	7	0	123	271	7	1,096	3,979	221
1931	437,573	425,201	22,129	0	6	0	92	167	5	1,251	2,668	101
1932	441,335	445,876	22,267	0	5	0	67	163	14	765	2,630	250
1933	437,267	403,021	19,805	1	7	0	90	177	2	1,077	2,381	9
1934	478,908	443,265	20,514	0	6	0	95	220	7	1,313	3,784	201
1935	499,765	458,440	23,571	2	6	0	116	266	12	1,250	4,372	291
1936	496,370	515,105	27,285	2	8	0	89	284	8	1,014	3,780	149
1937	547,748	548,929	25,267	2	2	16	129	298	14	1,733	5,007	407
1938	607,624	595,520	27,744	2	5	0	112	351	20	1,365	5,091	423
1939	683,624	548,121	26,643	1	3	0	158	302	15	2,263	4,247	488
1940	718,153	552,579	34,450	4	4	0	162	313	29	1,999	4,260	721
1941	657,142	517,347	54,779	1	1	0	151	325	38	1,978	5,069	630
1942	358,185	300,785	68,593	2	2	2	72	149	41	1,129	3,002	746
1943	82,780	155,370	84,694	0	3	1	1	82	37	54	1,338	635
1944	98,117	81,246	101,609	0	1	0	0	18	89	0	386	2,057
1945	145,260	52,224	84,523	0	0	3	5	2	64	22	10	1,417
1946	297,529	116,670	82,303	0	1	1	44	12	75	521	131	952
1947	351,916	85,361	80,691	1	1	1	65	8	47	869	110	646
1948	390,566	66,602	74,273	0	0	1	55	7	48	1,003	322	613
1949	361,494	54,796	86,602	0	0	0	59	12	66	538	427	1,292
1950	343,974	52,850	70,364	0	0	1	38	14	63	656	596	941
1951	222,577	33,035	66,985	1	0	0	45	1	66	402	10	834
1952	246,065	40,060	85,438	1	0	0	27	0	88	200	0	904
1953	284,390	34,490	112,636	1	1	2	53	12	160	616	98	2,049
1954	265,820	43,410	81,049	1	3	1	46	20	71	374	190	1,048

LIST OF ALASKA MINING OPERATIONS ACTIVE DURING THE BIENNIUM, 1953-54

Name and Address of Operator	Location of Mine	Recording Precinct and (USGS Quadrangle)	Type of Operation	Approx. Crew
**A and S Mining Co., Wiseman	Mascot Cr. Koyukuk Dist.	Fairbanks (Wiseman)	Nonfloat	3
Ace Mining Co., Nome	Darling Cr. Nome Dist.	Cape Nome (Nome)	Nonfloat	2
Admiralty Alaska Gold Mining Co., Box 529, Juneau	Funter Bay Admiralty Dist.	Juneau (Juneau)	Nickel-Copper lode development	4
Agoff, Harry, Prince Creek Mining Co., Flat,	Prince Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Nonfloat	4
**Alaska Copper Mines, Inc., Box 3365, Seattle 14, Wash.	Maclaren River Valdez Creek Dist.	Talkeetna (Mt. Hayes)	Copper lode development	8
Alaska Exploration and Mining Co., Mike Trepte, Talkeetna	Bird Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	3
Alaska Juneau Gold Mining Co., Box 2419, Juneau	A.J. Mine, Juneau Juneau Dist.	Juneau (Juneau)	Gold lode and mill (Maintenance only)	30
Alaska Metals Mining Co., Box 965, Fairbanks	Gilmore Dome Fairbanks Dist.	Fairbanks (Fairbanks)	Tungsten exploration	5
*Alaska Placer Co., Nome	Niukluk River Council Dist.	Cape Nome (Solomon)	Gold dredge	9
Alaska Tin Corp., Nome	Ear Mountain Port Clarence Dist.	Cape Nome (Teller)	Lode and placer tin prospecting	2
**Alaska Uranium Exploration Co., Fairbanks	Interior Alaska	Several	Prospecting	2
Albertson, E. O. and Pettyjohn, Fred, Big Delta	Maclaren River Valdez Creek Dist.	Talkeetna (Mt. Hayes)	Copper lode prospecting	2
Alder Creek Mining Co., Box 1999, Fairbanks	Fairbanks Cr. Fairbanks Dist.	Fairbanks (Livengood)	Nonfloat	10
*Alluvial Golds, Inc., Fairbanks	Woodchopper Cr. Circle Dist.	Fairbanks (Charley River)	Gold dredge Stripping only in 1954	9
American Creek Exploration Co., Wm. Hammersly & Associates, Anchorage	Bristol Bay and Redoubt Dists.	Iliamna (Iliamna)	Lode prospecting	3
Amero, A. W., Chandalar	Big Cr. Chandalar Dist.	Fairbanks (Chandalar)	Small scale hand	1
Anderson, Ellis, Chandalar	Tobin Cr. Chandalar Dist.	Fairbanks (Chandalar)	Small scale hand	1
Atlas Mines, George J. Waldhelm, Box 105, Nome	Dahl Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	3
Ausley, Clarence, Nome	Agashashok headwaters Noatak Dist.	Noatak-Kobuk (Baird Mts.)	Prospecting	2
Babel, McGahan, and Thorgaard, Fairbanks	Valdez, Cr. Valdez Creek Dist.	Talkeetna (Healy)	Lode prospecting	3
Backstrom, Gus, Flat	Idaho Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Hydraulic	1

Badger, Elmer, Fairbanks	Sheenjek River Sheenjek Dist.	Fairbanks (Table Mt.)	Prospecting	1
Barge, E. J., and Blair, Andrew,	Cache Cr. Yentna Dist.	Talkeetna (Talkeetna)	Nonfloat	3
*Barrett, Frank, Chicken	Stonehouse Cr. Fortymile Dist.	Fairbanks (Eagle)	Hydraulic	1
**Barrett, Frank, Chicken	Mosquito Fork Fortymile Dist.	Fairbanks (Eagle)	Prospecting	1
Basin Creek Mining Co., Herbert Engstrom, Nome	Basin Cr. Nome Dist.	Cape Nome (Nome)	Nonfloat	3
B.C. Mica, Ltd., Vancouver, B.C.	Sitklan Island & vicinity Ketchikan Dist.	Ketchikan (Prince Rupert)	Mica lode exploration	2
Bear Creek Mining Co., W. 1017 Riverside Ave. Spokane, Wash.	Interior & Southeast Alaska	Several	Mineral investigations	4
Beaver, J. G., and Englehorn, Forrest, Talkeetna	Cache Cr. Yentna Dist.	Talkeetna (Talkeetna)	Nonfloat	2
Beaver, Mary, and Stephens, V., Talkeetna	Nugget Cr. Yentna Dist.	Talkeetna (Talkeetna)	Small scale hand	2
*Bedrock Mining Co., Tom Wollard and Ivan C. Carlson, Ophir	Bedrock & Little Crs. Innoko Dist.	Innoko (Ophir)	Nonfloat	3
Belanger, George, and Cameron, J., Palmer	Albert Cr. Nelchina Dist.	Chitina (Talkeetna Mts.)	Hydraulic	2

Beltz, Bert and Douglass, Chub, Kotzebue	Bear Cr. Fairhaven Dist.	Fairhaven (Candle)	Nonfloat	2
Benick, Ed, Nome	Ophir Cr. Council Dist.	Cape Nome (Solomon)	Small scale hand	1
Berg, Rhinehart, Chitina	Ruby Cr. Shungnak Dist.	Noatak-Kobuk (Ambler River)	Copper lode development	2
**Bethlehem Steel Co., Bethlehem, Pa.	Southeast Alaska	Several	Mineral investigations	1
Big Hurrah Quartz Mine, Alaska Associates, Ltd., Nome	Big Hurrah Cr. Nome Dist.	Cape Nome (Solomon)	Gold lode development	10
Bittner, Paul, Central	Deadwood Cr. Circle Dist.	Fairbanks (Circle)	Hydraulic	1
**Blasher & Kristovich, 214 8th Ave., So., Seattle 4, Wash.	Nakat Inlet Ketchikan Dist.	Ketchikan (Prince Rupert)	Mica prospecting	2
Bliss, Patrick, Nome or Box 2225, Anchorage	Sweepstakes Cr. Koyuk Dist.	Cape Nome (Candle)	Nonfloat	3
Blundell, J. B., Big Lake	Jim Pup Koyukuk Dist.	Fairbanks (Chandalar)	Small scale hand and placer drift	1
Bodis, George, Box 64, Nome	Dick Cr. Serpentine Dist.	Cape Nome (Bendeleben)	Nonfloat	2
*Bott, Earl and Lyle, Big Lake	Eightmile Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Small scale hand	2

*Bourden, Fred, Nome	Nome Beach Nome Dist.	Cape Nome (Nome)	Small scale hand	1
*Bourden, Wilson. Nome	Kougarok River Kougarok Dist.	Cape Nome (Bendeleben)	Small scale hand	1
***Bowman, Fred E., Port Alsworth	Bristol Bay Dist.	Iliamna (Lake Clark)	Prospecting	1
*Bowman, Harry, Iliamna	Portage Cr. Bristol Bay Dist.	Iliamna (Lake Clark)	Nonfloat	1
Bradley, C. W.. Talkeetna	Upper Cache Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	3
**Briggs, Earl, Palmer	Sinona Cr. Chistochina Dist.	Chitina (Gulkana)	Placer prospecting	1
*Briner, Henry and Titus, Jack, Nome	Penny Creek Nome Dist.	Cape Nome (Solomon)	Small scale hand	2
*Brinker-Johnson Mining Co., 215 N. Carson, St., Carson City, Nevada	Pasco Cr. Fairbanks Dist.	Fairbanks (Big Delta)	Placer drilling	3
Bronnicke, Fred, Chistochina	Ahtell Cr. Chistochina Dist.	Chitina (Gulkana)	Lode gold prospecting	1
Burnette, Dewey and Hunter, M., Box 1995, Fairbanks	Crooked Cr. Kantishna Dist.	Fairbanks (Mt. McKinley)	Nonfloat	3
*Callahan Zinc-Lead Co., Box 990, Fairbanks	Livengood Cr. Tolovana Dist.	Fairbanks (Livengood)	Gold dredge	50

Canyon Creek Mining Co., Jens Kvamme & Sons, Akiak	Marvel Cr. Aniak Dist.	Kuskokwim (Bethel)	Nonfloat	4
**Carlson, Ivan C., Ophir	Little Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	1
Carstens, Heine, C., Central	Portage Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	2
Casa de Paga Gold Co., Utica or 411 Hoge Bldg., Seattle, Wash.	Inmachuk River Fairhaven Dist.	Fairhaven (Bendeleben)	2 gold dredges	28
**Chandalar Mining Co., Hugh Matheson, Jr., 613 3rd Ave., Anchorage	Big Cr. Chandalar Dist.	Fairbanks (Chandalar)	Nonfloat	2
Chappell, Oliver L., Wiseman	Thompson Gulch Koyukuk Dist.	Fairbanks (Wiseman)	Hydraulic	1
Chatham Creek Mining Co., Berg, Tweiten, and Wickstrom, Box 64, Fairbanks	Chatham Cr. Fairbanks Dist.	Fairbanks (Livengood)	Nonfloat	3
Chena Mining Co.	Jackson Cr. Bonnifield Dist.	Nenana	Nonfloat	2
Circle Dredging Co., Box 1498, Fairbanks	Crooked Cr. Circle Dist.	Fairbanks (Circle)	Gold dredge	6
Cline, Harvey, Yakataga	Yakataga Beach Yakataga Dist.	Cordova (Bering Glacier)	Small scale hand	1

**Coast Range Exploration Co., Box 1753, Anchorage	Southeast Alaska	Several	Lode prospecting	2
Collinsville Mines, 1557 H. Street, Anchorage	Mills & Twin Crs. Yentna Dist.	Talkeetna (Talkeetna)	Nonfloat	10
Colorado Creek Mining Co., Fullerton Brothers, McGrath	Colorado Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	5
***Connell, Paul A., Central	Circle and Black Dists.	Fairbanks (Circle and Charley Riv.)	Prospecting	1
Cook, Fred, Solomon	Kasson Cr. Nome Dist.	Cape Nome (Solomon)	Small scale hand	1
**Coplin Consolidated Enterprises, Frank Coplin, Nome	Niukluk River Council Dist.	Cape Nome (Solomon)	Gold dredge	10
Crane, Fred, and Associates, Kotzebue	Northwestern & Northern Alaska Regions	Noatak-Kobuk (Several)	Prospecting	2
Culver, Richard H., Talkeetna	Ruby Gulch Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	1
Cummins, Larry and Negus, Fred, Talkeetna	Nugget Cr. Yentna Dist.	Talkeetna (Talkeetna)	Small scale hand	2
*Curran, Peter, Solomon	Penny Cr. Nome Dist.	Cape Nome (Solomon)	Small scale hand	1
Dahl, Robert, Talkeetna	Nugget Cr. Yentna Dist.	Talkeetna (Talkeetna)	Small scale hand	1

Davis, Tolbert E., Fairbanks	Purcell Mountain Selawik Dist.	Noatak-Kobuk (Shungnak)	Prospecting	1
Dawson, Pieper, Adams and Associates, Box 2384, Ketchikan	Leduc River Ketchikan Dist.	Ketchikan (Bradfield Canal)	Lode prospecting	2
***Dayo, Stanley, Manley Hot Springs	Hot Springs Dist.	Hot Springs (Tanana)	Prospecting	1
Deadwood Mining Co., Wrede Brothers, 302 Cowles St., Fairbanks	Independence Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	3
DeCoursey Mountain Mining Co., Box 523 or 547 C St., Anchorage	Red Devil Mine Aniak Dist.	Kuskokwim (Sleetmute)	Mercury lode	24
DeCoursey Mountain Mining Co., Box 523 or 547 C St., Anchorage	DeCoursey Mine Aniak Dist.	Kuskokwim (Sleetmute)	Mercury lode development	4
Degnan, Joe A., Ophir	Esperanto Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	2
*Dittman, David, Fairbanks	Head of Gilmore Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Lode prospecting	1
Donlin Placers, Robert Lyman, Fairbanks	Donlin Cr. Aniak Dist.	Kuskokwim (Iditarod)	Nonfloat	1
Drews, Max, Eagle	Gravel Gulch Eagle Dist.	Fairbanks (Eagle)	Small scale hand	1
**Dron, John A., Jr., Fairbanks	Ester Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Nonfloat	2

*Dutch Creek Mining Co., Council	Dutch Cr. Council Dist.	Cape Nome (Solomon)	Nonfloat	2
*Dutch Hills Exploration and Development Co., Bill Lyons, Talkeetna	Bird Cr. Yentna Dist.	Talkeetna (Talkeetna)	Gold lode development	1
Edwards, H. W., Nome	Quartz Cr. Nome Dist.	Cape Nome (Solomon)	Nonfloat	3
***Eisenmenger, William, Fairbanks	Tibbs Cr. Goodpaster Dist.	Fairbanks (Big Delta)	Lode prospect	1
*Emery, W. M., and Gordon, Frank, Chicken	Fortymile River Fortymile Dist.	Fairbanks (Eagle)	Suction dredge construction Dismantled in 1954	2
Empire Jade Co., Gene Joiner, Kotzebue	Jade Cr. Kiana Dist.	Noatak-Kobuk (Ambler River)	Jade recovery and cutting	1
Enstrom, Oscar and McDougal, Fairbanks	American Cr. Hot Springs Dist.	Hot Springs (Tanana)	Nonfloat	2
Erickson, Halvor, Talkeetna	Cache Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	1
*Erickson Placers. Anchorage	Nome Dist.	Cape Nome (Nome)	Placer scheelite	8
Falls, Bently, Livengood	Wilbur Cr. Tolovana Dist.	Fairbanks (Livengood)	Nonfloat	1
Ferriss, M. M., Box 2491, Ketchikan	Southeast Alaska	Several	Lode prospecting	1

Francis, Harry, Flat	Flat Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Nonfloat	1
Franklin Mining Co., Roberts Brothers & H. Bayless. Box 1993, Fairbanks	Chicken Cr. Fortymile Dist.	Fairbanks (Eagle)	Nonfloat	5
Frasca, John and Hering, William, Box 1182, Fairbanks	Eagle Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	2
**Gelvin, Edwin C., Fairbanks	Squaw Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	2
**Gilbertson Brothers, Fairbanks	Alder Cr. Chistochina Dist.	Chitina (Gulkana)	Nonfloat	2
Gillette, B. F., Box 285, Nome	*Anvil Bench* Nome Dist.	Cape Nome (Nome)	Small scale hand	1
Gold Cord Mine, Brown and Renshaw, Anchorage	Head of Fishhook Cr. Willow Creek Dist.	Wasilla (Anchorage)	Gold lode	1
**Gold Placers, Inc., Fairbanks	Coal Cr. Circle Dist.	Fairbanks (Charley River)	Gold dredge Stripping only in 1953	5
**Gold Stream Mining Co., Denny G. Breaid Box 2116, Fairbanks	Goldstream Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Nonfloat Stripping only in 1953	4
Goodnews Bay Mining Co., Platinum	Salmon River & tribs. Goodnews Bay Dist.	Bethel (Hagemeister Island)	Platinum dredge and nonfloat	70

Goodwick, Sig, Box 1015, Fairbanks	Dahl Cr. Shungnak Dist.	Noatak-Kobuk (Shungnak)	Hydraulic (also jade recovery)	1
Goodwin, Charles, Kotzebue	Northwestern Alaska Region	Noatak-Kobuk	Prospecting	1
Granite Creek Mining Co., William Carlo, Ruby	Ophir Cr. Ruby Dist.	Nulato (Ruby)	Nonfloat	2
*Grant Mining Co., Box 457, Nome	Coffee Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	4
*Grant, O. M., Fairbanks	Happy Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Gold lode prospecting	1
**Guck, Robert, Whittier	Kisaralik River Aniak Dist.	Bethel (Bethel)	Mercury and gold lode prospecting	1
*Gurtler, Grover and Myklebust, John, Ophir	Little Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	4
Hagen, Otto Amund, Eagle	Fox Cr. Eagle Dist.	Fairbanks (Eagle)	Hydraulic	1
Hamburg & Gliska, Talkeetna	Pass Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	2
Hanson, Burnette, Eagle	Crooked Cr. Eagle Dist.	Fairbanks (Eagle)	Nonfloat	2
Hard & Uotila, Ophir	Bear Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	4

Hassel Mining Co., Harold Hassel, Fairbanks	Ready Bullion Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Nonfloat	3
*Hatton, Frank and Turner, George, Flat	Chicken Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Nonfloat	2
Havenstrite Oil Co., Mining Division, Candle	Candle Cr. Fairhaven Dist.	Fairhaven (Candle)	Nonfloat	18
Hayes, Howard, Box 1136, Douglas	Miller Gulch Chistochina Dist.	Chitina (Mt. Hayes)	Small scale hand	1
**Hayes, Howard, Box 1136, Douglas	A. J. Mine tailings Juneau Dist.	Juneau (Juneau)	Nonfloat	2
Heiner, Larry, Box 182, Petersburg	Petersburg and Kupreanof Dists.	Several	Lode prospecting	2
***Hodson, C. A., Elfin Cove	Juneau Dist.	Juneau (Juneau)	Prospecting	1
Hogendorn, Jack, Deering	Inmachuck River Fairhaven Dist.	Fairhaven (Bendeleben)	Hydraulic	1
Holmes, Walter, May Creek via Cordova	Dan Cr. Nizina Dist.	McCarthy (McCarthy)	Hydraulic	1
Hope Mine, R. V. Watkins, Box 521, Fairbanks	Faith Cr. Fairbanks Dist.	Fairbanks (Circle)	Nonfloat	3
**Huffman, Hall, March, & Nickelson, Bethel	Little Kasigluk Cr. Aniak Dist.	Bethel (Bethel)	Placer prospecting	1

Hunter Creek Mining Co., Melo Jackovich, Rampart	Hunter Cr. Rampart Dist.	Rampart (Tanana)	Nonfloat	1
Iditarod Operating Co., Frank C. "Tuffy" Edgington, Box 607, Fairbanks	Golden Cr. Melozitna Dist.	Ft. Gibbon (Melozitna)	Nonfloat	3
**Ihly, Nick, and Associates, 918 4th Ave., Anchorage	Gold Cr. Yentna Dist.	Talkeetna (Talkeetna)	Placer preparations	2
Irwin, John D., Fairbanks	Wild River Koyukuk Dist.	Fairbanks (Wiseman)	Small scale hand	1
Island Cove Mining Co., John Ballard, Box 102, Sitka	Vicinity of Cobol Chichagof Dist.	Sitka (Sitka)	Development of various lodes, cleanup of Hirst Chichagof mill	2
James, L. F. Hughes	Felix Fork Hughes Dist.	Ft. Gibbon (Hughes)	Nonfloat	1
Johansen, Engbret, Chicken	Ingle Cr. Fortymile Dist.	Fairbanks (Eagle)	Small scale hand	1
Johnson, Elmer. Ketchikan	Ketchikan Dist.	Ketchikan (Ketchikan)	Prospecting	1
Johnson, Eric and McDermott, Paddy	Edgar Cr. Marshall Dist.	Wade Hampton (Russian Mission)	Prospecting	3
Johnson, Fred, Kobuk	Dahl Cr. Shungnak Dist.	Noatak-Kobuk (Shungnak)	Hydraulic	1
Johnson, H., Teller	Gold Run Cr. Port Clarence Dist.	Cape Nome (Teller)	Small scale hand and placer drift	1

Johnson, Helmer, Fairbanks	Cleary Cr. Fairbanks Dist.	Fairbanks (Livengood)	Nonfloat	2
**Johnson, Iver M., 1519 Noble St., Fairbanks	Homestake Cr. Fairbanks Dist.	Fairbanks (Circle)	Nonfloat	2
Johnson, J. H., Box 2255, Ketchikan	N. Behm Canal Ketchikan Dist.	Ketchikan (Ketchikan)	Lode prospecting	1
Johnson, Pete and Isaacson, Hot Springs	Eureka Cr. Hot Springs Dist.	Hot Springs (Tanana)	Nonfloat	2
Johnson, "Rocky", Box 2286, Ketchikan	Vicinity of Ketchikan Ketchikan Dist.	Ketchikan (Ketchikan)	Gold-Lead-Zinc lode exploration	1
Jones, R. H., Harvey, C. K., and Doherty, Pete, Fairbanks	Smith Cr. Koyukuk Dist.	Fairbanks (Wiseman)	Hydraulic	3
Jurich, John and Carr, Tom, Livengood	Lillian Cr. Tolovana Dist.	Fairbanks (Livengood)	Nonfloat	2
*Kanyak, Jim, Nome	Nome Beach Nome Dist.	Cape Nome (Nome)	Small scale hand	1
*Kelly, Joseph D., Anchorage	Faith Cr. Fairbanks Dist.	Fairbanks (Circle)	Small scale hand	1
Kenai Chrome Co., 545 E. 4th, Anchorage	Red Mountain Homer Dist.	Seldovia (Seldovia)	Chromium lode	26
Kloss, Herman and Davis, Jack, Sunset Cove	Sunset Cove Petersburg Dist.	Juneau (Sumdum)	Gold-antimony lode development and prospecting	2

*Knorr, Vincent, Wiseman	Mascot Cr. Koyukuk Dist.	Fairbanks (Wiseman)	Small scale hand	1
Kobuk Mines, C. E. Stout & Wm. P. Thomas, Box 1464, Fairbanks	Dahl Cr. Shungnak Dist.	Noatak-Kobuk (Shungnak)	Nonfloat	3
***Koby, Jack, Pelican	Juneau Dist.	Juneau (Juneau)	Prospecting	1
**Kodiak Exploration Co., Box 448, Kodiak	Kodiak Island Kodiak Dist.	Kodiak (Kodiak)	Tungsten prospecting	2
*Koster, G. H., Fairbanks	No Grub Cr. Fairbanks Dist.	Fairbanks (Big Delta)	Small scale hand	1
Kougarok Freight & Mining Co., Straub & Towner, Nome	Buster Cr. Nome Dist.	Cape Nome (Nome)	Gold dredge	2
**Kugruk Placers, Paul Beshore, Kotzebue	Kugruk River Fairhaven Dist.	Fairhaven (Candle)	Nonfloat	3
*LaCross, Jack, Chicken	Turk Cr. Fortymile Dist.	Fairbanks (Eagle)	Small scale hand Prospecting in 1954	1
Langlow, Jens, Central	Switch Cr. Circle Dist.	Fairbanks (Circle)	Hydraulic	1
Lanning, Tony, Hot Springs	Thanksgiving Cr. Hot Springs Dist.	Hot Springs (Tanana)	Nonfloat	1
Larsen, Clyde and Suckling, Norman, Hot Springs	Woodchopper Cr. Hot Springs Dist.	Hot Springs (Tanana)	Placer drift	2

*Larsen, Hans C., Nome	Ophir Cr. Nome Dist.	Cape Nome (Solomon)	Small scale hand	1
Lazeration, Charles and Jokela, Fern, Box 2000, Fairbanks	Pedro Dome Fairbanks Dist.	Fairbanks (Livengood)	Gold lode	2
Lee Bros. Dredging Co., Solomon	Solomon River Nome Dist.	Cape Nome (Solomon)	2 gold dredges	10
Leonard, Harry, Wiseman	Smith Cr. Koyukuk Dist.	Fairbanks (Wiseman)	Small scale hand	1
*Lillie, Angus, Tokeen	Prince of Wales Island Ketchikan Dist.	Ketchikan (Several)	Prospecting	1
Lindfors, Hugo, Nome	Kigluaik Mountains Nome Dist.	Cape Nome (Teller, Nome)	Prospecting	1
Lindfors, Hugo and Bale, May, Nome	Christian Cr. Nome Dist.	Cape Nome (Nome)	Nonfloat	1
Lindgren, M. and Associates, Fairbanks	Coffe Dome & Bedrock Cr. Fairbanks Dist.	Fairbanks (Livengood)	Gold lode prospecting Some production from Bedrock Creek in 1954	2
Little Minook Mining Co., Box 1505, Fairbanks	Little Minook Cr. Rampart Dist.	Rampart (Tanana)	Nonfloat	7
**Lonesome Mine, Cope Brothers	Little Susitna River Willow Creek Dist.	Wasilla (Anchorage)	Gold lode	2
Long Creek Mining Co., Ruby	Long Cr. Ruby Dist.	Nulato (Ruby)	Nonfloat	2

Lost Chicken Hill Mines, Inc., Chicken	Lost Chicken Cr. Fortymile Dist.	Fairbanks (Eagle)	Nonfloat	2
*Lounsbury, Lloyd, Fairbanks	Tungsten Hill Fairbanks Dist.	Fairbanks (Fairbanks)	Tungsten prospecting	1
Love, Ward, Box 1046, Ketchikan	Southeast Alaska	Ketchikan (Ketchikan)	Lode prospecting	1
Lowman, Ted, Fairbanks	Fairbanks Dist.	Fairbanks	Prospecting	1
Lucky Seven Mining Co., Walter Roman, Miller House	Mastodon Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	2
*Macklin Creek Mining Co., Nome	Macklin Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	2
***Magill, Fred, Box 444, Petersburg	Southeast Alaska	Several	Lode prospecting	1
Manske, Dan, Chicken	Ingle Cr. Fortymile Dist.	Fairbanks (Eagle)	Nonfloat	2
Martin, Henry, Circle Hot Springs	Portage Cr. Circle Dist.	Fairbanks (Circle)	Small scale hand	1
Martinson, Olaf, Teller	Gold Run Cr. Port Clarence Dist.	Cape Nome (Teller)	Small scale hand	1
Maurer, Ernest L., 511 Fourth Ave., Fairbanks	First Chance Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Nonfloat	1

Meldrum, William, Chicken	Stonehouse Cr. Fortymile Dist.	Fairbanks (Eagle)	Nonfloat	1
*Midnight Sun Mining Co., Nome	Skookum Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Hydraulic	2
*Miller, Frank and Sons, Wiseman	Sheep Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Nonfloat	3
*Miller, George R., Candle	Eldorado Cr. Fairhaven Dist.	Fairhaven (Bendeleben)	Small scale hand	1
Mines Ventures, Inc., Jack Moore, Gakona	Middle Fork of Chistochina Chistochina Dist.	Chitina (Mt. Hayes)	Placer preparations	3
Miscovich Brothers, Flat	Otter Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Nonfloat	8
Miscovich Brothers, Fairbanks	Poorman Cr. Ruby Dist.	Nulato (Ruby)	Ditch construction	3
Moa, Arthur, Hyder	Mountain View Property Hyder Dist.	Hyder (Ketchikan)	Lode exploration and prospecting	1
**Moore, W. S., Co., Torrey Bldg., Duluth 2, Minn.	Southeast Alaska	Several	Mineral explorations	3
Mumtrak Miners, James Bystad & Associates, Platinum	Wattamuse Cr. Goodnews Bay Dist.	Bethel (Goodnews)	Nonfloat	6
Munz, William, Nome	Rock Cr. Council Dist.	Cape Nome (Solomon)	Nonfloat	2

*Murnion, James, Spenard	Ester Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Nonfloat	1
*Myrtle Creek Exploration Co., Anchorage	Myrtle Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Nonfloat	8
***Narva, Felix, Idaho Inlet	Chichagof Island Chichagof Dist.	Sitka (Sitka)	Prospecting	1
*Nelson, H. L., Gakona	Miller Gulch Chistochina Dist.	Chitina (Mt. Hayes)	Small scale hand	1
Nesland, Erling, Wiseman	Vermont Cr. Koyukuk Dist.	Fairbanks (Wiseman)	Nonfloat	2
New York-Alaska Gold Dredging Co., Nyac	Tuluksak River and California Cr. Aniak Dist.	Bethel (Russian Mission)	2 gold dredges and nonfloat on Rock Creek	80
**No Grub Mining Co., Ed Brenner Box 88, Fairbanks	No Grub Cr. Fairbanks Dist.	Fairbanks (Big Delta)	Nonfloat	5
*Nome Scheelite Exploration Co., Casimer C. Cechowski, Nome	Nome Dist.	Cape Nome (Nome)	Tungsten prospecting	1
North American Gold Dredging Co., Flat	Otter Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Gold dredge	10
**Northern Pyrites Corp., 75 E. 45th St., New York 17, N.Y.	Latouche Island Prince William Sound Dist.	Valdez (Seward)	Sulfide exploration	6
*Northern Tin Co., c/o Wien Airline, Nome	Buck Cr. Port Clarence Dist.	Cape Nome (Teller)	Nonfloat—jigs, placer tin	8

**Northwest Ventures, Ltd., 315-850 W. Hastings St., Vancouver, B.C.	Southeast Alaska	Several	Mineral explorations	3
Novatney, Robert, Juneau	Helm Bay Ketchikan Dist.	Ketchikan (Ketchikan)	Gold lode development	1
*Nugget Creek Mining Co., Talkeetna	Cache Cr. Yentna Dist.	Talkeetna (Talkeetna)	Nonfloat	4
O'Brien, Jim and Dunsmuir, Jim, Seward	Surprise Cr. Hope Dist.	Seward (Seward)	Placer drift	2
Agriz, John, Flat	Otter Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Gold dredge	6
O'Keefe, Dennis, Wiseman	Vicinity Twin Lakes Koyukuk Dist.	Koyukuk (Chandalar)	Prospecting	1
Olive Creek Mines, Box 552, Fairbanks	Olive Cr. Tolovana Dist.	Fairbanks (Livengood)	Nonfloat	4
Olson, C. V., Nome	Daniels Cr. Council Dist.	Cape Nome (Solomon)	Small scale hand	1
Olson, Henry T., Taku Harbor	Juneau and Admiralty Dists.	Juneau (Sumdum)	Prospecting	1
***O'Neil, Frank, Box 2000, Anchorage	Valdez Cr. Valdez Creek Dist.	Talkeetna (Healy)	Prospecting	1
Ophir Mining Co., Neal Beaton, Ophir	Upper Ganes Cr. Innoko Dist.	Innoko (Iditarod)	Gold dredge	9

Ostnes, Lars & Co.. Fortuna Ledge	Willow Creek Marshall Dist.	Wade Hampton (Russian Mission)	Nonfloat	3
**Pacific Northern Minerals Co., Box 164, Hyder	Riverside Mine Hyder Dist.	Hyder (Bradfield Canal)	Silver-Lead-Tungsten lode development	3
*Pade, Otto F.. Skagway	Vicinity of Skagway Juneau Dist.	Skagway (Skagway)	Prospecting	1
Pekovich, W. S., Box 529, Juneau	Port Snettisham Juneau Dist.	Juneau (Sumdum)	Iron lode development	2
Peninsula Exploration Co., R. E. Krautter & Associates, Box 551, Kodiak	Sitkalidak Island Kodiak Dist.	Kodiak (Kodiak)	Copper lode development	3
*Peterson, Hans, Nome	Dome Cr. tributary to Iron Cr.	Cape Nome	Hydraulic	2
Pitts, Fred, Big Lake	Lake Cr. Koyukuk Dist.	Koyukuk (Chandalar)	Hydraulic	1
P.R. & H. Mining Co., Box 462, Fairbanks	Mastodon Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	3
Price, Stanton, Windham	Spruce Cr. Petersburg Dist.	Juneau (Sumdum)	Nonfloat	2
Pringle, A. W., Hot Springs	Rhode Island Cr. Hot Springs Dist.	Hot Springs (Tanana)	Nonfloat	2
**Prospectors, Inc., 544 2nd Ave., Fairbanks	Myrtle Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Prospecting	3

Purdy Brothers, Chicken	Myers Fork and Atwater Bar	Fairbanks (Eagle)	Nonfloat	2
Quail Creek Mining Co., Wm. Redig and M. C. Haugdahl, General Delivery, Fairbanks	Quail Cr. Rampart Dist.	Rampart (Livengood)	Nonfloat	2
Quebec Metallurgical Industries, Ltd., c/o Josephine Bonkowski, Box 40, Haines	Near Klukwan Juneau Dist.	Haines (Skagway)	Iron placer and lode development	15
Radovan, Martin, McCarthy	Glacier Cr. Nizina Dist.	McCarthy (McCarthy)	Copper lode prospecting	1
Ragner, Joe, Fairbanks	Head of Wolf Cr. Fairbanks Dist.	Fairbanks (Livengood)	Gold lode prospecting	1
Rainbow Mining Co., Box 266, Nome	Goose Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	2
Red Mountain Mining Co., A. L. Howard, Seattle, Wash.	McCann Cr. Goodnews Bay Dist.	Bethel (Hagemeister Island)	Placer drilling (platinum)	2
Red Top Mining Co., Wren, Waskey & Wolfe, Dillingham	Near Aleknagik Bristol Bay Dist.	Bristol Bay (Dillingham)	Mercury lode development	3
Ricks, Dean, Fairbanks	Fairbanks Dist.	Fairbanks (Big Delta)	Prospecting	1
*Roberts, George, Tillicum Mining Co., 1940 2nd Ave., Ketchikan	Camaano Point Ketchikan Dist.	Ketchikan (Ketchikan)	Antimony lode development	2

Robinson, George F., Boundary	Wade Cr. Fortymile Dist.	Fairbanks (Eagle)	Nonfloat	1
*Rohn, E. H., Mines	Nome Beach Nome Dist.	Cape Nome (Nome)	Small scale hand	1
Rosander, T., Ophir	Yankee Cr. Innoko Dist.	Innoko (Iditarod)	Nonfloat	9
Runnels, R. L., Gulkana	Upper Miller Gulch Chistochina Dist.	Chitina (Mt. Hayes)	Small scale hand	1
*Sankovich & Peterson, College	Glacier Cr. Fairhaven Dist.	Fairhaven (Candle)	Nonfloat	2
*Savage, Patrick, Flat	Flat Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Nonfloat	4
*Savage, Patrick, Flat	Spruce Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	3
**Savage, Patrick, Ruby	Long Cr. Ruby Dist.	Nulato (Ruby)	Nonfloat	5
Schaeffer, Russel, Crooked Creek	Mukshulik Cr. Aniak Dist.	Kuskokwim (Sleetmute)	Nonfloat—gold, tungsten, and mercury	1
**Schaeffer, Russel, Crooked Creek	Cinnabar Cr. Aniak Dist.	Kuskokwim (Taylor Mts.)	Mercury lode development	1
Schultz, Henry, McCarthy	Vicinity of McCarthy Nizina Dist.	McCarthy (McCarthy)	Copper lode development	1

*Schwaesdall, Andy, Wiseman	Myrtle Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Nonfloat	1
*Selawik Mining Co., Selawik	Headwaters of Selawik River Selawik Dist.	Noatak-Kobuk (Shungnak)	Prospecting	2
Seldovia Chrome Co., Inc., Seldovia	Red Mountain vicinity Homer Dist.	Seldovia (Seldovia)	Chromium lode prospecting	2
**Slate Creek Mining Co., Fairbanks	Slate Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Nonfloat	3
*Slate Creek Placers, Louis Elmer, Slate Creek	Slate Cr. Chistochina Dist.	Chitina (Mt. Hayes)	Nonfloat	3
Slocum Arm Mining Co., Cobol via Juneau	Cox-Bolyan Mine Chichagof Dist.	Sitka (Sitka)	Gold lode development	2
Smith, A. B., Denali	Valdez Cr. Valdez Creek Dist.	Talkeetna (Healy)	Hydraulic	2
**Smith, Loren and Utter, Don, Palmer	Eagle Cr. Chistochina Dist.	Chitina (Mt. Hayes)	Placer prospecting	2
*Smith, Pitcher and Co., Ketchikan	Southeast Alaska	Several	Lode prospecting	3
Stampede Mines, Box 1896, Fairbanks	Stampede Cr. Kantishna Dist.	Fairbanks (Mt. McKinley)	Antimony lode and mill Exploration only	4
Stanich Brothers, Fairbanks	Porcupine Cr. Koyukuk Dist.	Fairbanks (Wiseman)	Nonfloat and placer drift	2

Stanton, Harold, Talkeetna	Thunder Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	1
Strandberg & Sons, 926 - 4th Ave., Anchorage	Colorado Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	8
Strandberg & Sons, 926 - 4th Ave., Anchorage	Indian River Hughes Dist.	Fort Gibbon (Hughes)	Nonfloat	16
Strandberg & Sons, 926 - 4th Ave., Anchorage	Eureka Cr. Hot Springs Dist.	Hot Springs (Tanana)	Nonfloat	7
*Strandberg & Sons, 926 - 4th Ave., Anchorage	Yentna Dist.	Talkeetna (Talkeetna Mts.)	Lode prospecting	2
Strandberg & Sons, 926 - 4th Ave., Anchorage	Nixon Fork Mine McGrath Dist.	Mt. McKinley (Medfra)	Gold lode development	2
Stuver, Jules, Flat	Head of Happy Cr. Iditarod Dist.	Mt. McKinley (Iditarod)	Hydraulic	1
Swanson Brothers, Rampart	Hunter Cr. Rampart Dist.	Rampart (Tanana)	Nonfloat	2
Swatch, Al, Fairbanks	Corpus Christi Cr. Fairbanks Dist.	Fairbanks	Nonfloat	1
Taraski, A. J., Talkeetna	Cache Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic	1
**Tauber, Joe, Bettles Field	Myrtle Cr. Koyukuk Dist.	Fairbanks (Chandalar)	Small scale hand	1

Thunder Mines, Inc., Box 933, Anchorage	Thunder Cr. Yentna Dist.	Talkeetna (Talkeetna)	Hydraulic and prospecting	3
Tiger Talisman Placers, Houston Alexander, Box 294, Nome	Dahl Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	1
Timberline Placers, Spade & Stout, Miller House	Porcupine Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	5
**Titus, Jack, Solomon	Penny Cr. Nome Dist.	Cape Nome (Solomon)	Small scale hand	1
*Trinity Mining Co., Nome	Trinity Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	2
*Tucker, S. A., Haycock	Sweepstakes Cr. Koyuk Dist.	Cape Nome (Candle)	Small scale hand	1
Tweet, N. B., and Sons, Teller	Kougarok River Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	5
Ulen, Joe and Pingalo, Sam, Wiseman	Nolan Creek Bench Koyukuk Dist.	Fairbanks (Wiseman)	Nonfloat	2
Uotila and Hard, Ophir	Ophir Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	6
U. S. S. R. & M. Co. Box 1170, Fairbanks	Fairbanks Dist.	Fairbanks (Fairbanks, Livengood)	6 gold dredges	550
U. S. S. R. & M. Co. Box 438, Nome	Nome Dist.	Cape Nome (Nome)	2 gold dredges	140

U. S. S. R. & M. Co. Box 1170, Fairbanks	Mosquito Fork Fortymile Dist.	Fairbanks (Eagle)	Stripping	17
U. S. Steel Co.	Southeast Alaska	Several	Mineral explorations	4
U. S. Tin Corp., Lost River via Nome	Cassiterite Cr. Port Clarence Dist.	Cape Nome (Teller)	Lode tin mine	60
*Vlaar, John, Nome	Windy Cr. Port Clarence Dist.	Cape Nome (Teller)	Nonfloat	1
Vuicich, Billy, Pasadena, Calif.	Ester Dome Fairbanks Dist.	Fairbanks (Fairbanks)	Gold lode prospect	1
Wackwitz, Charles and Fred, Fairbanks	Bedrock Cr. Fairbanks Dist.	Fairbanks (Livengood)	Prospect development	2
*Wade-Hampton Mining Co., Fortuna Ledge	Disappointment Cr. Marshall Dist.	Wade Hampton (Russian Mission)	Nonfloat	3
Watson, Ben, Yakataga	Yakataga Beach Yakataga Dist.	Cordova (Bering Glacier)	Small scale hand	2
Weaver, Vern and Rambaud, John, Chicken	Napoleon Cr. Fortymile Dist.	Fairbanks (Eagle)	Hydraulic	2
Weinard, Fred O., Candle	Mud Cr. Fairhaven Dist.	Fairhaven (Candle)	Nonfloat	4
**Western Alaska Mining Co., R. J. Anderson, Box 121, Spenard	Russian Mtns. Aniak Dist.	Kuskokwim (Sleetmute)	Mercury prospect development	2

Westlake, Theodore, Kiana	Klery Cr. Kiana Dist.	Noatak-Kobuk (Baird Mountains)	Small scale hand	1
**White Bear Lode, Archie Ferguson, Kotzebue	Independence Cr. Fairhaven Dist.	Cape Nome (Candle)	Lead-Silver lode prospecting	4
Wilke, Jack, Boundary	Squaw Cr. Fortymile Dist.	Fairbanks (Eagle)	Nonfloat	1
Wilkinson, Robert W., Miller House	Miller Cr. Circle Dist.	Fairbanks (Circle)	Nonfloat	4
Williams Mining Co., Fairbanks	Gilmore Cr. Fairbanks Dist.	Fairbanks (Fairbanks)	Nonfloat	2
**Willis, George H., and Oswald Sleetmute	Willis Cr. Aniak Dist.	Kuskokwim (Sleetmute)	Mercury lode development	1
Withrow, A. W., Fairbanks	Bedrock Bar on Koyukuk River Koyukuk Dist.	Fairbanks	Small scale hand	1
Wiurm, Andrew, Box 491, Nome	Dome Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Hydraulic	1
Wolf Creek Mining Co., Inc., Box 141, Fairbanks	Wolf Cr. Fairbanks Dist.	Fairbanks (Livengood)	Nonfloat	5
**Wollard, Joe, Ophir	Bedrock Cr. Innoko Dist.	Innoko (Ophir)	Nonfloat	1
**Wollard, Tom, Ophir	Lower Ganes Cr. Innoko Dist.	Innoko (Ophir)	Gold dredge	1

*Worm, Otto. Nome	Nome Beach Nome Dist.	Cape Nome (Nome)	Small scale hand	1
Xavier, Henry A., Candle	Gold Run Cr. Fairhaven Dist.	Fairhaven (Candle)	Small scale hand	1
Young, Larry, Denali	Dry Cr. Valdez Creek Dist.	Talkeetna (Healy)	Placer preparations	3
Zaiser, Clarence, Poorman	Greenstone Cr. Ruby Dist.	Nulato (Ruby)	Nonfloat	2
*Zenda Gold Mining Co., Box 695, Nome	Boulder Cr. Fort Clarence Dist.	Cape Nome (Teller)	Placer tin drilling	9
*Zero Placers, Lyman Madden, Nome	Garfield Cr. Kougarok Dist.	Cape Nome (Bendeleben)	Nonfloat	1
Zurek, W. J., Miller House	Mastodon Cr. Circle Dist.	Fairbanks (Circle)	Small scale hand	1

*—1953 only
**—1954 only
***—Part-time prospector, but propects more than the "weekend" prospectors.

"Nonfloat" indicates mechanical placer operation using draglines and/or bulldozers to transport gravel to nonfloating washing plant, bedrock sluiceboxes, or elevated sluices.

"Hydraulic" indicates operation in which gravel is excavated and transported to sluiceboxes solely by water jets from hydraulic nozzles.

"Small scale hand" indicates operation in which gravel excavation and transportation is accomplished by hand or ground sluicing.

ACTIVE COAL MINES, 1953-54

Name and Address of Operator	Location of Mine	Mining District and (USGS Quadrangle)	Type of Operation	Approximate Crew
Alaska Native Service, Juneau	Meade River Point Barrow Field	Barrow Dist. (Meade River)	Underground	5
**Arctic Coal Co., Box 554, Fairbanks	Lignite Cr. Nenana Field	Bonnifield Dist. (Healy)	Strip	4
*Buffalo Coal Mining Co., Box 2257, Anchorage	Buffalo Mine Matanuska Field	Willow Creek Dist. (Anchorage)	Underground	27
Cripple Creek Coal Co., Box 622, Fairbanks	Cripple Cr. Nenana Field	Bonnifield Dist. (Healy)	Strip	20
Evan Jones Coal Co., Box 619, Anchorage	Jonesville Mine Matanuska Field	Willow Creek Dist. (Anchorage)	Underground and strip	180
*Homer Coal Corp, Kibby and Owens, Box 1015, Anchorage	McNally Property Kenai Field	Homer Dist. (Seldovia)	Strip	2
Houston Coal Mining Co., 505 Barrow St., Anchorage	Houston Station—A.R.R. Matanuska Field	Willow Creek Dist. (Anchorage)	Strip	22
*Longborg and Anderson, Box 523, Nome	6 miles south of Unalakleet	Anvik Dist. (Unalakleet)	Underground	2

Mrak Coal Co., Palmer	Near Eska Matanuska Field	Willow Creek Dist. (Anchorage)	Strip and underground	10
Pioneer Coal Mining Co., Inc., Wilcox and Rice, Box 1863, Anchorage	Premier Mine Matanuska Field	Willow Creek Dist. (Anchorage)	Underground	5
Suntrana Mining Co., 521 Third Ave., Anchorage	Healy Cr. Nenana Field	Bonnifield Dist. (Healy)	Underground	75
Usibelli Coal Mine, Suntrana	Healy Cr. Nenana Field	Bonnifield Dist. (Healy)	Strip and underground	50

* 1953 only
** 1954 only

OIL AND GAS EXPLORATION PROJECTS ACTIVE DURING THE BIENNIUM, 1953-1954

Name and Address of Company	Location of Exploration	Type of Exploration
Alaska Gulf Oil & Gas Co., 326 - 4th Ave., Anchorage	Vicinity of Goose Bay Cook Inlet province	Leasing ground, planning to drill in 1955
Alaska Oil & Gas Development Co., Box 2000, Anchorage	Nelchina Valley near Eureka	Drilling
Anchorage Oil & Gas Co., 505 Barrow St., Anchorage	Houston area, railbelt Upper Cook Inlet province	Drilling
Brooks-Scanlon Oil Co., Minneapolis, Minnesota	Interior Alaska province Kateel River area	Leasing Associated with Fairbanks Oil & Gas Co.
Fairbanks Oil & Gas Co., Room 205, Hall Building, 527 - 4th Ave., Fairbanks	Interior Alaska Province Kateel River area	Leasing Preliminary geological and engineering work
Humble Oil Co.,	Alaska in general	Extensive aerial reconnaissance
Iniskin Unit Operators, Havenstrite Oil Co., 811 W. 7th St., Los Angeles 7, California	Chinitna Bay area Alaska Peninsula	Drilling
Kivalina Oil Association, Box 200, Fairbanks	Northwest Alaska	Leasing Geological field exploration

Ohio Oil Co., Finley, Ohio or Los Angeles, California	Alaska in general	Leasing Preliminary reconnaisance
Phillips Petroleum Co., Bartlesville, Oklahoma, or Gitchell Bldg., 4th Ave. & F St., Anchorage	Katalla-Yakataga province	Drilling Performance contract with the Dept. of Interior on large acreage
Richfield Oil Co., Los Angeles, California	Kenai Peninsula	Leasing
Shell Oil Co., Hoge Bldg., Seattle, Washington	Cook Inlet-Alaska Peninsula province	Leasing Geological field exploration 4 field parties
Standard Oil Co., 225 Bush St., San Francisco, California	Katalla-Yakataga and Cook Inlet-Susitna provinces	Geological surveys and seismic exploration Performance contract with the Dept. of Interior on large acreage
Texas-Yukon Oil Co., Fairbanks	Interior Alaska province Kateel River area	Leasing Associated with Fairbanks Oil & Gas Co.
Texota Oil Co., Fort Worth, Texas	Interior Alaska province Kateel River area	Leasing Associated with Fairbanks Oil & Gas Co.
The Texas Co., Box 2332, Houston, Texas	Alaska in general	Preliminary reconnaissance
Union Oil Co., Los Angeles, California	Alaska in general	Leasing Preliminary reconnaissance

LIST OF REPORTS ISSUED BY THE COMMISSIONER OF MINES AND CORRESPONDING PRECEDING OFFICIALS

*Report of the Mine Inspector for the Territory of Alaska to the Secretary of the Interior, fiscal year ended June 30, 1912.

*Report of the Mine Inspector for the Territory of Alaska to the Secretary of the Interior, fiscal year ended June 30, 1913.

*Report of the Mine Inspector for the Territory of Alaska to the Secretary of the Interior, fiscal year ended June 30, 1914.

*Report of the Territorial Mine Inspector to the Governor of Alaska for the year 1915.

*Report of William Maloney, Territorial Mine Inspector, to the Governor of Alaska for the year 1916.

*Report of the Territorial Mine Inspector to the Governor of Alaska for the year 1917.

*Annual Report of the Territorial Mine Inspector to the Governor of Alaska, 1920.

*Annual Report of the Territorial Mine Inspector to the Governor of Alaska, 1921.

†Annual Report of the Mine Inspector to the Governor of Alaska, 1922.

*Annual Report of the Mine Inspector to the Governor of Alaska, 1923.

*Report upon industrial accidents, compensation and insurance in Alaska for the biennium ending December 31, 1924.

*Report of the Territorial Mine Inspector, calendar years 1925-26.

*Report of cooperation between the Territory of Alaska and the United States in making mining investigations and in the inspection of mines for the biennium ending March 31, 1929.

*Report of cooperation between the Territory of Alaska and the United States in making mining investigations and in the inspection of mines for the biennium ending March 31, 1931.

*Mining investigations and mine inspection in Alaska, biennium ending March 31, 1933.

*Report of the Commissioner of Mines to the Governor, biennium ending December 31, 1936.

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*Joesting, Henry R., Strategic mineral occurrences in interior Alaska: Pamphlet No. 1, May 1942.

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Anderson, Eskil, Asbestos and jade occurrences in the Kobuk River region, Alaska; Pamphlet No. 3-R, May 1945.

Rochm, J. C., Some high calcium limestone deposits in Southeastern Alaska; Pamphlet No. 6, March 1946.

Report of the Commissioner of Mines, biennium ended December 31, 1946.

Report of the Commissioner of Mines, biennium ended December 31, 1948.

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*Report of the Commissioner of Mines, biennium ended December 31, 1952.

Proper Claim Staking in Alaska; Information Circular, No. 1, August 15, 1953.

Rights of Canadians in Alaska under the Mining Laws; Information Circular No. 2, September 15, 1953.

Hints for Prospectors on the Mainland of Southeastern Alaska; Information Circular No. 3, March 15, 1954.

Alaska Uranium Information; Information Circular No. 4, December 15, 1954.

*Out of print—on file in certain public and university libraries.

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