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## APPENDICES

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APPENDIX A.—SCHEDULES

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# APPENDIX A.

## SCHEDULES.

*Schedule No. 6.*—Intended for all mineral industries for which no special schedule is provided. (Number printed, 100,000.)

UNITED STATES CENSUS OFFICE.  
*Special Schedule No. 6.*

DIVISION OF MANUFACTURES.  
S. N. D. NORTH, Chief Statistician.

### MINES AND QUARRIES.

Name of mine or quarry .....  
 Character of mineral.....  
 Name of company, firm, or individual owner .....  
 Location of mine or quarry: State.....; County.....  
 Nearest city or town.....; Post office.....  
 General office at.....

UNITED STATES CENSUS OFFICE,  
Washington, D. C., January 2, 1903.

By section 7 of the act of Congress for the establishment of a permanent Census Office, approved March 6, 1902, the Director of the Census is required to prepare a report on mines, mining, quarries, and minerals and the production and value thereof, including gold in divisions of placer and vein, and silver mines, of the United States, and the following schedule has been formulated for that purpose.

For the convenience of producers, the United States Geological Survey will distribute and receive these schedules in connection with the returns for its annual report.

The information returned on this schedule should cover the business year of the establishment most nearly conforming to the year ending December 31, 1902.

All answers will be held absolutely confidential. No publication will be made in the census reports disclosing the names or operations of individual establishments in any particular. Special agents and enumerators of the census are liable to a penalty of \$500 if they disclose any information obtained in their official capacity.

WILLIAM R. MERRIAM,  
*Director of the Census.*

Extract from act of Congress, March 3, 1899:

SECTION 22. \* \* \* "And every president, treasurer, secretary, director, agent, or other officer of every corporation, and every establishment of productive industry, whether conducted as a corporate body, limited liability company, or by private individuals, from which answers to any of the schedules, inquiries, or statistical interrogatories provided for by this act are herein required, who shall, if thereto requested by the Director, supervisor, enumerator, or special agent, willfully neglect or refuse to give true and complete answers to any inquiries authorized by this act, or shall willfully give false information, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not exceeding ten thousand dollars, to which may be added imprisonment for a period not exceeding one year."

#### CERTIFICATE.

This is to certify that the information contained in this schedule is complete and correct to the best of my knowledge and belief.

.....  
(Signature and official designation of the person furnishing the information.)

.....  
(Signature of special agent.)

30223—04—69

1. Character of present organization, whether individual, firm, limited partnership, cooperative association, or incorporated company: .....
2. Capital stock, bonds, dividends, and assessments (if an incorporated company):

	BONDS.		PREFERRED STOCK.		COMMON STOCK.	
	Number.	Total par value.	Number of shares.	Total par value.	Number of shares.	Total par value.
Authorized .....		\$.....		\$.....		\$.....
Issued to the end of the year: .....						

Dividends and interest, if any, paid during the year:

Common stock, rate.....; amount, \$.....  
 Preferred stock, rate.....; amount, \$.....  
 Bonds, rate.....; amount, \$.....

Assessments: Total amount levied, if any, since organization of company..... \$.....

3. Persons employed:

CLASSES.	Average number employed during the year.	Total amount paid in wages or salaries during the year.
Above ground:		
General officers.....		\$.....
Superintendents, managers, foremen, surveyors, etc.....		
Clerks.....		
Engineers, firemen, machinists, blacksmiths, carpenters, and other mechanics.....		
Miners or quarrymen and stonecutters.....		
Boys under 16 years.....		
All other employees.....		
Below ground (not for quarries or surface mines):		
Foremen.....		
Miners.....		
Miners' helpers.....		
Boys under 16 years.....		
All other employees.....		
Total.....		

(Account for all persons employed at the mine or quarry. Give the total salaries and wages paid, which should include board or rent furnished as part compensation. The wages reported for miners or quarrymen and stonecutters should be their net wages, and should not include the cost of supplies furnished by the company and charged to them, such as explosives, lamp oil, etc., and

blacksmithing charges. Care should be taken that those employed "above ground" and those "below ground" be reported separately. Stockholders of corporations are not to be reported unless they are salaried officials. Amounts paid for contract work, not done by employees hired directly, and the number employed in such work, must not be included in this inquiry, but be reported in answer to Inquiry 6. The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of product reported.)

AVERAGE NUMBER OF WAGE-EARNERS AT SPECIFIED DAILY RATES OF PAY.

OCCUPATIONS.	Less than \$0.50.	\$0.50 to \$0.74.	\$0.75 to \$0.99.	\$1.00 to \$1.24.	\$1.25 to \$1.49.	\$1.50 to \$1.74.	\$1.75 to \$1.99.	\$2.00 to \$2.24.	\$2.25 to \$2.49.	\$2.50 to \$2.74.	\$2.75 to \$2.99.	\$3.00 to \$3.24.	\$3.25 to \$3.49.	\$3.50 to \$3.74.	\$3.75 to \$3.99.	\$4.00 to \$4.24.	\$4.25 and over.
	Engineers.....																
Firemen.....																	
Machinists, blacksmiths, carpenters, and other mechanics.....																	
Miners or quarrymen and stonecutters.....																	
Miners' helpers.....																	
Timbermen and track layers.....																	
Boys under 16 years.....																	
All other employees, not including those on salaries.....																	

AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH.

MONTH.	Men 16 years and over.	Boys under 16 years.	MONTH.	Men 16 years and over.	Boys under 16 years.
January.....			July.....		
February.....			August.....		
March.....			September.....		
April.....			October.....		
May.....			November.....		
June.....			December.....		

(Only wage-earners should be reported, including miners working on tonnage and other pieceworkers. Do not include firm members, general officers, superintendents, managers, foremen, clerks, and other salaried employees.)

4. If mining or quarrying is paid for by ton, car, yard, or other unit, give rate paid and character of unit, .....

Average number of employees engaged in this class of mining, .....

Total amount paid for such work, \$.....

(The rate paid for mining or quarrying not done by the day should be reported, and the average number of employees engaged in such work and the total amount paid.)

5. Time in operation:

Total number of days in operation during the year, ..... Number of hours in operation per day, ..... Number of shifts of workmen, ..... Number of hours to shift, .....

6. Contract work:

Amount paid, if any, for tunneling, shaft sinking, boring test holes, etc., if not done by employees hired directly by this establishment, \$.....

Average number of men employed on such work, .....

Number of days employed, .....

7. Supplies and materials:

Total cost of supplies and materials of all kinds used during the year, including freight paid on the same, \$.....

(The actual cost of all supplies and materials used during the year, including freight paid on the same, must be reported. The cost of the following materials should be reported under this inquiry: Lumber and timber used for repairs, mine supports, track ties, cars, and all other purposes; iron and steel for blacksmithing, rails, frogs, sleepers, etc., for tracks and repairs, parts of machinery and tools used for renewals and repairs; explosives, water for boilers and for other purposes, fuel, illuminating and lubricating oils, machinery supplies, etc.)

8. Miscellaneous expenses:

ITEMS.	Amount.
Royalties and rent of mine and mining plant.....	\$.....
Amount paid for rent of offices, taxes, insurance, interest, advertising, office supplies, law expenses, injuries and damages, telegraph and telephone service, gas, and all other sundries not reported elsewhere.....	.....
Total.....	\$.....

(All items of expense incident to the operation of the mine or quarry, not accounted for under Inquiries 3 and 7, must be reported here. Do not include any portion of the freight reported under Inquiry 7 as paid on supplies and materials.)

9. Product:

Total quantity of mineral or stone mined during the year, .....

Total value at mine or quarry, \$.....

(Under this inquiry should be reported the quantity and value of all mineral or stone mined during the year, f. o. b. at mine or quarry, as reported to the United States Geological Survey.)

10. Power:

a. Power owned—

CLASS.	Number.	Total horsepower.
Engines: Steam.....		
Gas and gasoline.....		
Water wheels.....		
Electric motors.....		
Other power (specify kind).....		

b. Power supplied to other establishments, if any—horsepower, .....

c. Power supplied by other establishments, if any—kind of power, .....; horsepower, .....; name and address of establishment supplying same, .....

(Under this inquiry should be reported all mechanical power employed, either owned or rented, including the number and horsepower of all engines, motors, water wheels, etc., used for hoisting, derricks, surface machinery, ventilating, pumping, and all other purposes.)

Special Schedule No. 8.—For coal mines. (Number printed, 35,000.)

First page same as Schedule No. 6.

Inquiries 1 and 2 same as Schedule No. 6.

3. Persons employed:

CLASSES.	Average number employed during the year.	Total amount paid in wages or salaries during the year.
Above ground:		
General officers.....		\$.....
Superintendents, managers, foremen, surveyors, etc.....		.....
Clerks.....		.....
Engineers, firemen, machinists, blacksmiths, carpenters, and other mechanics.....		.....
Boys under 16 years.....		.....
All other employees.....		.....
Below ground:		
Foremen.....		.....
Miners.....		.....
Miners' helpers.....		.....
Boys under 16 years.....		.....
All other employees.....		.....
Total.....		.....

(Account for all persons employed at the mine. Give the total salaries and wages paid, which should include board or rent furnished as part compensation. The wages reported for miners should be their net wages, and should not include the cost of supplies furnished by the company and charged to them, such as explosives, lamp oil, etc., and blacksmithing charges. Care should be taken that those employed "above ground" and those "below ground" be reported separately. Stockholders of corporations are not to be reported unless they are

salaried officials. Amounts paid for contract work, not done by employees hired directly, and the number employed in such work, must not be included in this inquiry, but be reported in answer to Inquiry 6. The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of product reported.)

AVERAGE NUMBER OF WAGE-EARNERS AT SPECIFIED DAILY RATES OF PAY.

OCCUPATIONS.	Less than \$0.50.	\$0.50 to \$0.74.	\$0.75 to \$0.99.	\$1.00 to \$1.24.	\$1.25 to \$1.49.	\$1.50 to \$1.74.	\$1.75 to \$1.99.	\$2.00 to \$2.24.	\$2.25 to \$2.49.	\$2.50 to \$2.74.	\$2.75 to \$2.99.	\$3.00 to \$3.24.	\$3.25 to \$3.49.	\$3.50 to \$3.74.	\$3.75 to \$3.99.	\$4.00 to \$4.24.	\$4.25 and over.
	Engineers.....																
Firemen.....																	
Machinists, blacksmiths, carpenters, and other mechanics.....																	
Miners.....																	
Miners' helpers.....																	
Timbermen and track layers.....																	
Boys under 16 years.....																	
All other employees, not including those on salaries.....																	

AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH.

MONTH.	Men 16 years and over.	Boys under 16 years.	MONTH.	Men 16 years and over.	Boys under 16 years.
January.....			July.....		
February.....			August.....		
March.....			September.....		
April.....			October.....		
May.....			November.....		
June.....			December.....		

(Only wage-earners should be reported, including miners working on tonnage and other pieceworkers. Do not include firm members, general officers, superintendents, managers, foremen, clerks, and other salaried employees.)

4. If mining is paid for by ton, car, yard, or other unit, give rate paid and character of unit, .....

Average number of employees engaged in this class of mining, .....

Total amount paid for such work, \$.....

Amount paid as yardage or other allowances to miners, if any, \$.....

(The rate paid for mining not done by the day should be reported, and the number of employees engaged in such work and the total amount paid. If yardage or other allowances are made to miners in consideration of difficult mining, narrow work, or for other causes, the total amount paid as such during the year should be reported under this inquiry.)

Inquiries 5, 6, 7, and 8, same as Schedule No. 6.

9. Product:  
Total quantity of marketable coal mined during the year, .....

Total value at mine, \$.....

Number of mine cars of coal, run of mine, hoisted during the year, .....

Average capacity of mine cars, in pounds, .....

(Under this inquiry should be reported the quantity and value of all coal mined during the year, f. o. b. at mine, as reported to the United States Geological Survey. The number of cars loaded in the mine with their average capacity, in pounds, should also be reported.)

Inquiry 10, same as Schedule No. 6.

11. What mechanical system of haulage is employed, if any—tail rope, endless rope, electric locomotive, compressed air, or other kind?.....

12. Are automatic slate pickers or coal cleaners used in the breaker?.....  
(Does not apply to bituminous coal mines.)

13. Number of washeries at this colliery, if any, ....., and price per ton charged to washeries for culm, .....,  
(Does not apply to bituminous coal mines.)

14. Nature of openings to the works—shaft, slope, drift or level, open cutting or stripping, or other method, and depth or length in feet of each, .....

15. System of ventilation in use—fan, furnace, fire basket, exhaust steam, natural, or other kind, .....

16. If coal was mined on royalty during the year, give the rate per ton paid, .....

In addition to Special Schedule No. 8 for coal mines of a commercial character, there was provided for small country coal banks to which Special Schedule No. 8 could not be applied a simpler form of combined letter and schedule.

*Schedule for small coal banks.*

DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
Washington, D. C., June 1, 1903.

DEAR SIR: In accordance with the act of Congress of March 6, 1902, requiring the Director of the Census to prepare a report on mines and quarries, and pursuant to an agreement between the Director of the Census and the Director of the United States Geological Survey, the Geological Survey will collect the data for the mining census, in addition to the usual information collected for the annual report, "Mineral Resources of the United States." The schedule below has been prepared for the purpose of obtaining the statistics of the production of small coal banks which are engaged in mining coal for immediate local consumption. Please fill out the replies to all the inquiries and return this schedule in the accompanying envelope, which requires no postage.

In order that reports from all local banks may be secured, and the canvass thus be made as complete as possible, you are requested to add the names of the owners of any other mines in your immediate vicinity.

Your prompt compliance with this request will greatly facilitate the work of both the Geological Survey and the Census Office, and will be highly appreciated.

Very respectfully,

CHAS. D. WALCOTT, *Director.*

Name.....  
Post office.....  
County.....  
State.....

Quantity of coal produced in 1902:

Tons.....  
Bushels.....  
Total value of the same at the mine..... \$.....  
Total cost of supplies and materials used at the mine in 1902..... \$.....  
Total amount paid in wages during the year..... \$.....  
Total number of men employed at the mine during the year.....  
Total number of days the mine was worked during the year.....

Please give below the names of owners of other small coal mines in your vicinity. Other names may be added on the back of this sheet.

NAME.	Post office.	State.
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

*Special Schedule No. 9.—For petroleum and natural gas wells.*  
(Number printed, 20,000.)

First page same as Schedule No. 6.  
Inquiries 1 and 2 same as Schedule No. 6.

3. Persons employed:

CLASSES.	Average number employed during the year.	Total amount paid in wages or salaries during the year.
General officers.....		\$.....
Superintendents, managers, foremen, etc.....		
Clerks.....		
Engineers, firemen, machinists, blacksmiths, drillers, rig builders, pumpmen, and other mechanics.....		
Boys under 16 years.....		
All other employees.....		
Total.....		\$.....

(Account for all persons employed at the wells. Give the total salaries and wages paid, which should include board or rent furnished as part compensa-

tion. Stockholders of corporations are not to be reported unless they are salaried officials. Amounts paid for contract work, not done by employees hired directly, and the number employed in such work, must not be included in this inquiry, but be reported in answer to Inquiry 5. The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of product reported.)

AVERAGE NUMBER OF WAGE-EARNERS AT SPECIFIED DAILY RATES OF PAY.

OCCUPATIONS.	Less than \$0.50.	\$0.50 to \$0.74.	\$0.75 to \$0.99.	\$1.00 to \$1.24.	\$1.25 to \$1.49.	\$1.50 to \$1.74.	\$1.75 to \$1.99.	\$2.00 to \$2.24.	\$2.25 to \$2.49.	\$2.50 to \$2.74.	\$2.75 to \$2.99.	\$3.00 to \$3.24.	\$3.25 to \$3.49.	\$3.50 to \$3.74.	\$3.75 to \$3.99.	\$4.00 to \$4.24.	\$4.25 and over.
	Engineers and pumpmen.....																
Firemen.....																	
Machinists, blacksmiths, drillers, rig builders, and other mechanics.....																	
Boys under 16 years.....																	
All other employees, not including those on salaries.....																	

AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH.

MONTH.	Men 16 years and over.	Boys under 16 years.	MONTH.	Men 16 years and over.	Boys under 16 years.
January.....			July.....		
February.....			August.....		
March.....			September.....		
April.....			October.....		
May.....			November.....		
June.....			December.....		

(Only wage-earners should be reported. Do not include firm members, general officers, superintendents, managers, foremen, clerks, and other salaried employees.)

Inquiry 4 same as Inquiry 5 on Schedule No. 6.

5. Contract work:

Amount paid, if any, for well drilling, rig building, etc., if not done by employees hired directly by this establishment, \$.....

Average number of men employed on such work.....

Number of days employed.....

6. Supplies and materials:

Total cost of supplies and materials of all kinds used during the year, including freight paid on the same, \$.....

(The actual cost of all supplies and materials used during the year, including freight paid on the same, must be reported. The cost of the following materials should be reported under this inquiry: Lumber and timber used for repairs, rig building, and all other purposes; iron and steel for blacksmithing; parts of machinery and tools used for renewals and repairs; explosives, water for boilers and for other purposes, fuel, machinery supplies, etc.)

7. Miscellaneous expenses:

ITEMS.	Amount.
Royalties and rent of wells.....	\$.....
Amount paid for rent of offices, taxes, insurance, interest, advertising, office supplies, law expenses, telegraph and telephone service, and all other sundries not reported elsewhere.....	\$.....
Total.....	\$.....

(All items of expense incident to the operation of the wells not accounted for under Inquiries 3, 5, and 6, must be reported here. Do not include any portion of the freight reported under Inquiry 6 as paid on supplies and materials.)

8. Product:

Total quantity of petroleum produced during the year (barrels of 42 gallons).....

Total value, at wells, of petroleum produced during the year.... \$.....

Total value, at wells, of natural gas produced during the year.... \$.....

(Under this inquiry should be reported the quantity and value of petroleum and the value of natural gas produced during the year, at the wells, as reported to the United States Geological Survey.)

Inquiry 9 same as Inquiry 10 on Schedule No. 6.

10. Tankage:

Number of tanks at wells.....; total capacity, in barrels of 42 gallons.....

11. Wells:

Total number of wells drilled during the year.....; number of producing wells drilled during the year.....; number of dry holes drilled during the year.....

Of the total number of wells reported on this schedule, state the number flowing.....; number pumping.....; and the number abandoned during the year,.....

What diminution of pressure has occurred during the year? (Describe fully.)

Special Schedule No. 10.—For gold, silver, lead, and copper mines. (Number printed, 78,000.)

First page same as Schedule No. 6, except that the following note of instructions is printed after the location and post office address of the mine:

Where a mine and reduction works are operated under the same management, separate reports should be made on each Schedule No. 10 and No. 11, respectively. If this is not possible, a full report should be made on this schedule (with the exception of Inquiry 10), covering both the mine and reduction works, and answers should also be given to Inquiries 4, 5, 9, 10, and 12 on Schedule No. 11.

Inquiry 1 same as Schedule No. 6.

2. If this mine was ever abandoned, state year when last abandoned..... and when last reopened.....

Inquiries 3, 4, 5, and 6, same as Inquiries 2, 3, 4, and 5, on Schedule No. 6.

7. Contract work:

a. Amount paid, if any, for work not done by employees hired directly by this establishment, \$.....

State whether drainage, pumping, tunneling, shaft sinking, boring test holes, etc.....

Average number of men employed on such work.....

Number of days employed.....

b. Total amount received for contract work done for other establishments, \$..... State whether tunneling, drainage, pumping, etc.....

(Do not include charges for treatment of ores, tailings, etc., at custom mills.)

Inquiry 8 same as Inquiry 7 on Schedule No. 6.

9. Miscellaneous expenses:

ITEMS.	Amount.
Amount expended in development work.....	\$.....
Rent and royalties of mine and mineral land.....	\$.....
Rent of mining plant and improvements.....	\$.....
Rent or royalty for tunnel privileges.....	\$.....
Water rent.....	\$.....
Other rent or royalties (specify kind).....	\$.....
Amount paid for taxes, insurance, interest, advertising, office supplies, law expenses, injuries and damages, telegraph and telephone service, gas, and all other sundries not reported elsewhere.....	\$.....
Total.....	\$.....

(All items of expense incident to the operation of the mine, not accounted for under Inquiries 4, 5, 7, and 8, must be reported here. Do not include any portion of the freight reported under Inquiry 8 as paid on supplies and materials. The items of rent should be stated separately only in cases where they

are paid separately; if any two or more of them are paid in one sum, for instance royalties for mine and mining plant, the fact should be stated and the one amount paid should be given, without attempting to make a division.)

10. Product:  
 Gross value of metallic contents, as reported to the United States Geological Survey ..... \$.....  
 Deductions:  
 Charges for treatment, per ton, \$.....; total ..... \$.....  
 Freight, per ton, \$.....; total ..... \$.....  
 Net value of mining product ..... \$.....
11. Name and address of mill or works at which the ore is treated, .....  
 By what method is the ore conveyed from the mine to the mill? .....
12. Mineral lands:  
 Total acreage—owned .....; held on lease .....; leased to other parties .....  
 If worked by dredges, state total area treated in 1902, acres .....
13. Water plant:  
 Total length of ditches owned (including flumes, pipes, etc.), miles, .....; feet, .....
14. Length of railroad tracks owned:  
 On the surface .....  
 Underground .....
- Inquiry 15 same as Inquiry 10 on Schedule No. 6.

16. Machinery:

CLASS OF MACHINE.	Kind of power.	Number.
Hoisting engines .....		
Pumping engines .....		
Locomotives for outside or inside haulage .....		
Power drills .....		
Steam shovels or derricks .....		
Dredges .....		

Special Schedule No. 11.—For reduction works (*other than smelters*). (*Number printed, 11,500.*)  
 First page same as Schedule No. 6.  
 Inquiries 1 and 2 same as Schedule No. 6.

8. Persons employed:

CLASSES.	Average number employed during the year.	Total amount paid in wages or salaries during the year.
General officers .....		\$.....
Superintendents, managers, foremen, assayers, etc. ....		
Clerks .....		
Engineers, firemen, machinists, blacksmiths, carpenters, and other mechanics .....		
Boys under 16 years .....		
All other employees .....		
Total .....		\$.....

(Account for all persons employed at the works. Give the total salaries and wages paid, which should include board or rent furnished as part compensation. Stockholders of corporations are not to be reported unless they are salaried officials. The average number employed during the year is the number that would be required, at continuous employment for the twelve months, to produce the quantity of product reported.)

AVERAGE NUMBER OF WAGE-EARNERS AT SPECIFIED DAILY RATES OF PAY.

OCCUPATIONS.	Less than \$0.50.	\$0.50 to \$0.74.	\$0.75 to \$0.99.	\$1.00 to \$1.24.	\$1.25 to \$1.49.	\$1.50 to \$1.74.	\$1.75 to \$1.99.	\$2.00 to \$2.24.	\$2.25 to \$2.49.	\$2.50 to \$2.74.	\$2.75 to \$2.99.	\$3.00 to \$3.24.	\$3.25 to \$3.49.	\$3.50 to \$3.74.	\$3.75 to \$3.99.	\$4.00 to \$4.24.	\$4.25 and over.
	Engineers .....																
Firemen .....																	
Machinists, blacksmiths, carpenters, and other mechanics .....																	
Boys under 16 years .....																	
All other employees, not including those on salaries .....																	

AVERAGE NUMBER OF WAGE-EARNERS EMPLOYED DURING EACH MONTH.

MONTH.	Men 16 years and over.	Boys under 16 years.	MONTH.	Men 16 years and over.	Boys under 16 years.
January .....			July .....		
February .....			August .....		
March .....			September .....		
April .....			October .....		
May .....			November .....		
June .....			December .....		

(Only wage-earners should be reported. Do not include firm members, general officers, superintendents, managers, foremen, clerks, and other salaried employees.)

Inquiry 4 same as Inquiry 5 on Schedule No. 6.

5. Amount paid, if any, for treatment of bullion, concentrates, tailings, or other products at custom smelters, refineries, or other custom works, \$.....  
 Total freight paid on the same, \$.....
6. Materials:  
 State character of materials used, whether ore, tailings, or other materials, .....
- Total assay contents and value of all materials bought in 1902:

	Total assay contents.	Value.		Value.
Gold, ounces fine .....		\$.....	Total gross value (brought forward) ....	\$.....
Silver, ounces fine .....			Deductions:	
Lead, pounds .....			Total working charges .....	\$.....
Copper, pounds .....			Total freight .....	\$.....
Other metals, pounds .....			Total deductions .....	\$.....
Total gross value .....		\$.....	Net paid .....	\$.....

(Under this inquiry should be given the cost of all materials bought for the mill. State the metallic contents of the ore, etc., as per sample or assay; the value allowed for gold, silver, lead, copper, and other metals contained in the materials; the deductions made to cover working charges and freight; and give the total net amount paid. Do not give under this inquiry the yield in gold, silver, and other metals resulting from the treatment of the materials at the works and reported to the Geological Survey.)

7. Supplies:

Total cost of mill supplies of all kinds used during the year, including freight paid on the same, \$.....

(The cost of the following supplies should be reported under this inquiry: Shoes, dies, screens, plates, and other parts of machinery and tools used for renewals and repairs; quicksilver, cyanide of potassium, lumber, iron, steel, oil, fuel, water, etc.)

8. Miscellaneous expenses:

Amount paid for rent of offices, plant, and land, taxes, insurance, interest, advertising, office supplies, law expenses, injuries and damages, telegraph and telephone service, gas, and all other sundries not reported elsewhere, \$.....

(All items of expense incident to the operation of the works, not accounted for under Inquiries 3, 5, 6, and 7, must be reported here. Do not include freight.)

9. Product:

Gross value of metallic contents, as reported to the United States Geological Survey \$.....

Deductions on product sold (not including product of this establishment treated at custom works):

Total smelter charges \$.....

Total freight \$.....

Net value of milling product at the mill \$.....

10. Custom work done by this establishment:

	Ore.	Concentrates or other material.	Tailings.	Total.
Quantity treated, tons.....				
Amount received, not including freight \$.....	\$.....	\$.....	\$.....	\$.....
Freight paid on the same \$.....	\$.....	\$.....	\$.....	\$.....

Inquiry 11 same as Inquiry 10 on Schedule No. 6.

12. Name, location, and character of establishment to which the product was sold or shipped for final treatment:

Gold bullion.....  
 Silver bullion.....  
 Concentrates.....  
 Other products (specify kind).....

In addition to the foregoing schedules, Nos. 10 and 11, for mines and reduction works, a schedule was printed for smelters and refineries. Smelters and refineries were included in the Census of Manufactures taken in 1900 and did not come within the scope of the Census of Mines and Quarries of 1902. This schedule was provided for the purpose of merely verifying the reports of the metallic contents of the ores mined and the cost of reduction, and of ascertaining the terms upon which ores were treated by custom smelters, the cost of smelting and refining, and the percentage of metals recovered in the process.

Special schedule No. 12.—For smelters and refineries. (Number printed 1,000.)

UNITED STATES CENSUS OFFICE.  
 Special Schedule No. 12.

DIVISION OF MANUFACTURES.  
 S. N. D. NORTH, Chief Statistician.

SMELTERS AND REFINERIES.

Name of works.....  
 Character of works.....  
 Name of company, firm, or individual owner.....  
 Location of works: City or town.....; County.....; State.....  
 General office at.....

Isaac A. Hourwich, Ph. D., of Washington, D. C., has been appointed expert special agent of the Census Office for this branch of the inquiry.

1. Date of establishment of works:.....
2. If a corporation, in which state incorporated?.....  
 Year of organization.....
3. Schedule of prices paid for materials treated in 1902:

	Ores.	Concentrates.	Matte.	Bullion.	Miscellaneous.
Gold, per ounce.....	\$.....	\$.....	\$.....	\$.....	\$.....
Silver, percentage paid.....					
Lead, per unit (state what unit).....	\$.....	\$.....	\$.....	\$.....	\$.....
Lead, percentage paid.....					
Copper, per unit (state what unit).....	\$.....	\$.....	\$.....	\$.....	\$.....
Other metals (specify each kind).....					
Deductions:					
Working costs, per ton.....	\$.....	\$.....	\$.....	\$.....	\$.....
Freight, per ton.....					

Specify classes of materials embraced under the head of "Miscellaneous":.....

(State separately prices paid per ounce of gold contained in ores, concentrates, matte, bullion, or other materials; likewise state separately percentage of silver contents paid for in each class of materials, give the unit of lead and copper paid for, whether pound or percentage, contained in ore, concentrates, etc. If working costs per ton vary with the character of ore, give all rates in detail.)

4. If the smelter is in a mining district, state by what method the ore is conveyed from the mine to the smelter:.....
5. Total daily capacity of plant, tons per 24 hours:.....
6. Time in operation:  
 Total number of days in operation during the year 1902,.....; number of hours in operation per day.....
7. Total amount paid in salaries and wages during the year 1902, \$.....
8. Cost of supplies used during the year, including freight paid on the same, \$.....

(The cost of the following supplies should be given under this inquiry: Parts of machinery and tools used for renewals and repairs, fuel, fluxes, zinc, oil, and all other supplies consumed in the running of machinery.)

9. Miscellaneous expenses, \$.....

(Amount paid for rent of land, buildings, machinery, offices, taxes, insurance, interest, advertising, office supplies, law expenses, injuries and damages, telegraph and telephone service, gas, and all other sundries not reported elsewhere.)

10. Production of smelter, not including custom work:

MATERIALS TREATED.	Ores.	Concentrates.	Matte.	Bullion.	Miscellaneous.
Quantity, tons or pounds.....					
Total contents as per assay before smelting:					
Gold, ounces fine.....					
Silver, ounces fine.....					
Lead, pounds.....					
Copper, pounds.....					
Other metals, pounds (specify each kind).....					
BULLION RECOVERED.	From ores.	From concentrates.	From matte.	From bullion.	From miscellaneous.
Gold, ounces fine.....					
Silver, ounces fine.....					
Lead, pounds.....					
Copper, pounds.....					
Other metals, pounds (specify each kind).....					

Specify classes of materials embraced under the head of "Miscellaneous":.....

(Give the total quantity, in tons or pounds, of each class of materials treated and the assay contents of ores, concentrates, matte, bullion, etc., separately; also the bullion recovered from each class of materials—that is, the gold, silver, lead, copper, or other metallic contents of the smelted product, as shown by assay.)

11. Production of refinery, not including custom work:

	CRUDE BULLION TREATED.		Refined bullion produced, fine weight.
	Gross weight.	Fine weight as shown by assay.	
<b>A. Materials from smelting department:</b>			
Gold, ounces .....	.....	.....	.....
Silver, ounces .....	.....	.....	.....
Lead, pounds.....	.....	.....	.....
Copper, pounds.....	.....	.....	.....
Other products, pounds (specify each kind).....	.....	.....	.....
<b>B. Materials bought:</b>			
Gold, ounces .....	.....	.....	.....
Silver, ounces .....	.....	.....	.....
Lead, pounds.....	.....	.....	.....
Copper, pounds.....	.....	.....	.....
Other products, pounds (specify each kind).....	.....	.....	.....

12. Custom smelting: (See instructions under Inquiry 10.)

MATERIALS TREATED.	Ores.	Concentrates.	Matte.	Bullion.	Miscellaneous.
Quantity, tons or pounds .....	.....	.....	.....	.....	.....
Total contents as per assay before smelting:					
Gold, ounces fine .....	.....	.....	.....	.....	.....
Silver, ounces fine .....	.....	.....	.....	.....	.....
Lead, pounds .....	.....	.....	.....	.....	.....
Copper, pounds .....	.....	.....	.....	.....	.....
Other metals, pounds (specify each kind) .....	.....	.....	.....	.....	.....
<b>BULLION RETURNED.</b>					
	From ores.	From concentrates.	From matte.	From bullion.	From miscellaneous.
Gold, ounces fine .....	.....	.....	.....	.....	.....
Silver, ounces fine .....	.....	.....	.....	.....	.....
Lead, pounds .....	.....	.....	.....	.....	.....
Copper, pounds .....	.....	.....	.....	.....	.....
Other metals, pounds (specify each kind) .....	.....	.....	.....	.....	.....
Total smelting charges .....	\$.....	\$.....	\$.....	\$.....	\$.....
Total freight charges .....	.....	.....	.....	.....	.....

Is freight charged to the customer?.....

Specify classes of materials embraced under the head of "Miscellaneous":.....

13. Custom refining:

	CRUDE BULLION TREATED.		Refined bullion returned (fine weight).	Total tolls received.	Total freight charged.
	Gross weight.	Fine weight as per assay.			
Gold, ounces .....	.....	.....	.....	\$.....	\$.....
Silver, ounces .....	.....	.....	.....	.....	.....
Lead, pounds.....	.....	.....	.....	.....	.....
Copper, pounds.....	.....	.....	.....	.....	.....
Other metals, pounds (specify each kind).....	.....	.....	.....	.....	.....

14. Crude bullion treated at other refineries:

	CRUDE BULLION SHIPPED.		Refined bullion received (fine weight).	Total tolls paid.	Total freight paid.
	Gross weight.	Fine weight as per assay.			
Gold, ounces .....	.....	.....	.....	\$.....	\$.....
Silver, ounces .....	.....	.....	.....	.....	.....
Lead, pounds.....	.....	.....	.....	.....	.....
Copper, pounds.....	.....	.....	.....	.....	.....
Other metals, pounds (specify each kind).....	.....	.....	.....	.....	.....

15. Crude bullion sold:

	Gross weight.	Fine contents.	Total gross value.	Refining charges.	Freight charges.
Gold, ounces.....	.....	.....	\$.....	\$.....	\$.....
Silver, ounces.....	.....	.....	.....	.....	.....
Lead, pounds.....	.....	.....	.....	.....	.....
Copper, pounds.....	.....	.....	.....	.....	.....
Other metals, pounds (specify each kind).....	.....	.....	.....	.....	.....

16. Name and location of mint, assay office, or refinery to which bullion was shipped during the year:

Gold.....  
 Silver.....  
 Lead.....  
 Copper.....

Before commencing the mining census it was considered necessary to prepare a schedule for corporations, firms, or individuals operating more than one mine or quarry with a central office for all of them.

*Special schedule, No. 6a.*—Supplemental schedule for administrative and general offices. (Number printed, 12,000.)

UNITED STATES CENSUS OFFICE.

*Special Schedule, No. 6a.*

DIVISION OF MANUFACTURES.

S. N. D. NORTH, Chief Statistician.

MINES AND QUARRIES.

SUPPLEMENTAL SCHEDULE FOR ADMINISTRATIVE AND GENERAL OFFICES.

Name of company, firm, or individual owner .....

General office: State.....; County.....; City or town .....

Corporations, firms, or individuals operating more than one mine, quarry, or reduction works, with a central office for all of them, are requested to report on this schedule the employees of such central office, with their salaries or wages, and all other employees whose work is not confined to one particular mine, quarry, or reduction works, such as general superintendents, machinists, surveyors, etc. All general expenses are also to be reported on this schedule, and the data relating to capital stock, bonds, dividends, and assessments of incorporated companies. No data reported on this schedule should appear on the separate reports for the individual mines, quarries, or reduction works. Separate schedules are supplied for these individual plants.

MINES AND QUARRIES.

CERTIFICATE.

This is to certify that the information contained in this schedule is complete and correct to the best of my knowledge and belief.

(Signature and official designation of the person furnishing the information.)

(Signature of special agent.)

1. Character of present organization, whether individual, firm, limited partnership, cooperative association, or incorporated company: .....
2. Capital stock, bonds, dividends, and assessments (if an incorporated company):

	BONDS.		PREFERRED STOCK.		COMMON STOCK.	
	Number.	Total par value.	Number of shares.	Total par value.	Number of shares.	Total par value.
Authorized .....		\$.....		\$.....		\$.....
Issued to end of the year .....		\$.....		\$.....		\$.....

Dividends and interest, if any, paid during the year:

Common stock, rate.....; amount, \$.....

Preferred stock, rate.....; amount, \$.....

Bonds, rate.....; amount, \$.....

Assessments: Total amount levied since organization of company.. \$.....

3. Persons employed:

CLASSES.	Average number employed during the year.	Total amount paid in salaries or wages during the year.
General officers.....		\$.....
Other officers (managers, general superintendents, etc.) .....		
Clerks .....		
Surveyors, machinists, laborers, and all others not employed at particular mines, quarries, or reduction works.....		
Total .....		\$.....

(Account for all persons not included in the separate returns for mines, quarries, or reduction works. Give the total salaries and wages paid, which should include board or rent furnished as part compensation. Stockholders of corporations are not to be reported, unless they are salaried officials. Amounts paid for contract work, not done by employees hired directly, and the number employed in such work, must not be included in this inquiry, but be reported in answer to Inquiry 4. The average number employed during the year is the number that would have continuous employment for the twelve months.)

4. Contract work:

Amount paid, if any, for tunneling, shaft sinking, boring test holes, etc., not chargeable to a particular mine or quarry, if not done by employees hired directly by this establishment..... \$.....

Average number of men employed on such work.....

Number of days employed.....

5. Miscellaneous expenses:

Amount paid for rent of offices, taxes, insurance, interest, advertising, office supplies, law expenses, injuries and damages, telegraph and telephone service, gas, and all other sundries not reported elsewhere..... \$.....

(All items of general expense not accounted for under Inquiries 3 and 4 must be reported here.)

6. Names and locations of mines, quarries, or reduction works owned or leased: (If not sufficient space, use separate sheet of paper.)

NAME OF MINE, QUARRY, OR REDUCTION WORKS.	LOCATION.		
	State.	County.	Nearest city or town.
.....			
.....			
.....			

Special Schedule No. 6b.—For stone quarries in addition to Special Schedule No. 6, as supplementary thereto. (Number printed, 35,000.)

UNITED STATES CENSUS OFFICE.

Special Schedule No. 6b.

(To be filled out and returned in connection with and in addition to Special Schedule No. 6, as supplementary thereto.)

DIVISION OF MANUFACTURES.  
S. N. D. NORTH, Chief Statistician.

STONE QUARRIES.

Name of quarry .....

Kind of stone.....

Name of company, firm, or individual owner.....

Location of quarry: State.....; County.....

Nearest city or town.....; Post office.....

Dr. G. P. Merrill, of the United States National Museum, has been appointed expert special agent of the Census Office for the collection of statistics relating to stone quarries.

QUARRYING AND STONE-DRESSING MACHINES.

(Please state the kinds of drills, channellers, gadders, and quarry bars used, and if other machines than those specified below are used, please report them and give full description in the blank spaces provided.)

KIND.	Trade name and make.	Number used.	Year when adopted.
Drills.....			
Channellers.....			
Gadders.....			
Quarry bars.....			
Helicoidal saws.....			
Reciprocating saws used with sand, chilled iron, or crushed steel, in gangs.....			
Reciprocating saws with diamond teeth.....			
Planers.....			
Lathes.....			
Rubbing beds.....			
Polishers.....			
Surfacing machines.....			
Jointing machines.....			
Sand-blast machines.....			
All others.....			

There were provided in addition to the schedules of the Census Office, copies of the schedules of the Geological Survey which were used for transcribing the information reported to that office.

No. ....

UNITED STATES CENSUS OFFICE.

DIVISION OF MANUFACTURES.

MINES AND QUARRIES.

SLATE. (Number printed, 300.)

Special Schedule No. 6.

Name of quarry .....

Name of company, firm, or individual owner.....

General office.....

Location of quarry: State.....; County.....

Nearest city or town.....

1. Please give quantity of slate sold and selling value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Roofing slate (squares).....		\$.....
Milling stock and all other purposes.....		
Total value.....		\$.....

2. How was the demand and what was the general condition of trade in 1902 as compared with the preceding year?

Note carefully the following:

Unless statements of tests or analyses of your slate have been given with previous replies, you are earnestly requested to give the results of any such analyses or tests, with the name of the expert who made the analysis or test.

Please give the names and addresses of any new quarry operators in your vicinity.

If you have retired permanently from the business, or did not operate last year, please so state.

MARBLE. (Number printed, 500.)

Special Schedule No. 6.

Name of quarry.....

Name of company, firm, or individual owner.....

General office.....

Location of quarry: State.....; County.....

Nearest city or town.....

1. Please give quantity of marble quarried and the value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Sold rough for—		
Building purposes.....		\$.....
Monumental work.....		
Other purposes.....		
Dressed for—		
Building purposes.....		
Monumental work.....		
Ornamental purposes.....		
Interior decoration.....		
Other purposes.....		
Other uses.....		
[State use, if possible.]		
Total value.....		\$.....

2. How was the demand and what was the general condition of trade in 1902 as compared with 1901?

Note carefully the following:

Unless statements of tests or analyses of your marble have been given with previous replies, you are earnestly requested to inclose the results of any such analyses or tests, with the name of the expert who made the analysis or test.

If you have retired permanently from the business, or have not operated in 1902, please so state.

If you have disposed of your quarry, please give the name and address of your successor and the date on which you sold.

If you have recently acquired your quarry, please give the name of its former owner and the date on which you took possession.

Please give the names and addresses of any new quarry operators in your vicinity.

TRAP ROCK. (Number printed, 500.)

Special Schedule No. 6.

Name of quarry.....

Name of company, firm, or individual owner.....

General office.....

Location of quarry: State.....; County.....

Nearest city or town.....

1. Please give quantity of trap rock quarried and the value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Sold rough for building purposes.....		\$.....
Dressed for building purposes.....		
Made into paving blocks.....		
Crushed stone for—		
Roadmaking (macadam, etc.).....		
Railroad ballast.....		
Concrete, etc.....		
Rubble.....		
Riprap.....		
Other purposes.....		
[State purpose, if possible.]		
Total value.....		\$.....

2. How was the demand and what was the general condition of trade in 1902 as compared with 1901?

Note carefully the following:

Unless statements of tests or analyses of your trap rock have been given with previous replies, you are earnestly requested to inclose the results of any such analyses or tests, with the name of the expert who made the analysis or test.

If you have retired permanently from the business, or have not operated in 1902, please so state.

If you have disposed of your quarry, please give the name and address of your successor, and the date on which you sold.

If you have recently acquired your quarry, please give the name of its former owner and the date on which you took possession.

Please give the names and addresses of any new quarry operators in your vicinity.

GRANITE. (Number printed, 2,000.)

Special Schedule No. 6.

Name of quarry.....

Name of company, firm, or individual owner.....

General office.....

Location of quarry: State.....; County.....

Nearest city or town.....

1. Please give quantity of granite quarried and the value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Sold rough for—		
Building purposes.....		\$.....
Monumental work.....		
Other purposes.....		
Dressed for building purposes.....		
Dressed for monumental work.....		
Dressed for interior decoration.....		
Made into paving blocks.....		
Curbing.....		
Flagging.....		
Crushed stone for—		
Roadmaking (macadam, etc.).....		
Railroad ballast.....		
Concrete, etc.....		
Rubble.....		
Riprap.....		
Other purposes.....		
[State purpose, if possible.]		
Total value.....		\$.....

2. How was the demand and what was the general condition of trade in 1902 as compared with 1901?

Note carefully the following:

Unless statements of tests or analyses of your granite have been given with previous replies, you are earnestly requested to inclose the results of any such analyses or tests with the name of the expert who made the analysis or test.

If you have retired permanently from the business, or have not operated in 1902, please so state.

If you have disposed of your quarry, please give the name and address of your successor and the date on which you sold.

If you have recently acquired your quarry, please give the name of its former owner and the date on which you took possession.

Please give the names and addresses of any new quarry operators in your vicinity.

**SANDSTONE.** (Number printed, 1,750.)

Special Schedule No. 6.

Name of quarry .....  
 Name of company, firm, or individual owner .....  
 General office .....  
 Location of quarry: State .....; County .....  
 Nearest city or town .....

1. Please give quantity of sandstone quarried and the value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Sold rough for building purposes.....		\$.....
Dressed for building purposes.....		
Crushed stone for—		
Roadmaking (macadam, etc.) .....		
Railroad ballast.....		
Concrete, etc.....		
Ganister rock.....		
Riprap.....		
Rubble.....		
Paving.....		
Flagging.....		
Curbing.....		
Grindstones.....		
Whetstones.....		
Sand mined:		
Glass sand.....		
Engine sand.....		
Furnace sand.....		
Building sand.....		
Other uses.....		
Other purposes.....		
[State purpose, if possible.]		
Total value.....		\$.....

2. How was the demand and what was the general condition of trade in 1902 as compared with 1901?

Note carefully the following:

Unless statements of tests or analyses of your sandstone have been given with previous replies, you are earnestly requested to inclose the results of any such analyses or tests, with the name of the expert who made the analysis or test.

If you have retired permanently from the business or have not operated in 1902, please so state.

If you have disposed of your quarry, please give the name and address of your successor, and the date on which you sold.

If you have recently acquired your quarry, please give the name of its former owner and the date on which you took possession.

Please give the names and addresses of any new quarry operators in your vicinity.

**BLUESTONE.** (Number printed, 500.)

Special Schedule No. 6.

Name of quarry .....  
 Name of company, firm, or individual owner .....  
 General office .....  
 Location of quarry: State .....; County .....  
 Nearest city or town .....

1. Please give quantity of bluestone quarried and the value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Sold rough for building purposes.....		\$.....
Dressed for building purposes.....		
Crushed stone for—		
Roadmaking (macadam, etc.) .....		
Railroad ballast.....		
Concrete, etc.....		
Riprap.....		
Rubble.....		
Paving.....		
Flagging.....		
Other purposes.....		
[State purpose, if possible.]		
Total value.....		\$.....

2. How was the demand and what was the general condition of trade in 1902 as compared with 1901?

Note carefully the following:

Unless statements of tests or analyses of your bluestone have been given with previous replies, you are earnestly requested to inclose the results of any such analyses or tests, with the name of the expert who made the analysis or test.

If you have retired permanently from the business, or have not operated in 1902, please so state.

If you have disposed of your quarry, please give the name and address of your successor and the date on which you sold.

If you have recently acquired your quarry, please give the name of its former owner and the date on which you took possession.

Please give the names and addresses of any new quarry operators in your vicinity.

**LIMESTONE.** (Number printed, 7,500.)

Special Schedule No. 6.

Name of quarry .....  
 Name of company, firm, or individual owner .....  
 General office .....  
 Location of quarry: State .....; County .....  
 Nearest city or town .....

1. Please give quantity of limestone quarried and the value at the quarry for the year 1902, as follows:

[Give your usual unit of measurement, but state definitely what it is.]

	Quantity.	Value.
Building purposes.....		\$.....
Flagging.....		
Curbing.....		
Stone burned into lime.....		
Lime made.....		
[Give quantity and value of lime in bulk.]		
Stone sold as such to lime burners.....		
Crushed stone for—		
Roadmaking (macadam, etc.).....		
Railroad ballast.....		
Concrete, etc.....		
Rubble.....		
Riprap.....		
Blast-furnace flux.....		
Quarried for cement.....		
Other purposes.....		
[State purpose, if possible.]		
Total value.....		\$.....

2. What was the average price of lime per bushel or barrel in your locality during 1902?

3. How was the demand and what was the general condition of trade in 1902 as compared with 1901?

Note carefully the following:

Unless statements of tests or analyses of your limestone, or the lime made from it, have been given with previous replies, you are earnestly requested to inclose the results of any such tests or analyses, with the name of the expert who made the analysis or test.

If you have retired permanently from the business or have not operated in 1902, please so state.

If you have disposed of your quarry, please give the name and address of your successor, and the date on which you sold.

If you have recently acquired your quarry, please give the name of its former owner and the date on which you took possession.

Please give the names and addresses of any new quarry operators in your vicinity.

**BARYTES.** (Number printed, 800.)

Special Schedule No. 6.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....

*Inquiries for miners.*

Quantity of crude barytes produced in 1902, short tons.....  
 Total value at the mine..... \$.....

[If any part of the above product was purchased from other parties, please state under "Remarks" the names of such parties and the quantity obtained from each.]

*Inquiries for manufacturers.*

Quantity of barytes treated by you in 1902, short tons.....  
 Quantity of refined product, as follows:  
 Flotted for pigment, short tons.....  
 For canvassing hams, etc., short tons.....  
 For other purposes, short tons.....

Value of refined product..... \$.....  
 Please state from what locality your crude material was obtained:  
 What was the tendency of trade as compared with preceding year?  
 Please note the names and addresses of any new operators in your vicinity.

REMARKS.

**MINERAL PAINTS.** (Number printed, 1,000.)

Special Schedule No. 6.

Name of mine or works.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine or works: State.....; County.....  
 Nearest city or town.....

Please fill out the following blanks with the quantity and value of your production in 1902. It is preferred to have returns made for "dry ground" paint. If you sell in any other condition, please state what it is.

	Quantity (short tons).	Value.
Metallic paint.....		\$.....
Mortar colors.....		
Other.....		
Umber.....		
Sienna.....		
Soapstone.....		
Barytes.....		
Slate.....		
Venetian reds.....		
Zinc white.....		
Other pigments.....		

Please note any changes in the condition of trade as compared with the preceding year.

Please give the names and addresses of any new operators in your vicinity.

REMARKS.

**MICA.** (Number printed, 250.)

Special Schedule No. 6.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....  
 What was your production in 1902?

	Quantity.	Value.
Cut or sheet mica.....pounds..		\$.....
Scrap or waste.....short tons..		

What were the uses for which it was sold? Please make an estimate if you have no exact figures.

USES.	Quantity.
Stove.....pounds..	
Electrical.....pounds..	
Ground for--	
Lubricants.....short tons..	
Wall papers.....short tons..	
Other purposes.....short tons..	

How many days was your mine worked in 1902?  
 Please note the names and addresses of any new operators in your vicinity.

REMARKS.

**PHOSPHATE ROCK.** (Number printed, 1,250.)

Special Schedule No. 6.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....  
 What was the quantity and value of your product in 1902?

[Please state definitely whether long or short ton is used.....]

	Total quantity produced in 1902. .... tons.	Total quantity sold in 1902. .... tons.	Value of sales.
Land rock.....			\$.....
River rock.....			
Hard rock.....			
Soft rock.....			
Plate rock.....			
Land pebble.....			
River pebble.....			
White rock.....			
Blue rock.....			
Brown rock.....			
Total.....			\$.....

Answers to above queries are requested from producers of phosphate rock only. If the person addressed is a merchant or agent, buying and selling phosphates or phosphate lands, and not engaged in mining, please return this card with a statement to that effect.

Please give the names and addresses of any new operators in your vicinity.

REMARKS.

**GYPSUM AND GYPSUM PRODUCTS.** (Number printed, 400.)

Special Schedule No. 6.

Name of quarry.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of quarry: State.....; County.....  
 Nearest city or town.....

MINES AND QUARRIES.

Source of gypsum.

	Short tons.	Value.
Quantity quarried.....		\$.....
Quantity purchased locally.....		
Quantity imported.....		
Total value.....		\$.....

Disposal of gypsum.

	Short tons.	Value.
Quantity sold crude.....		\$.....
Quantity sold as land plaster.....		
Quantity sold as wall or cement plaster.....		
Quantity sold as plaster of Paris.....		
Total value.....		\$.....

What was the condition of trade as compared with that of the preceding year? Please note the names and addresses of any new operators in your vicinity, and add any other information which the blank does not furnish space for.

REMARKS.

EMERY AND CORUNDUM. (Number printed, 100.)

Special Schedule No. 6.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....

Emery.

	Short tons.
1. Total quantity of emery mined in 1902.....	
2. Total quantity of emery sold in 1902.....	
3. Total value of emery sold.....	\$.....

Corundum.

	Short tons.
4. Total quantity mined in 1902.....	
5. Total quantity sold in 1902.....	
6. Total value of corundum sold.....	\$.....

NEW ADDRESSES.

Please give the names of any other operators in your vicinity.

REMARKS.

MILLSTONES. (Number printed, 100.)

Special Schedule No. 6.

Name of quarry.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of quarry: State.....; County.....  
 Nearest city or town.....

1. Total number of millstones made by you in 1902.....
2. Total number sold in 1902.....
3. Total value of millstones sold in 1902..... \$.....
4. Please state how many of each size you made and what was the average price per pair.

	Number made.	Price per pair.
30 inches.....		\$.....
36 inches.....		
42 inches.....		
48 inches.....		

5. What was the condition of trade as compared with the previous year?

Please give the name and address of any new manufacturer of millstones in your vicinity.

REMARKS.

GRINDSTONES. (Number printed, 150.)

Special Schedule No. 6.

Name of quarry.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of quarry: State.....; County.....  
 Nearest city or town.....

Short tons.

1. Total approximate quantity of crude rock quarried in 1902.... [This question applies only to stone quarried for the manufacture of grindstones.]
2. Total number of grindstones made in 1902.....
3. Total number of grindstones of your own make sold by you in 1902 [In replying to questions 2 and 3, please state definitely whether your product is sold by weight or otherwise.]
4. Total value of grindstones sold in 1902..... \$.....
5. Please give average prices for different sizes of grindstones during the year. Please note the names of any other manufacturers in your vicinity.

REMARKS.

SOAPSTONE AND TALC. (Number printed, 250.)

Special Schedule No. 6.

Name of quarry.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of quarry: State.....; County.....  
 Nearest city or town.....

Total quantity of { soapstone } { talc } produced by you in 1902 (short tons).....	
Quantity sold in rough state as quarried (short tons).....	
Total value of same.....	\$.....
Quantity sawed into slabs and sold (short tons).....	
Total value of slabs sold.....	\$.....
Quantity made by you into washtubs, laboratory or kitchen sinks, stove bricks, griddles, or other mill stock (short tons).....	
Total value of manufactured articles.....	\$.....
Quantity ground for paint, paper filling, complexion powders, lubricants, etc. (short tons).....	
Value after grinding.....	\$.....

Information regarding any further uses to which your product is put, the condition of trade, new developments, etc., will be greatly appreciated.

Please note the causes of any notable fluctuations, either in amount or value, of your production as compared with the preceding year. This should include fires or other accidents, strikes, new advantages in transportation facilities, favorable freight rates, etc.

BITUMINOUS COAL. (Number printed 10,000.)

Special Schedule No. 8.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....  
 Character of coal produced.....

Disposition of product: [Include all marketable sizes of coal. Exclude only slack coal wasted.]  
 Loaded at mines for shipment..... Tons.  
 Sold to local trade or used by employees.....  
 Used at mines for steam and heat.....  
 Made into coke at mines.....  
 Total production in 1902.....  
 Please state definitely whether "long" or "short" ton is used by you.....  
 Total selling value of product..... \$.....  
 Average price per ton..... \$.....  
 Average number of full days made by each employee (exclusive of coke workers) during the year. (Parts of days should be reduced to equivalent in full days).....  
 Average number of employees during the year, including all persons connected directly with the mine, but excluding coke workers.....  
 If the mine reported hereon was idle because of strikes in 1902, please state how many men were affected and how many days they were idle.  
 Ans.: Number of men on strike.....  
 Number of days idle.....  
 Date of strike: From..... to.....

*Mining machines.*

Do you use any machines for mining coal? Ans.:.....  
 How many were in use in 1902? Ans.:.....  
 How many tons of your product were mined by machines in 1902? Ans.:.....

*Kinds of machines used.*

Pick machines:	Number.
Harrison.....	
Sullivan.....	
Ingersoll-Sargeant.....	
Other kinds.....	
Chain-breast machines:	
Jeffrey air.....	
Jeffrey electric.....	
Independent or Link-Bell.....	
Morgan-Gardner.....	
Morgan-Standard.....	
Other kinds.....	
Long wall:	
Jeffrey.....	
Sperry.....	
Lee.....	
Other kinds.....	

ANTHRACITE COAL. (Number printed, 500.)

*Special Schedule No. 3.*

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....  
 Disposition of product: Long tons.  
 Loaded at mine for shipment.....  
 Sold to local trade or used by employees.....  
 Used at mine for steam and heat.....  
 Total production in 1902.....  
 Total selling value of product..... \$.....  
 Average price per ton..... \$.....  
 Railways over which product was shipped.....  
 Average number of full days made by each employee during the year. (Parts of days should be reduced to equivalent in full days).....  
 Average number of employees during the year, including all persons connected directly with the mine.....  
 If the mine reported hereon was idle because of strikes in 1902, please state how many men were affected and how many days they were idle.  
 Ans.: Number of men on strike.....  
 Number of days idle.....  
 Date of strike: From..... to.....

REMARKS.

CLAY. (Number printed, 750.)

*Special Schedule No. 6.*

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....  
 In compiling these statistics the amount of sales during the year 1902 is what is desired, not including clay burned by yourself. By "value" is meant the net price at the mine f. o. b. cars, wagons, or boats.

*Clay mined and sold in 1902.*

	Quantity (tons of 2,000 pounds).	Value.
Kaolin:		
Raw.....		\$.....
Ground, washed, or prepared in any way.....		
Ball clay:		
Raw.....		
Ground, washed, or prepared in any way.....		
Fire clay:		
Raw.....		
Ground, washed, or prepared in any way.....		
Stoneware clay:		
Raw.....		
Ground, washed, or prepared in any way.....		
Pipeclay:		
Raw.....		
Ground, washed, or prepared in any way.....		
Terra cotta clay:		
Raw.....		
Ground, washed, or prepared in any way.....		
Miscellaneous clay (please give variety):		
Raw.....		
Ground, washed, or prepared in any way.....		
Total mined and sold by you in 1902.....		

[If there have been any analyses made of your clay which you have not already sent to this office, please inclose copies with this slip.]  
 Please give the color to which your clay burns.  
 If you are also engaged in the burning of clay, please so state.  
 If you have retired permanently from the business, or made no sales of clay in 1902, please so state.  
 If you have disposed of your mine, please give the name and address of your successor, and the date on which you gave possession.  
 If you have recently acquired your mine, please give the name of its former owner and the date on which you took possession.  
 Please give the names and addresses of the operators of any new clay mines in your neighborhood.

CEMENT. (Number printed, 250.)

*Special Schedule No. 8.*

Name of quarry.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of quarry: State.....; County.....  
 Nearest city or town.....  
 Quantity.  
 Natural cement made in 1902 (barrels).....  
 Portland cement made in 1902 (barrels).....  
 Limestone quarried in 1902.....  
 Limestone purchased in 1902.....  
 Marl mined in 1902.....  
 Marl purchased in 1902.....  
 Slag cement made in 1902 (barrels).....  
 Please state how many kilns you use:.....  
 Number.....  
 Vertical.....  
 Rotary.....

Please give the location of your office.  
 Please give the location of your factory.  
 If your plant was idle during the past year, please state that fact.  
 If you have disposed of your business, or retired, please state such facts and give the name of your successor, if any.  
 Please give the names of any new cement works established or projected in your neighborhood.

PRECIOUS METALS AND DEEP MINES. (Number printed, 35,000.)  
 Special Schedule No. 10a.

Name of mine .....  
 Name of company, firm, or individual owner .....  
 General office .....  
 Location of mine: State .....; County .....  
 Nearest city or town .....  
 Mining district or region .....  
 Name and address of superintendent .....

Tons of 2,000 pounds.

1. Total quantity of ore mined in 1902.....
2. Total quantity of ore sold or treated in 1902.....
3. Stock of ore on hand December 31, 1901.....  
 Stock of ore on hand December 31, 1902.....
4. Total bullion contents of above ore sold or treated in 1902:

	Fine ounces.	Value.
Gold.....		\$.....
Silver.....		
	Pounds.	
Copper.....		
Lead.....		
Other metals.....		
Total value.....		\$.....

5. What is the prevailing mineralogical character of your ore? [For instance, auriferous pyrite, argentiferous galena, copper glance passing into chalcopyrite, etc.]
6. What is the geological character of your deposit? [For instance, fissure vein in granite, blanket deposit in limestone, contact deposit between limestone and porphyry, etc.]
7. How is your mine opened, and what is the extent of the workings? [For instance, by vertical shaft — feet deep, by tunnel — feet long, etc.]
8. By what process or processes is your ore reduced to the metallic state? [Smelting, amalgamation, chlorination, cyaniding, etc.]
9. If returns are from a number of mines or mining claims operated under one direction or management, please give names and localities of the same.
10. If ores are treated at reduction works owned or operated by the company, please state the process:
  - a. Concentration only.....
  - b. Stamp mill and concentration.....
  - c. Chlorination.....
  - d. Cyanide.....
  - e. Give any peculiarities in your process or mode of treatment.....
11. Bullion contents and gross value per ton of ore sold or treated:
 

Gold, fine ounces.....	
Silver, fine ounces.....	
Copper, per cent.....	
Lead, per cent.....	
Other metals, per cent.....	
Aggregate gross value.....	\$.....

12. Increase or decrease of stock of ore on hand:

	Increase.	Decrease.
Quantity..... Tons.....		
Estimated value..... \$.....		

16. Total estimated value of the mining product..... \$.....

PRECIOUS METALS—REDUCTION WORKS AT MINES. (Number printed, 25,000.)  
 Special Schedule No. 11a.

Name of mine .....  
 Name of company, firm, or individual owner.....  
 General office .....  
 Location of mine: State.....; County.....  
 Nearest city or town .....  
 Mining district or region.....  
 Name and address of superintendent .....

Bullion produced or contained in concentrates from ore or tailings treated in 1902:

	Fine ounces.	Value.
Gold.....		\$.....
Silver.....		
	Pounds.	
Copper.....		
Lead.....		
Other metals (designate them).....		
	Tons	
Total quantity of products other than bullion.....		
Total value.....		\$.....

State general character and capacity of mill. [For instance, 20-stamp wet crushing, amalgamation with plates, 2 Frue vanners, and settling tanks. Capacity, 30 tons per 24 hours.]

Give any peculiarities in your process or mode of treatment.

Sources of material treated in 1902.

If any or all of the ore or other material treated by you in 1902 was custom material or was purchased from other parties, please give below the sources of such ores and the average assay or total bullion value of each.

STATE.	County.	Tons.	VALUE.	
			Gold.	Silver.
.....	.....	.....		

1. Bullion contents and gross value per ton of ore mined and milled:

- |                             |         |
|-----------------------------|---------|
| Gold, fine ounces.....      |         |
| Silver, fine ounces.....    |         |
| Copper, per cent.....       |         |
| Lead, per cent.....         |         |
| Other metals, per cent..... |         |
| Aggregate gross value.....  | \$..... |

2. Bullion contents, total and per ton, and value of product from purchased materials:

	PRODUCT.			Average assay contents before treatment, per ton.
	Total quantity.	Per ton.	Total value.	
Gold.....	<i>Fine ounces.</i>	<i>Fine ounces.</i>	\$.....	<i>Fine ounces.</i>
Silver.....				
Lead.....	<i>Pounds.</i>	<i>Per cent.</i>		<i>Per cent.</i>
Copper.....				
Other metals.....				
Total gross value.....			\$.....	\$.....
Average value per ton.....				

3. Bullion contents of the product of custom materials:

	PRODUCT.		
	Total quantity.	Per ton.	Total value.
Gold .....	<i>Fine ounces.</i>	<i>Fine ounces.</i>	\$.....
Silver .....			
Lead .....	<i>Pounds.</i>	<i>Per cent.</i>	
Copper .....			
Other metals .....			
Total gross value .....			\$.....
Average value per ton .....			

4. Average cost of smelting per ton of ore mined and milled:

Smelter charges .....	\$.....
Freight .....	
Total .....	\$.....

5. Total estimated value of the mining and milling product... \$.....

6. Sources of material treated:

STATE.	County.	Tons.	TOTAL BULLION VALUE.	
			Gold.	Silver.
.....	.....	.....	\$.....	\$.....
.....	.....	.....		
Total domestic.....				
Total foreign.....				
Grand total .....			\$.....	\$.....

PRECIOUS METALS—PLACER AND SURFACE MINES. (Number printed, 7,500.)

Special Schedule No. 10b.

Name of mine .....

Name of company, firm, or individual owner.....

General office .....

Location of mine: State.....; County .....

Nearest city or town .....

1. State character of deposit. [Whether stream sand, bench gravels, beach sands, ancient river beds, old tailings, etc.]

2. How is the deposit worked? [Whether by sluicing, drift mining, hydraulic mining, dredging, etc.]

3. Production:

	Ounces.	Value.
a. Gold, crude weight.....		\$.....
b. Fineness of gold produced .....		
bb. Total fine ounces .....		
c. Average yield per ton or cubic yard of material handled.....		
d. State what accessory metals or gems are found, and the value of such in 1902 .....		
e. State any values obtained from black sand or tailings .....		
Total value.....		\$.....

REMARKS.

PRECIOUS METALS—LOCAL OR CUSTOM MILLS OR SMELTING WORKS. (Number printed, 2,000.)

Special Schedule No. 11b.

Name of works .....

Name of company, firm, or individual owner.....

General office .....

Location of works: State.....; County .....

Nearest city or town .....

Name of superintendent .....

Address .....

Production.

Total quantity of ore, tailings, or other material treated in 1902: (tons of 2,000 pounds).....

	Ounces, fine.	Value.
Total yield in gold .....		\$.....
Total yield in silver .....		
	Pounds.	Value.
Copper.....		\$.....
Lead.....		
Other metals (designate them):.....		

Custom mills.

1. State general character and capacity of mill. [For instance, 20-stamp, wet crushing, amalgamation with plates, 2 Frue vanners, and settling tanks. Capacity, 30 tons per 24 hours.]

2. Give any peculiarities in your process or mode of treatment.

Local or custom smelting works.

1. State general character of process. [As "roasting in kilns," "smelting in stack furnace," etc.]

2. Give character and capacity of plant. ...., Superintendent.

Sources of material treated.

In order that the producing districts may be properly credited, please furnish below an approximate statement of the sources from which your ores were obtained and the average assay or total bullion value. (Precious metals only.)

STATE.	County.	VALUE.	
		Gold.	Silver.
.....	.....	\$.....	\$.....
.....	.....		

A. Bullion contents, assay contents before treatment, and average value per ton of product from purchased materials:

	Contents of product.	Assay contents before treatment.
Gold, fine ounces.....		
Silver, fine ounces.....		
Lead, per cent.....		
Copper, per cent .....		
Other metals, per cent.....		
Average value per ton.....	\$.....	\$.....

B. Sources of material treated:

STATE.	County.	Tons.	TOTAL BULLION VALUE.	
			Gold.	Silver.
.....	.....	.....	\$.....	\$.....
.....	.....	.....	.....	.....
.....	.....	.....	.....	.....
Total domestic.....		.....	.....	.....
Total foreign.....		.....	.....	.....
Grand total.....		.....	\$.....	\$.....

NATURAL GAS. (Number printed, 3,000.)  
Special Schedule No. 9.

Name of company, firm, or individual owner.....  
 General office.....  
 Number and group of wells reported on this schedule.....  
 Location of wells: State.....; County.....  
 Nearest city or town.....

Production.

- Total value of gas produced and sold by you in 1902.....\$.....  
 [If possible, please give exact amount charged consumers. When this can not be done, as in the case where gas is consumed by those producing it, please estimate value by the amount of wood or coal necessary to do the same work.]
- How much coal or wood would have been required to do the same work?  
 Tons.....; Cords.....
- What would have been the value of this coal or wood?.....\$.....
- Uses:  
 Number of domestic consumers supplied.....  
 Number of rolling mills supplied.....  
 Number of steel works supplied.....  
 Number of glass works supplied.....  
 Other establishments supplied.....
- Number of wells producing gas December 31, 1901.....  
 Number of producing wells drilled in 1902.....  
 Number of wells abandoned in 1902.....  
 Number of wells producing gas December 31, 1902.....  
 Number of nonproducing holes drilled in 1902.....
- Number of feet of gas pipe in use December 31, 1902.....
- What cities or towns are supplied by you wholly or in part?.....

REMARKS.

CRUDE PETROLEUM. (Number printed, 5,000.)  
Special Schedule No. 9.

Name of group of wells.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of wells: State.....; County.....  
 Nearest city or town.....  
 Total amount of crude petroleum produced and sold by you in 1902 (bbls. of 42 gals.).....  
 Value of same at wells.....\$.....

Stocks at wells.

[Merchantable crude; bbls. of 42 gals.]

	Illuminating.	Lubricating.	Fuel.
December 31, 1901.....	.....	.....	.....
December 31, 1902.....	.....	.....	.....

Well records.

Total number of producing wells December 31, 1901..... Ans.....  
 Total number of producing wells drilled in 1902..... Ans.....  
 Total number of dry holes drilled in 1902..... Ans.....  
 Total number of wells abandoned in 1902..... Ans.....  
 Total number of producing wells December 31, 1902..... Ans.....

Production by months.

MONTH.	Crude, for illuminating.	Crude, for lubricating.	Fuel oil.	Total.
1902.	Bbls. of 42 gals.	Bbls. of 42 gals.	Bbls. of 42 gals.	Bbls. of 42 gals.
January.....	.....	.....	.....	.....
February.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....
June.....	.....	.....	.....	.....
July.....	.....	.....	.....	.....
August.....	.....	.....	.....	.....
September.....	.....	.....	.....	.....
October.....	.....	.....	.....	.....
November.....	.....	.....	.....	.....
December.....	.....	.....	.....	.....
Total.....	.....	.....	.....	.....

REMARKS.

Please give any statement as to character, analysis, markets, etc., of your petroleum that may be of interest to the general public and that you are willing should be published, such as the well record. What is the character of the oil? Can you give analysis? What is its color? What is the character of strata in which it is found? What does it yield in illuminants? Etc.

IRON ORE. (Number printed, 1,100.)  
Special Schedule No. 6.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....

- Underscore character of iron ore produced, and if more than one of the following classes is mined give quantity of each:  
 Limonite, brown hematite, or bog ore.....  
 Red hematite, specular or fossil ore.....  
 Magnetic ore.....  
 Carbonate or black band ore.....
- State total quantity of marketable iron ore mined or produced during the year ending December 31, 1902.  
 .....gross tons.  
 [If none, so state.]

Also stock of iron ore on hand at mine December 31, 1902.  
 .....gross tons  
 [If none, so state.]

- Give total value on cars or carts at the mine of the iron ore produced during the year ending December 31, 1902.  
 \$.....

REMARKS.

MANGANESE ORE. (Number printed, 250.)  
Special Schedule No. 6.

Name of mine.....  
 Name of company, firm, or individual owner.....  
 General office.....  
 Location of mine: State.....; County.....  
 Nearest city or town.....

- State total quantity of marketable manganese ore mined or produced during the year ending December 31, 1902.  
 .....gross tons.  
 [If none, so state.]
- Also stock of manganese ore on hand at mine December 31, 1902.  
 .....gross tons.  
 [If none, so state.]
- Give total value on cars or carts at the mine of the manganese ore produced during the year ending December 31, 1902.  
 \$.....

REMARKS.

MINOR MINERALS. (Number printed, 2,500.)

Special Schedule No. 6.

Name of mine .....  
 Name of company, firm, or individual owner .....  
 General office .....  
 Location of mine: State .....; County .....  
 Nearest city or town .....

Total quantity (approximately) of crude mineral ore produced in 1902..... Tons.

[Please state whether long ton of 2,240 pounds or short ton of 2,000 pounds is used as the unit.]

If the product (or any part of it) is sold in the crude state, please say how much was sold crude in 1902.....

Total value of same ..... \$.....

If the product (or any part of it) is subject to any process of concentration, reduction, or refining before being sold, please state briefly what the process is. Tons.

How much of the product in 1902 was so treated?..... Tons or pounds.

Total quantity of concentrated or refined product obtained in 1902.....

Total value of refined product ..... \$.....

Any further information regarding the condition of trade and prospects of the future will be appreciated.  
 Please give the names of any new operators in your vicinity.

REMARKS.

Answers to the following inquiries on mines and quarries schedules do not appear in the detailed tables:

Schedule No. 6.

*Inquiry 4.*—Contract mining: Method of payment, by ton, car, yard, etc. Number employed. Amount paid.

*Inquiry 5.*—Time in operation: Number of hours in operation during the year. Number of hours per day. Number of shifts of workmen. Number of hours to shift.

*Inquiry 9.*—Product: Quantity of stone quarried. (Quantities were variously reported in perches, cords, tons, cubic yards, cubic feet, etc.)

Schedule No. 8.—Coal.

*Inquiry 4.*—(Same as in Schedule No. 6.)

*Inquiry 5.*—(Same as in Schedule No. 6.)

*Inquiry 9.*—Product: Number of mine cars of coal hoisted during the year. Average capacity of mine cars in pounds.

*Inquiry 11.*—Mechanical system of haulage, whether tail rope, endless rope, electric locomotive, compressed air, or other kind.

(Anthracite only.)

*Inquiry 12.*—Are automatic slate pickers or coal cleaners used? (Anthracite only.)

*Inquiry 13.*—Number of washeries at colliery, and price per ton charged to washeries for culm.

*Inquiry 14.*—Nature of openings to works, whether shaft, slope, drift, or level, etc., and depth or length in feet of each.

*Inquiry 15.*—System of ventilation in use—fan, furnace, fire basket, exhaust steam, natural, or other kind.

*Inquiry 16.*—Rate per ton paid for coal mined on royalty.

Schedule No. 9.—Petroleum and natural gas.

*Inquiry 10.*—Tankage: Number of tanks at wells and their total capacity in barrels of 42 gallons.

*Inquiry 11.*—Wells: Number of wells drilled during the year. Number producing. Number of dry holes. Of total number of wells reported, state number flowing. Of total number of wells reported, state number pumping. Number abandoned during the year. What diminution of pressure occurred during the year?

## APPENDIX B.

### INSTRUCTIONS TO SPECIAL AGENTS.

#### MINES, QUARRIES, AND REDUCTION WORKS.

##### INSTRUCTIONS.

1. By an agreement between the Director of the United States Census and the Director of the United States Geological Survey, made to avoid a duplicate canvass of the mining and quarrying industry, and for other purposes, the Geological Survey will have supervision of the field work of the Census of Mines and Quarries. In accordance with this agreement, reports will be secured on both the Census Office schedules and the schedules of the Geological Survey for all mines, quarries, and reduction works in existence during the year 1902. The schedules for the two offices must be forwarded in the same envelope.

2. The agents will transmit all schedules promptly to the Geological Survey at Washington, D. C., unless specially instructed, as will sometimes be the case, to send them to the office of special agents of the Geological Survey in other places.

3. Agents are required to comply with all the regulations of the Census Office governing field work and to submit daily reports on the blanks prepared for that purpose. The names of establishments for which returns were secured, and also of those visited but for which reports were not obtained, must appear on the report for each day. The agents must, also, under "Remarks," state the character of the mineral for which they are securing reports and keep the office advised of the probable date on which they will complete their present assignment. Daily reports will be promptly transmitted to the Census Office through the Geological Survey and the relative efficiency of each agent determined therefrom.

4. Each agent will be furnished with a list giving the names, locations, and addresses of all mines, quarries, etc., assigned to him, which were in existence during the year ending December 31, 1902, together with a list of those for which returns have been obtained by correspondence. This list has been prepared from reports made to the United States Geological Survey in previous canvasses, amended by information received from other sources. The list, however, may not be entirely complete, and the agent, therefore, must be constantly on the alert to discover other mines or quarries. They must make careful inquiry at each city and town they visit for mines and quarries located in that vicinity. If such plants are discovered, and they are located in the territory assigned the agent, he should proceed to secure returns for them in the same manner that reports are secured from establishments on the lists. In forwarding the reports for unlisted mines or quarries, the agent must call attention to the fact that the establishments do not appear on the list furnished him.

5. The agent is required to visit the different localities in the order in which they are named on the list, unless he finds that railroad connections and local conditions make a change necessary. In such cases the condition and character of the change must be stated on the agent's daily report.

6. In all cases where an annual report of the establishment is printed, a copy of the latest report should be secured and forwarded with the schedule. Copies should also be returned of any other printed matter that will add to the information contained in the schedule.

7. In case a mine or quarry is owned by a company with an office in another locality, outside the territory of the agent, and it is impossible to secure a complete report at the plant, the agent must complete the schedule as far as possible from the data obtainable at the mine, and forward it to the Geological Survey with a full statement of the facts, giving also the names and addresses of the persons from whom further information may be obtained.

8. It is important that a separate return be made for each mine or quarry and that the statistics of employees, wages, expenses, and supplies entered on the schedule pertain only to the mine or quarry reported. This rule should be observed in all branches of mining and quarrying, except petroleum and natural-gas wells, where all the wells located in a certain group or district under one ownership should be reported upon the same schedule.

9. However, if more than one mine or quarry in the same county is owned by the same company or firm, and it is impracticable to make a separate report for each, a combined report may be made which will include the operations of all. Mines or quarries under the same ownership in different counties must be reported on separate schedules. If a schedule includes the operations of more than one mine or quarry, a memorandum giving the name and post office address of each mine or quarry included should be attached to the schedule.

10. All entries in the schedule must be made clearly and neatly in ink. Quantities and values must be obtained from book accounts, if such accounts are available. *Each question is to be answered.* If any question is found not applicable, and no amounts are reported, write the word "None."

11. An exact answer to each item enumerated in the several questions is what is required, and is what should be given if it can be secured with a reasonable amount of labor. In all cases where the answers are estimated the amounts must be preceded by the word "Estimate."

##### CENSUS SCHEDULES.

12. Reports must be secured for all mines and quarries and for reduction works engaged in reducing the ores containing the precious metals. The schedules on which these reports are to be made are seven in number, as follows:

13. Special Schedule No. 6. All mines and quarries must be reported on this schedule except those for which special schedules are provided. Mines and quarries of the following minerals are to be reported on this schedule: Bluestone, granite, limestone, marble, sandstone, slate, trap rock, grindstones, millstones, soapstone and talc, cement rock, clay, barytes, emery and corundum, gypsum,

mica, mineral paints, phosphate rock, iron ore, and manganese ore. Special attention is called to the fact that on this schedule also (Special Schedule No. 6) should be reported the nonargentiferous or soft-lead mines located east of the Rocky mountains, the copper mines of the Lake Superior region, and zinc mines. Other minerals, mined as such, to be reported on this schedule except where they accompany minerals of more importance, as platinum in gold placers, are the following: Antimony, asbestos, asphaltum, bauxite, borax, chrome ore, cobalt, feldspar, fibrous talc, flint, fluor spar, fuller's earth, garnet, graphite, infusorial earth and tripoli, magnesite, marls, molybdenum, monazite, oilstones, platinum, precious stones, pyrite, crystalline quartz, quicksilver, rutile, sulphur, tungsten, uranium, and vanadium.

14. Special Schedule No. 8, for Coal Mines, both anthracite and bituminous, and anthracite coal washeries.

15. Special Schedule No. 9, for Petroleum and Natural-Gas Wells.

16. Special Schedule No. 10, for Gold and Silver, and argentiferous and auriferous Lead and Copper Mines.

17. Special Schedule No. 11, for Reduction Works of the precious metals (other than Smelters and Refineries).

18. Special Schedule No. 6a, a supplemental schedule for administrative and general offices. This schedule is intended for corporations, firms, or individuals operating more than one mine, quarry, or reduction works, with a central office for all of them. Upon this schedule should be reported the employees of such central office with their salaries or wages, and all other employees whose work is not confined to one particular mine, quarry, or reduction works, such as general superintendents, machinists, surveyors, etc. All general expenses are also to be reported on this schedule and the data relating to capital stock, bonds, dividends, and assessments of incorporated companies. No data reported on this schedule should appear on the separate reports for the individual mines, quarries, or reduction works. Separate schedules are supplied for these individual plants.

19. Special Schedule No. 6b, a supplemental schedule for bluestone, granite, limestone, marble, sandstone, slate, and trap rock quarries, upon which a full description of the quarrying and stone-dressing machines in use should be given. This schedule is to be filled out in addition to and supplementary to Special Schedule No. 6 for all stone quarries.

#### GEOLOGICAL SURVEY SCHEDULES.

20. There are, in addition to the schedules of the Census Office, schedules of the Geological Survey, and upon these are to be reported in detail the statistics of production of the various minerals, with other information as indicated on each. They are enumerated as follows:

Slate.	Coke, by-product plants.
Marble.	Brick and tile.
Trap rock.	Pottery.
Granite.	Clay mined.
Sandstone.	Mineral waters.
Bluestone.	Cement.
Limestone.	Deep mine (precious metals).
Sulphuric acid.	Reduction works at mines.
Barytes.	Placer and surface mines (precious metals).
Mineral paints.	Local or custom mills or smelting works (precious metals).
Mica.	Natural gas.
Salt.	Crude petroleum.
Phosphate rock.	Iron ore.
Gypsum.	Manganese ore.
Emerald and corundum.	Gas, tar, and ammonia.
Millstones.	Precious stones.
Grindstones.	Minor minerals (a general schedule for the production of all other minerals not included in the foregoing list).
Soups and talc.	
Bituminous coal.	
Anthracite coal.	
Coke.	

#### INDUSTRIES ELIMINATED FROM CENSUS CANVASS.

21. Of the above minerals and subjects of inquiry by the Geological Survey it has been decided to eliminate from the Census

inquiry the following: Brick and tile, coke, coke in by-product plants, gas, tar, and ammonia, mineral waters, pottery, salt, and sulphuric acid. Small placer gold mines at which less than two wage-earners are employed are also to be eliminated from the Census inquiry. Special agents are instructed not to obtain returns for these industries upon the Census schedule.

22. It is very essential that the Geological Survey and the Census Office schedules be transmitted together.

#### MINING AND MANUFACTURING INDUSTRIES.

23. There are several branches of mining in which the mineral products do not reach the market in the crude condition, but are subjected to certain processes at the mine or quarry before being regarded as marketable commodities. These may be processes of milling, separating, washing, burning, calcining, or other forms of manufacture. In some industries these processes are performed entirely at the mine or quarry, and in such cases the special agents are instructed that the census schedule should include the statistics of employees and wages, miscellaneous expenses, and supplies and materials involved in the entire work of mining the crude material and preparing the same for market. For example, the following branches of mining and quarrying are of this character: Emery and corundum mines, where finished emery wheels are frequently manufactured; mica mines, sheet and crushed mica being the finished product; graphite mines, where the crude graphite is refined; grindstone and millstone quarries, where grindstones and millstones are the finished products; mines or quarries of kaolin, flint, ocher, barytes, manganese, chalk, talc, mica, amber, sienna, and other iron-oxide colors, where the crude mineral is ground or otherwise prepared; marble, granite, and other stone quarries, where the stone is cut and dressed, and monuments and tombstones are manufactured; slate quarries, where roofing slate, slate blackboards, school slates, and sanitary plumbing slate slabs are manufactured. In all such cases as the foregoing and others where any form of manufacturing is necessary at the mine or quarry before the product is placed on the market the census schedule should cover the entire work of the establishment.

#### INSTRUCTIONS FOR FILLING OUT SCHEDULES.

24. The Census Office schedules must be carefully prepared in conformity with the general practice of the division of manufactures in gathering statistics concerning manufactures, street railways, electric light, etc. The agents who have been detailed from the Census Office are familiar with these methods. All questions must be carefully answered, and amounts reported in answer to each inquiry should be tested individually and with the totals. The following general instructions for filling out Special Schedule No. 6 will apply to the similar general features and inquiries of each of the several census schedules.

25. Give on the first page of the schedule the name of the mine or quarry; the character of the mineral; the name of the company, firm, or individual owner; the location of the mine or quarry (state, county, nearest city or town, and post office); and the address of the general office, if different from that of the mine or quarry. Obtain, also, the signature and official designation of the person furnishing the information. The signature of the special agent should be written on each schedule returned.

#### INQUIRY 1.—CHARACTER OF ORGANIZATION.

26. Under this inquiry should be reported the character of the organization under which the mine or quarry is owned and operated.

#### INQUIRY 2.—CAPITAL STOCK, BONDS, DIVIDENDS, AND ASSESSMENTS OF INCORPORATED COMPANIES.

27. This question does not apply to any other forms of mining and quarrying organizations than incorporated companies. Account

for the entire amount of common and preferred stock and bonds, respectively, authorized, the amount of each issued up to the end of the year for which the report was made, giving the number of each class, the par value, and the full amount of dividends paid during the year on each class of stock and on bonds. The total amount of assessments levied by organizations known as "assessment companies," whether incorporated or unincorporated, should also be reported.

#### INQUIRY 3.—EMPLOYEES, SALARIES, WAGES, ETC.

28. Account for all persons employed at the mine or quarry, both in the management and in the operation of the plant. Give the number of officers who receive salaries (not the number of stockholders), and the gross amount of their salaries. Report separately the number and wages of each class of employees specified. The salaries and wages should include board or rent furnished as part compensation.

29. The wages reported for miners or quarrymen and stonecutters should be their net wages, and should not include the cost of supplies furnished by the company and charged to them, such as explosives, lamp oil, etc., and blacksmithing charges.

30. Care should be taken that those employed "above ground" and those "below ground" be reported separately.

31. Amounts paid for contract work not done by employees hired directly, and the number employed in such work, must not be included in this inquiry, but be reported in answer to Inquiry 6.

32. The average number employed during the year is the number that would be required at continuous employment for the twelve months to produce the quantity of product reported. There should be no difficulty in securing this information for the plant of ordinary size, but it may be that the large companies keep an itemized pay roll, the total only being carried forward from each week or month. In such cases it will be necessary to add on a separate sheet the pay roll of each week or month for each class of employees.

33. *Average number of wage-earners at specified daily rates of pay.*—This inquiry is designed to ascertain the average number of employees for each of the eight classes enumerated that receive the daily rates of pay specified.

34. *Average number of wage-earners employed during each month.*—The object of this inquiry is to obtain the average number of wage-earners employed during each month as distinguished from the average number employed during the entire year. If properly answered, it shows the variation in the number employed at different seasons of the year.

#### INQUIRY 4.—METHOD OF PAYMENT FOR MINING OR QUARRYING.

35. This inquiry is intended to elicit information regarding the manner in which payment is made for mining or quarrying when not done by the day. It has an important bearing upon labor and wages in certain branches of the mining industry, particularly in coal mining, and should be very carefully answered. The manner of payment for the class of work referred to is sometimes different at the same mine. This should be reported if not done by the day, with the average number of men engaged and the total amount paid for such work, also any allowances that may be made in addition to the regular schedule of wages for difficult mining or other considerations.

#### INQUIRY 5.—TIME IN OPERATION.

36. The object of this inquiry is to ascertain the time that the mine or quarry was in operation during the year.

#### INQUIRY 6.—CONTRACT WORK.

37. Extensive improvements or development work, such as tunneling, shaft sinking, boring test holes, etc., are frequently let out

by contract, and are not done by regular employees of the mine or quarry. The amount paid for such work, the average number of men engaged and the number of days employed, should be reported. Although the book accounts of such work, except the amount paid for it, are not kept by the mine operator, it is thought that a correct estimate of the average number of men engaged and the number of days employed can be furnished.

#### INQUIRY 7.—SUPPLIES AND MATERIALS.

38. The actual cost of all supplies and materials used during the year, including freight paid on the same, must be reported. The cost of the following materials should be reported under this inquiry: Lumber and timber used for repairs, mine supports, track ties, cars, and for all other purposes; iron and steel for blacksmithing, rails, frogs, sleepers, etc., for tracks and repairs, parts of machinery and tools used for renewals and repairs; explosives, water for boilers and for other purposes, fuel, illuminating and lubricating oils, machinery supplies, etc.

39. It is frequently the case when the crude mineral is put through a process of milling, refining, calcining, or other manufacturing at the mine or quarry, as at gypsum, limestone, and cement quarries, that crude material is purchased from other mines or quarries that are not equipped for such work. The quantity and cost of material so purchased should be separately reported under this inquiry.

#### INQUIRY 8.—MISCELLANEOUS EXPENSES.

40. All items of expense incident to the operation of the mine or quarry, not accounted for under Inquiries 3, 4, 6, and 7, must be reported under this inquiry. Care should be taken that royalties paid for mineral taken out from leased land and other forms of rent for the mine or quarry be reported separately under the first item of this inquiry. Under the second item should be reported all other miscellaneous expenses, such as taxes on real and personal property, insurance on buildings, interest on borrowed money, etc. Do not include any portion of the freight reported under Inquiry 7 as paid on supplies and materials.

#### INQUIRY 9.—PRODUCT.

41. As stated in a preceding paragraph, the statistics of production will be reported in detail on the schedules of the Geological Survey, and only the total quantity and total value will be reported on the Census schedule. The figures on both schedules must agree. The value reported should be the spot value f. o. b. at mine or quarry, except in the returns of natural gas wells, where the price to the consumer should be given, as obtained from the books of the company.

#### INQUIRY 10.—POWER.

42. Under this inquiry should be reported all mechanical power employed, either owned or rented, including the number and horsepower of all engines, motors, water wheels, etc., used for ventilating, pumping, hoisting, derricks, surface machinery, and all other purposes.

43. Care should be taken to report correctly "Power owned" and "Power rented." When an entire plant, including engine or water wheel, is rented, the power thus controlled is to be regarded as "Power owned" and entered under 10a. "Power supplied by other establishments" (10c) should include only cases where the mechanism generating the power is in the control of another party.

44. The foregoing instructions will apply to all inquiries in the Census schedules, except several special and additional inquiries peculiar to certain branches of the mining industry.

Instructions for answering those special inquiries are given in the following:

## SPECIAL SCHEDULE NO. 8.—COAL MINES.

45. In addition to the detailed information relating to the product of coal mines provided for in the schedules of the Geological Survey, under Inquiry 9, on the Census schedule the number of cars of run of mine coal taken from the mine during the year, and the average capacity of the mine cars, in pounds, should be reported. This information is easily accessible, and can be given in all cases with little trouble by the foreman at the colliery.

46. The information called for in Inquiries 11, 12, 13, 14, and 15 relates to the equipment of the mine and can be readily given by the foreman. It is important that complete information be given in reply to these inquiries. The rate of royalty per ton should be given under Inquiry 16, if paid on all or part of the output of the mine during the year. The total amount so paid should be reported under Inquiry 8.

## SPECIAL SCHEDULE NO. 9.—PETROLEUM AND NATURAL-GAS WELLS.

47. It is important that complete statistical information regarding the storage capacity for crude petroleum at the wells and the development and exploration work done during the year and the results of that work, as evidenced by the number and condition of wells drilled during the year, be reported in reply to Inquiries 10 and 11. Describe fully, also, the diminution of pressure, if any, that has occurred during the year.

## SPECIAL SCHEDULE NO. 10.—GOLD, SILVER, LEAD, AND COPPER MINES.

## INQUIRY 2.

48. This inquiry should be answered in all cases when the working of a mine was discontinued for a number of years and subsequently resumed.

## INQUIRY 9.—MISCELLANEOUS EXPENSES.

49. The four items of rent specified under this inquiry should be reported separately in case the owner of the mine and mineral lands, the party who erected the mining plant and developed the mine, and the operator are different persons, and the lessee is required to make separate payments to the patentee, to the development company, to the tunneling company, etc.

50. The answers should in all cases be obtained from the mine operator, but the addresses of the owner and lessor from whom the operator holds his lease should be obtained for reference, likewise the address of the tunneling company.

51. In case the mine is worked by the hydraulic method, the address of the owner of the water plant should also be obtained for reference.

52. If, in addition to the four items of rent, offices or any other facilities are rented, specify each kind and state the total amount paid in the column reserved for the same.

53. If two or more items of rent are paid in one sum to the same party, give the amount paid and state for what it is paid.

## INQUIRY 10.—PRODUCT.

*Gross value of metallic contents, as reported to the United States Geological Survey.*

*Deductions: Charges for treatment and freight, per ton and total.*

*Net value of mining product.*

54. The gross value of the metallic contents of the product is to be transferred to this schedule from the schedules of the United States Geological Survey. In order properly to answer this inquiry, it must therefore be read in conjunction with the schedules of the Geological Survey; there is one schedule relating to "Deep mines" and another relating to "Placer and surface mines."

55. *Deep mines.*—The product of deep mines is ore. Ore is either sold, treated at a mill connected with the mine, or treated at a custom mill.

56. The customary method of settlement for ore purchased by samplers, smelters, etc., is the following: The ores are sampled and the contents of each metal are determined by assay. All the gold contained in the ore is paid for at a stated rate, usually very near the rate paid by the United States mints or assay offices for unrefined bullion—that is, about \$20 per ounce fine. The silver contents are paid for at the current New York price per ounce fine, with a discount of a few per cent for losses in smelting, etc. Base metals contained in the ore are paid for at a stated price per unit (per pound, or percentage contained in the ore).

57. From the gross value of the metallic contents thus computed deduction is made for working costs and freight at a stated rate per ton of ore. The balance, after making these deductions, is the net value of the ore f. o. b. at mine, for which payment is made by the purchaser.

58. The Geological Survey schedule for "Deep mines" contains the following inquiry:

"4. Total bullion contents of above ore sold or treated in 1902."

59. If the ore was sold, the special agent, after entering on the Geological Survey schedule for "Deep mines" the quantities and gross values of the precious and base metals contained in the ore, will transfer the "Total value" from that schedule to Special Schedule No. 10, entering it in the blank space against "Gross value of metallic contents, as reported to the United States Geological Survey."

60. Next enter under "Deductions" the charges for treatment, per ton and total, and freight, per ton and total. Unless the rates per ton underwent a change during the year 1902, the total must be equal to the rate per ton multiplied by the total amount of ore sold in 1902, reported in answer to Inquiry 2 on the schedule of the Geological Survey.

61. The "Net value of mining product" is equal to the total amount realized by the mining company for all ores sold during the year 1902. The amount should be furnished by the manager of the mine. It must be equal to the gross value reported to the Geological Survey less charges for treatment and freight reported under this inquiry. If the balance does not agree with the answer, the discrepancy will indicate that some of the answers are incomplete or incorrect. The mistake should be corrected before leaving the establishment.

62. If the ore is treated at a mill operated under the same management, a report similar to the foregoing should be made whenever separate accounts are kept for the mine and the mill. If this is not possible this inquiry need not be answered, and an answer will be given, covering both the mine and the mill, on Special Schedule No. 11, under Inquiry 9.

63. If the ore is treated at a custom mill and the bullion, concentrates, or other product, after being returned to the mine operator, are sold to a smelter, the total charges for treatment should be reported, including both the cost of milling and the smelting charges; the freight should in such case likewise include both the cost of carriage to the custom mill and the freight charges made by the smelter.

64. *Placer and surface mines.*—Most of the placer gold finds its way into the United States mints and assay offices, and is paid for according to weight and fineness at the legal rate, a small charge being made for refining. The crude gold or dust which goes to private smelters and refineries is paid for at a fixed rate per crude ounce for every producing district. Accordingly, if the gold dust is deposited at a United States mint or assay office, the value on the schedule of the United States Geological Survey should be given at the full legal rate of \$20.67 per ounce fine, and the mint charges should be entered on Special Schedule No. 10, under "Deductions, charges for treatment."

65. If any values are obtained from tailings, the same should be added to the value of the gold product, and the total should be transferred to Special Schedule No. 10.

rate given under Inquiry 4, and if it is found that the amount is not included it should be added, the correction being made in red ink.

*Inquiry 6—Contract work.*—Care should be taken that the information given under this inquiry is not duplicated under Inquiries 3 and 4. It is probable that in only a small proportion of the schedules will information be given under this question, but, when reported, it should be treated as separate information not included under any of the other inquiries. In calculating the expense of operating the mine for the purpose of comparison with the value of the product, the amount reported as paid for contract work should be added to the other expenses for wages, supplies and materials, and miscellaneous expenses. When an amount is reported as paid, the "Average number of men employed" and the "Number of days" should also be reported.

*Inquiry 8—Royalty and rent of mine.*—In examining this inquiry, reference should also be made to Inquiry 16, and if any rate is given, an amount should be reported under Inquiry 8 as paid for royalties. This amount need not necessarily be the amount obtained from calculating the royalty on the number of tons reported mined under Inquiry 9, by the rate given under Inquiry 16. It can in no case be more, but may be less. Royalty is frequently paid on only a part of the product of the mine. It should be borne in mind that while the product is reported under Inquiry 9 in short tons, royalty is frequently paid in long tons. This is also true of Inquiry 4, the miners being paid for long tons and the product marketed in short tons. The general instructions apply to other features of Inquiry 8.

*Inquiry 9—Product.*—The data reported under this inquiry should not be inconsistent with information given under the other questions on the schedule. In bituminous coal mining the quantity of coal taken from the mine will agree in most cases with the marketable coal reported. If no information is given as to the number of cars of coal taken from the mine and the average capacity of such cars, the information should be supplied on the basis of the information given in other reports of mines in the same locality.

There will sometimes be a difference shown in the reports of bituminous coal mines between the quantity of coal hoisted and the quantity of marketable coal. In anthracite coal mining, owing to the larger proportion of coal which can not be utilized, the difference between the coal taken from the mine and that marketed will in many cases be considerable, the latter being less than the former. This is the result of the crushing, screening, and cleaning processes by which the coal is prepared for shipment.

*Inquiry 10—Power.*—In all large mines power in some form should be shown. The purposes for which it is required are for operating the crushing and screening machinery, for hoisting, pumping, and ventilating, and sometimes for other subsidiary purposes. A knowledge of the conditions found at coal mines is generally necessary to properly edit this question. If the opening to a vein is a shaft or slope, a hoisting engine will be required and in all probability one or more pumping engines, and if fan ventilation is employed, an engine will be necessary to operate the fan. Other methods of ventilation do not require the use of power.

*Inquiry 11—System of haulage.*—The information required under this inquiry is where a mechanical system of haulage has supplanted to some extent the use of animal power, such as horses and mules. It does not apply to the mechanical power used for hoisting coal from a shaft or slope.

*Inquiry 12—Slate pickers or coal cleaners.*—This inquiry is intended to apply only to anthracite mines. In separating the slate from the coal mechanical means have been substituted to a very large extent for boys, and the object of the inquiry is to determine the magnitude of this change or improvement in anthracite mining.

*Inquiry 13—Washeries.*—This question also is intended to apply only to anthracite coal mines. The use of washeries for cleaning coal, which formerly was allowed to lie on waste dumps, is comparatively a recent development, and by the use of such washeries a

much larger proportion of the coal mined is available for shipment. Wherever a washery is reported under this inquiry there should be a separate report in the files giving the operations of the washery.

*Inquiry 14—Openings to the works.*—Whenever a shaft, slope, or tunnel is given as the nature of the opening to the vein, its depth or length in feet should be given. This information is not required where the mining is by drift or open cutting or stripping.

*Inquiry 16—Coal mined on royalty.*—If any rate is reported under this question, corresponding information should also be reported under the first item of Inquiry 8.

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Special attention should be paid to the reports of bituminous coal mines where coke is manufactured. This information will be found on the slip containing the Geological Survey details of production. Only the capital stock, general officers, expenses, etc., pertaining to coal mining should be included in the schedule. If any of these data pertaining to coke manufacture are included, a separation should be made, based on the relative proportions of the two branches of the business.

## GOLD, SILVER, LEAD, AND COPPER MINES.

In editing Special Schedules Nos. 10, 10a, 10b, 11, 11a, and 11b, the following instructions are to be followed and applied to the revision of the special features of the schedules, in addition to the application of the general instructions heretofore given to those inquiries which are identical in form in all the census schedules.

### I. GENERAL RULES.

#### 1. *By whom the report should be made.*

The report should always be made by the party operating the mine; when a mine is leased, one report should be obtained from the lessee and another from the owner, and both schedules should be combined; one should be marked "Owner's report," the other "Lessee's report." The owner should, in such cases, report only his own production and expenditures exclusive of the production of the lessees. An exception from this rule is made in the case of "leasers" or "tributers," of which see further.

In some cases one report is made indiscriminately combining the capitalization and some of the expenses of the owner with those of the lessee. In such cases a segregation should be made at this office; all items pertaining to the owner should be transferred to a separate schedule.

If a mine has changed hands in the course of the year 1902 separate reports are required from each owner or lessee for the time he operated. These reports should be combined, but all repetitions should be eliminated from one of the schedules. (See Inquiries 13, 14, 15, and 16.)

#### 2. *Small and Chinese mines.*

There are a number of schedules marked "Small and Chinese" with nothing but an estimated value of the product. All such schedules should be assorted into a separate group to be tabulated on a separate sheet.

#### 3. *General office.*

The address of the general office must be given on the title page of the Census schedule and also on the United States Geological Survey transfer slip (Schedules Nos. 10a and 10b). Very frequently the address is given on the United States Geological Survey transfer slip alone; in such cases it should likewise be written on the title page of the Census schedule.

If no general office is maintained separately from the mine, write in red ink after the words "general office" the word "mine."

## INQUIRY 12.

87. Give the addresses and character of establishments to which the products were sold or shipped for treatment, for example: Gold, to the United States mint at (location); silver, to the smelter of (name) at (location); concentrates from tailings, to cyaniding plant of (name) at (location), etc.

## SPECIAL SCHEDULE NO. 6a, ADMINISTRATIVE AND GENERAL OFFICES.

88. As previously explained, this schedule is intended for the general office reports of establishments operating more than one plant. In such cases great care should be taken that no data included in this schedule be included in any of the reports for the individual mines or quarries, and all data chargeable to a particular mine or quarry should be included in the report of that plant and not in the administrative or general office report.

## SPECIAL SCHEDULE NO. 6b, STONE QUARRIES.

89. This schedule is supplemental to Special Schedule No. 6, for the reports of stone quarries, and should in all cases be returned with the complete report of stone quarries. It should contain a full description, as provided on the blank, of all quarrying and stone-dressing machines in use. If such machines are not used, Special Schedule No. 6b should be returned containing a statement to that effect.

90. In order to insure the success of the cooperation between the Geological Survey and the Census Office, in taking the census of mines and quarries, there must be perfect agreement between the published reports of the two bureaus. To secure this, and to minimize the work of correspondence, correction, and revision, the utmost pains should be taken to obtain, for all branches of the investigation, correct returns in which the answers to the various inquiries will conform to each other and harmonize throughout. Careful study should be given to all instructions relating to the work of the special agents.

## APPENDIX C.

### INSTRUCTIONS FOR EDITING AND REVISING THE SCHEDULES.

#### GENERAL INSTRUCTIONS.

All corrections or additions to schedules should be made neatly and plainly in red ink.

No change or correction of importance should be made except on the advice of the clerk in charge.

Whenever cents are reported on a schedule, if 50 cents or over, a dollar should be added to the amount and the cents stricken out; if less than 50 cents, they should be stricken off the schedule.

The Instructions to Special Agents giving directions for filling out the schedules should be carefully studied in so far as they affect the census schedules. As shown therein each mineral should be reported upon a specified schedule. This question should receive primary consideration. The instructions relating to the various industries to be reported on the several schedules are as follows:

Reports should be secured for all mines and quarries and for reduction works engaged in reducing and concentrating the ores of the precious metals. The schedules on which these reports are to be made are seven in number: Special Schedule No. 6, for mines and quarries in general, for which no other special schedule is provided. Mines and quarries of the following minerals are to be reported on this schedule: Slate, marble, trap rock, granite, sandstone, bluestone, limestone, barytes, mineral paints, mica, phosphate rock, gypsum, emery and corundum, millstones, grindstones, soapstone and talc, clay, cement rock, iron ore, manganese ore. Special attention is called to the fact that on this schedule, also (Special Schedule No. 6), should be reported the nonargentiferous or soft-lead mines located east of the Rocky mountains, the copper mines of the Lake Superior region, and zinc mines. Other minerals, mined as such, to be reported on this schedule, except where they accompany minerals of more importance, as platinum in gold placers, are the following: Antimony, asbestos, asphaltum, borax, bauxite, chrome ore, cobalt, feldspar, fibrous talc, flint, fluor spar, fuller's earth, garnet, graphite, infusorial earth and tripoli, magnesite, marls, molybdenum, monazite, oilstones, platinum, precious stones, pyrite, crystalline quartz, quicksilver, rutile, sulphur, tungsten, uranium, and vanadium. Special Schedule No. 8, for coal mines, both anthracite and bituminous, and anthracite coal washeries. Special Schedule No. 9, for petroleum and natural-gas wells. Special Schedule No. 10, for gold and silver, and argentiferous and auriferous lead and copper mines. Special Schedule No. 11, for reduction works of the precious metals (other than smelters and refineries). Special Schedule No. 6a, a supplemental schedule for administrative and general offices. This schedule is intended for corporations, firms, or individuals operating more than one mine, quarry, or reduction works, with a central office for all of them. Upon this schedule should be reported the employees of such central offices, with their salaries or wages, and all other employees whose work is not confined to one particular mine, quarry, or reduction works, such as general superintendents, machinists, surveyors, etc. All general expenses are also to be reported on this schedule and the data relating to capital stock, bonds, dividends,

and assessments of incorporated companies. No data reported on this schedule should appear on separate reports for the individual mines, quarries, or reduction works. Separate schedules are supplied for these individual plants. Special Schedule No. 6b, a supplemental schedule for sandstone, granite, marble, trap rock, bluestone, limestone, and slate quarries, upon which a full description of the quarrying and stone-dressing machines in use should be given. This schedule is to be filled out in addition to and supplementary to Special Schedule No. 6 for all stone quarries.

#### CLASSIFICATION.

The schedules may be separated into three main groups—those representing establishments that were active and engaged in production during 1902, idle or nonproductive establishments, and schedules that in no manner represent active or idle mines or quarries but are from men who have retired permanently from business, from mines or quarries that have been worked out or abandoned, or from establishments that may be eliminated from the Census of Mines and Quarries, or for other reasons. Reports from mines or quarries that were in process of development—no production being reported during 1902—should be classified as "Idle" unless there are special reasons for omitting them presented in the information accompanying the schedule. These three classes of schedules should be filed separately and the two latter should be stamped "Idle" or "Omit," respectively, on the right of the center of the top margin of the schedule.

Each schedule should be classified with the name of the mineral of chief importance produced, as reported on the production card of the Geological Survey, the classification to be written in red ink on the upper left-hand margin of the schedule. The number placed on the upper left-hand corner of the schedule, which corresponds to the number on the schedule of the Geological Survey, should not be obliterated or in any manner obscured in writing the classification.

It sometimes occurs that two classes of mineral, or two products which require different classifications, are produced in the same quarry, and only one report has been made covering the entire operations. In such cases it is frequently impossible to make any separation of the data reported under the several inquiries so as to present a separate report for each branch of the business. Instances of this kind are when limestone quarrying and cement manufacturing are done at a quarry and a part of the product of the quarry is sold in its crude state for building and other purposes, or when grindstones are made at a sandstone quarry and a certain proportion of the quarried stone is sold for building and other purposes, this condition in both of these instances necessitating two reports of the product to the Geological Survey.

It is impossible or impracticable in such cases to make a report for each branch of the business, therefore the combined report will be accepted and should receive the classification of the predominating products as shown by the production slips. A Census schedule should be made out for the less important product, con-

taining only such information as is necessary for filing purposes, such as the classification, name, and location, but no statistical data except the product. This schedule should be made out in red ink. Cross references should be made in each schedule and Survey slip, one to the other. In the Census schedule which contains the complete report the cross reference should be about as follows: "See also Cement No. 86, Jones and Smith, Pageville, Ohio, for additional cement product." On the blank Census schedule for the less important product the cross reference should be in about the following terms: "See also Limestone No. 72, Jones and Smith, Pageville, Ohio, for all data other than cement product." Corresponding references should be written on the Survey slips.

The following instructions are intended to apply to Special Schedule No. 6 and to the similar general features and inquiries of the other Census schedules:

The classification should be verified by comparing with the copy of the Geological Survey schedule which accompanies each Census schedule. The schedule should receive close examination to ascertain if it includes more than one mine or quarry, and if so, that fact should be clearly stated in red ink in the space below the classification at the top of the schedule on the left-hand side as follows: 3 mines or 5 quarries, as the case may be.

*Title page.*—The information called for on the first page of the schedule should be reported in full, each item of information being written plainly in the space provided.

*Inquiry 1—Character of organization.*—It is probable that the character of the organization under which mines and quarries are operated will be in all cases one of the five classes specified. This information should appear on all schedules.

*Inquiry 2—Capital stock, etc.*—If the character of organization as reported under Inquiry 1 is that of an "incorporated company," the necessary information relating to the same should appear under this inquiry. The number of shares of each kind of stock and the number of bonds, with the total par value of the same, should be reported. The total par value should be that of the entire amount of bonds or stock, and not that of a single share. It is not necessary that all incorporated companies report bonds and both classes of stock. Bonds and preferred stock will very frequently not appear, as this class of liabilities in the cases of many corporations is solely common stock.

The amount reported as issued should not be in excess of the amount reported as authorized, and the number of shares of stock and the number of bonds should not be inconsistent with the par value.

The "authorized" and "issued" stock should be reported in all instances.

The amount of dividends, if any, paid during the year on common and preferred stock should be the result obtained by multiplying the par value of common and preferred stock issued to the end of the year by the "rate" reported. If the amount is reported and no rate, the rate should be calculated and supplied, and vice versa.

A report showing bonds should show the rate of interest on the same, although no interest is reported as paid.

In cases where an incorporated company owns more than one mine or quarry and a Special Schedule No. 6a has or has not been filled out, it frequently occurs that the details of capital stock and the general officers are included in each of the individual schedules, thus duplicating and triplicating, etc., this information. In all cases of this kind, after being assured that an apportionment of the capital stock, etc., has not been made among the individual schedules, the duplicated data should be stricken off all schedules except one and a note substituted to the effect that the information is reported on Schedule — (giving the name of the mine and location).

*Inquiry 3—Persons employed.*—The information reported under this inquiry should be very carefully examined, and the three sec-

tions of the inquiry should agree with each other and with other inquiries that have the least bearing upon the question of employees and wages.

The numbers of the several classes of employees reported should not be out of proportion with each other, nor with the character and extent of the mine or quarry reported on the schedule. No employees should be reported "below ground" for quarries or surface mines.

The average number of "wage-earners," which includes all classes of employees other than general officers, superintendents, managers, etc., and clerks reported in the first section of the inquiry, should agree in number with those reported under "Wage-earners at specified daily rates." The total average number of wage-earners under these two sections of the inquiry should accordingly be written in the margin of the schedule. The total wages reported for all employees after clerks, except foremen "below ground" is the amount of wages to be used in comparison with the second section of the inquiry. This amount should be written in red ink in the margin of the schedule. The wages that would be earned by the employees reported at specified daily rates, at the rates given, the mean rate being used in the calculation, and for the time in operation as reported under Inquiry 5, should agree approximately with the amount reported under the first section of the inquiry. This comparison should be made for the entire number of wage-earners and for each corresponding class of wage-earners. To obtain the average number of wage-earners during the year, reported under "Average number of wage-earners employed during each month," add the numbers reported for each month and divide the total by 12, the number of months in the year. This calculation should be made on the left-hand margin of the schedule in red ink.

The average number employed during the year, under the first and second sections of Inquiry 3, must be the number that would be required to produce the quantity of product reported, working continuously for twelve months. Therefore, if a mine or quarry had suspended operations for any protracted length of time during the year, the average number of wage-earners, under the first and second sections of Inquiry 3, must be reduced by that proportion of the number reported that the period of idleness is to twelve months, providing the average number as reported in answer to these sections is approximately the same as the average number employed during each month the mine or quarry was in operation. When necessary to make such reduction, the amounts paid in wages to the several classes of employees must be approximately the amounts they would receive if employed the full number of working days in the year at the specified daily rates of pay, and not the amounts they would receive for the actual number of days employed at the rates reported. The reduction of the average number of employees that may be necessary should not always be applied to "Superintendents, managers, etc.," "Clerks," and "Engineers, firemen, etc.," as these employees generally work full time whether the mine is idle or in operation. However, if the computation shows that they were employed only while the mine was operated, the reduction should be applied to them the same as to the other employees.

There should be a substantial agreement in the rates of wages shown on the different schedules from establishments engaged in the same branch of industry in the same locality.

*Inquiry 4.*—The information reported under this inquiry should be reported also under Inquiry 3. The number of employees and amount paid should be included in Inquiry 3, under "Miners or quarrymen and stonecutters" for surface mines or quarries, and under "Miners" and "Miners' helpers" for underground mining. The inquiry is intended to develop the manner of payment for the actual work of mining or quarrying when not done by the day. As there is not frequently a diversity in the method of payment for identical work in the same mine or quarry, it is thought that the data reported as to the average number of employees and total

amount paid in this inquiry will, in most cases, be the same as that reported under the heads provided for this information in Inquiry 3.

*Inquiry 5—Time in operation.*—The information reported under this inquiry should be considered in connection with the answers to Inquiries 3 and 9, and in verifying the amount reported as paid in wages by the specified daily rates and the number of wage-earners reported at each, the number of days in operation, and the number of shifts of workmen reported under this inquiry should be taken into account. The number of shifts of workmen reported will be one in the large majority of cases, and sometimes two or three. A larger number of shifts is open to question. In quarrying and surface mining if more than one shift is reported it is questionable. This is also true of certain other branches of mining. The number of hours to a shift will in most cases be 10, frequently 8, and sometimes 12.

*Inquiry 6—Contract work.*—The information reported under this inquiry is entirely separate from any data given under Inquiry 3 and should not be included therein. It is frequently the custom to let such work as tunneling, shaft sinking, boring, etc., out by contract, and no record is kept by the officers of the mine or quarry of the wage-earners employed and the wages paid, and as it is in most cases impossible to obtain the information from the contractor, it will be estimated and given by the mine or quarry operator. Contract miners or quarrymen who work by the ton, car, yard, etc., should not be reported under this inquiry but under Inquiries 3 and 4.

*Inquiry 7—Supplies and materials.*—The character of the expenditures to be reported under this inquiry is shown on the schedule. It should always be considered in connection and compared with the product reported and answers to other inquiries. Except under extraordinary circumstances, the amount reported will not be in proportion to the value of the product. It will frequently be found to be the case that no amount is reported under this head, particularly in very small mines or quarries, and in such cases it should be accepted as correct.

It is frequently the case when the crude mineral is put through a process of milling, refining, calcining, or other manufacturing at the mine or quarry, as gypsum, limestone, and cement quarries, that crude material is purchased from other mines or quarries that are not equipped for such work. The quantity and cost of material so purchased should be separately reported under this inquiry.

*Inquiry 8—Miscellaneous expenses.*—All items of expense incident to the operation of the mine or quarry, not accounted for under Inquiries 3, 4, 6, and 7 must be reported under this inquiry. Care should be taken that the royalties for mineral taken out from leased land and other forms of rent for the mine or quarry be reported separately under the first item of this inquiry. It will be frequently found to be the case that no amount is reported under this head, particularly in very small mines or quarries, and in such cases it should be accepted as correct.

*Inquiry 9—Product.*—Inclosed with each schedule will be found a copy of the card of the Geological Survey containing a detailed report of the product. The product as reported on this card, and not as entered on the schedule, will be tabulated and included in the published reports. It will, therefore, be taken as the product in editing the schedules when considering its relation to the data reported in reply to the other inquiries.

This question should receive very careful examination and be carefully compared with the replies to other inquiries. The quantity reported should be consistent with the number of employees and the time in operation; the kind of mineral, and the conditions of mining it should also be considered in this connection. The value per unit of the product should be examined to see that there is not a very great difference between the average value shown in the schedule and the average ruling price of the article under consideration during 1902.

As it is necessary that the quantity and value of the product published in the reports of the Census Office and in those of the

Geological Survey agree, under no circumstances should any change be made in this information without the permission of the section chief.

*Inquiry 10—Power.*—The first consideration in examining this question is as to whether or not the use of mechanical power is required. This question is determined by the size of the mine or quarry, and by the character or method of mining. In a very large number of quarries and open mines generally, no power is used, but if they are of considerable magnitude some equipment for power purposes is necessary. In a large majority of cases the power reported will be steampower.

Before closing any branch of the mineral industry, and tabulating the schedules, the files should be searched and all No. 6a schedules withdrawn. The information reported under Inquiry 6 should then be carefully checked against the individual mine and quarry schedules to see that all the schedules are on file.

If the mines or quarries are all located in the same county, the data reported on the No. 6a schedule should be added to any one of the individual schedules and an examination made of the others, for the purpose of eliminating this data, if duplicated on such schedules. Care should be taken that all information under Inquiries 1 and 2 be stricken off all schedules, except one, and a suitable cross reference made to the schedule containing the information. If the mines or quarries are located in different states or counties, or if there is more than one branch of mining, the data on the No. 6a schedule should be apportioned among the different states and counties, or branches of mining, as the case may be, the apportionment being based on the value of the product.

#### INSTRUCTIONS FOR EDITING SPECIAL SCHEDULES.

The foregoing instructions are intended for general application in editing the returns of mines and quarries of all kinds. In addition, there are certain special schedules which contain peculiar features and require further explanation.

#### SPECIAL SCHEDULE NO. 8—COAL MINES.

*Inquiry 3—Persons employed.*—Care should be taken that the employees are correctly reported "above ground" and "below ground." Only an insignificant proportion of coal mines are surface mines, and in such cases the mines should be reported under Inquiry 14 as "Open cutting or stripping." Roughly stated, in bituminous coal mining, about nine-tenths of the entire force of employees work underground, but in anthracite mining, on account of the large plants on the surface for screening and cleaning the coal, the proportion underground is less than in soft coal mines, being about two-thirds.

The timbermen and track layers separately stated under the second section of this inquiry should be included among "All other employees" below ground, in the first section of the inquiry.

*Inquiry 4—Average number of employees and rates paid.*—As the actual work of coal mining is seldom done by the day, the number of miners and miners' helpers, with their earnings, should be reported here. This information should also be reported under the first section of Inquiry 3. Under the second section of Inquiry 3, where miners are paid by the ton, car, or yard, the specified daily rate under which those contract miners are reported should be the same for the entire number of this class of workmen. This rate should be estimated by the examiner from the total number of days in operation and total amount of wages paid, and should be the average daily earnings for the period that they are employed.

The "Total amount paid for such work" should agree with the amount reported as paid to miners and miners' helpers under Inquiry 3, and this amount should include the amount reported as paid for yardage or other allowances. As reported on this schedule, these allowances are frequently not included in the amount paid for mining. This may be verified by calculating the amount that would be received on the product reported, under Inquiry 9, at the

rate given under Inquiry 4, and if it is found that the amount is not included it should be added, the correction being made in red ink.

*Inquiry 6—Contract work.*—Care should be taken that the information given under this inquiry is not duplicated under Inquiries 3 and 4. It is probable that in only a small proportion of the schedules will information be given under this question, but, when reported, it should be treated as separate information not included under any of the other inquiries. In calculating the expense of operating the mine for the purpose of comparison with the value of the product, the amount reported as paid for contract work should be added to the other expenses for wages, supplies and materials, and miscellaneous expenses. When an amount is reported as paid, the "Average number of men employed" and the "Number of days" should also be reported.

*Inquiry 8—Royalty and rent of mine.*—In examining this inquiry, reference should also be made to Inquiry 16, and if any rate is given, an amount should be reported under Inquiry 8 as paid for royalties. This amount need not necessarily be the amount obtained from calculating the royalty on the number of tons reported mined under Inquiry 9, by the rate given under Inquiry 16. It can in no case be more, but may be less. Royalty is frequently paid on only a part of the product of the mine. It should be borne in mind that while the product is reported under Inquiry 9 in short tons, royalty is frequently paid in long tons. This is also true of Inquiry 4, the miners being paid for long tons and the product marketed in short tons. The general instructions apply to other features of Inquiry 8.

*Inquiry 9—Product.*—The data reported under this inquiry should not be inconsistent with information given under the other questions on the schedule. In bituminous coal mining the quantity of coal taken from the mine will agree in most cases with the marketable coal reported. If no information is given as to the number of cars of coal taken from the mine and the average capacity of such cars, the information should be supplied on the basis of the information given in other reports of mines in the same locality.

There will sometimes be a difference shown in the reports of bituminous coal mines between the quantity of coal hoisted and the quantity of marketable coal. In anthracite coal mining, owing to the larger proportion of coal which can not be utilized, the difference between the coal taken from the mine and that marketed will in many cases be considerable, the latter being less than the former. This is the result of the crushing, screening, and cleaning processes by which the coal is prepared for shipment.

*Inquiry 10—Power.*—In all large mines power in some form should be shown. The purposes for which it is required are for operating the crushing and screening machinery, for hoisting, pumping, and ventilating, and sometimes for other subsidiary purposes. A knowledge of the conditions found at coal mines is generally necessary to properly edit this question. If the opening to a vein is a shaft or slope, a hoisting engine will be required and in all probability one or more pumping engines, and if fan ventilation is employed, an engine will be necessary to operate the fan. Other methods of ventilation do not require the use of power.

*Inquiry 11—System of haulage.*—The information required under this inquiry is where a mechanical system of haulage has supplanted to some extent the use of animal power, such as horses and mules. It does not apply to the mechanical power used for hoisting coal from a shaft or slope.

*Inquiry 12—Slate pickers or coal cleaners.*—This inquiry is intended to apply only to anthracite mines. In separating the slate from the coal mechanical means have been substituted to a very large extent for boys, and the object of the inquiry is to determine the magnitude of this change or improvement in anthracite mining.

*Inquiry 13—Washeries.*—This question also is intended to apply only to anthracite coal mines. The use of washeries for cleaning coal, which formerly was allowed to lie on waste dumps, is comparatively a recent development, and by the use of such washeries a

much larger proportion of the coal mined is available for shipment. Wherever a washery is reported under this inquiry there should be a separate report in the files giving the operations of the washery.

*Inquiry 14—Openings to the works.*—Whenever a shaft, slope, or tunnel is given as the nature of the opening to the vein, its depth or length in feet should be given. This information is not required where the mining is by drift or open cutting or stripping.

*Inquiry 16—Coal mined on royalty.*—If any rate is reported under this question, corresponding information should also be reported under the first item of Inquiry 8.

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Special attention should be paid to the reports of bituminous coal mines where coke is manufactured. This information will be found on the slip containing the Geological Survey details of production. Only the capital stock, general officers, expenses, etc., pertaining to coal mining should be included in the schedule. If any of these data pertaining to coke manufacture are included, a separation should be made, based on the relative proportions of the two branches of the business.

### GOLD, SILVER, LEAD, AND COPPER MINES.

In editing Special Schedules Nos. 10, 10a, 10b, 11, 11a, and 11b, the following instructions are to be followed and applied to the revision of the special features of the schedules, in addition to the application of the general instructions heretofore given to those inquiries which are identical in form in all the census schedules.

#### I. GENERAL RULES.

##### 1. *By whom the report should be made.*

The report should always be made by the party operating the mine; when a mine is leased, one report should be obtained from the lessee and another from the owner, and both schedules should be combined; one should be marked "Owner's report," the other "Lessee's report." The owner should, in such cases, report only his own production and expenditures exclusive of the production of the lessees. An exception from this rule is made in the case of "leasers" or "tributers," of which see further.

In some cases one report is made indiscriminately combining the capitalization and some of the expenses of the owner with those of the lessee. In such cases a segregation should be made at this office; all items pertaining to the owner should be transferred to a separate schedule.

If a mine has changed hands in the course of the year 1902 separate reports are required from each owner or lessee for the time he operated. These reports should be combined, but all repetitions should be eliminated from one of the schedules. (See Inquiries 13, 14, 15, and 16.)

##### 2. *Small and Chinese mines.*

There are a number of schedules marked "Small and Chinese" with nothing but an estimated value of the product. All such schedules should be assorted into a separate group to be tabulated on a separate sheet.

##### 3. *General office.*

The address of the general office must be given on the title page of the Census schedule and also on the United States Geological Survey transfer slip (Schedules Nos. 10a and 10b). Very frequently the address is given on the United States Geological Survey transfer slip alone; in such cases it should likewise be written on the title page of the Census schedule.

If no general office is maintained separately from the mine, write in red ink after the words "general office" the word "mine."

4.—*Preliminary classification.*

All Schedules No. 10 should be classified under one of the following four groups:

- First. Productive.
- Second. Development work.
- Third. Assessment work.
- Fourth. Idle.

(1) A productive mine is one which produces ore or metal.

(2) If no ore or bullion is produced or the quantity is out of all proportion to the total amount invested in labor, the mine is classed under the second subdivision (development work).

(3) If a little work is done to comply with the requirements of the law, the mine is classed under the third subdivision (assessment work).

(4) If no work of any description was done during the year 1902, though some ore previously mined may have been shipped, the mine is classed under subdivision 4 as "idle."

In assorting schedules for tabulation those showing only development work without any production whatsoever must be segregated from those where production is reported as incidental to development.

Only schedules of the first and the second class must be edited; those of the third and fourth class require no editing.

All schedules relating to productive mines are to be assorted into two groups, viz, (1) placers and (2) deep mines. In editing the schedules these designations must be written in red ink on the title page of each schedule in the blank space after the words "Character of ore." The character of the mine is to be determined from the annexed Geological Survey schedule attached to Schedule No. 10. A deep mine is reported on Schedule No. 10a, a placer on Schedule No. 10b.

"Deep mines" are further assorted into two groups, *with or without a mill connection*. When a mine has no reduction works, the report is on Schedules Nos. 10 and 10a. Where a mine is connected with a reduction works, there must be Schedules Nos. 10 and 10a, 11 and 11a. These again are to be assorted into two subdivisions: Those where complete reports are furnished for the mine and the mill and those where the mine and reduction works are covered by one combined report, in accordance with the note on the title page of Schedule No. 10.

Placer mines as a rule require no mill; in some cases, however, where the ground is cement, it must be crushed in a stamp mill. In such cases a Schedule No. 11 is attached to Schedule No. 10, as in the case of a deep mine. Such reports must be segregated into a separate group. Reduction works without a mine connection are reported on Schedules Nos. 11 and 11a, except those running on old tailings, of which see further.

## II. MINES WITHOUT MILL CONNECTION.

1. *Development work without production.*

Where a report shows only development work without production, Schedule No. 10 alone is to be edited and prepared for tabulation; Schedules Nos. 10a and 10b should be disregarded.

*Inquiry 9.*—The total value of development work must in such cases be equal to the total amount expended and need not be reported separately. If it is so reported it should be erased. Very frequently the amount reported under this inquiry is equal either to the total wages and salaries or to the total wages alone, or to the sum of wages, salaries, and supplies, or to the sum of wages and supplies, or to the amount paid for contract work. All such answers should be erased. If, however, the amount reported is either in excess or short of any of these quantities, the schedule should be criticised; in the former case it may eventually disclose an omission under Inquiries 4, 7, or 8, or the amount may represent the expenditure of more than one year. Among the schedules of this class a number will be found where nothing but the amount expended in development work is reported; they probably repre-

sent merely assessment work on more than one mining claim in each case. All such schedules should be segregated into a separate group.

In many cases the work was done by the owner and his family and the amount reported is an estimate of the value of his labor. Such schedules should likewise be segregated into a separate group. (See further instructions to Inquiry 4.)

If the value of the development work done in such cases is estimated, write in the blank space, after "Amount expended in development work," the words "Done by owners."

In case development work is done in consideration of a lease and the amount is estimated, write similarly, "Done by lessees."

Aside from these instructions all schedules of this class are to be edited in accordance with the general rules applying to the Mining Census.

2. *Productive mines.*

The following instructions apply to all schedules where production is reported, including those where production is incidental to development work:

*Inquiry 4.*—In case the mine is worked by the owner or operator, with the assistance of members of his family, without hired labor, the fact should be noted as follows: Write in red ink after the words "persons employed," the words "no hired labor," erase the words "general officers" and write "owners working," giving the number, if known, in the first column. The same entry with regard to "owners working" should likewise be made where hired labor is employed, in addition to the owner's labor. By "owner" is meant the party in actual possession of the mine, whether as owner or lessee. The words "no hired labor" and "owners working" should also be written in red ink on the title page at the upper end of the right margin. All such schedules should be assorted into two separate groups.

*Inquiry 5—Lessees.*—In case the mine is worked under the so-called "leasing" or "tribute" system, i. e., when it is leased in blocks to a number of miners, each paying a royalty to the owner, no answers are required under Inquiry 4, but a report must be made under Inquiry 5, as follows:

After the words "If mining is paid for by the ton, car, or other unit, give the rate paid and character of unit," write: "Worked by lessees on — per cent of royalty;" insert the percentage charged by the owner to the lessees, specifying whether "gross" or "net," i. e., whether computed on the gross or on the net product. In the next blank space insert the average number of lessees employed.

After the words "Total amount paid for such work" insert the amount received by the lessees out of the total product after deducting treatment and freight charges and royalties. For example, if the gross product reported under Inquiry 10 is \$10,000, the net product is \$6,000, the rate of royalty 25 per cent net, then the entry in the first blank space should read as follows: "Worked by lessees on 25 per cent royalty, net," and in the last blank space, "\$4,500." If the rate of royalty is varying or is not stated, compute the average net rate. For this purpose first obtain the amount of the royalty by subtracting the amount received by the lessees from the total net value of the mining product, and next compute the percentage of royalty to the total net value. In many cases the rate of royalty reported represents the percentage of the lessee's share to the total product; this is an error. If the value of the product is \$6,000 and the lessees received \$4,500, the rate of royalty is not 75 per cent but 25 per cent, the ratio of the royalty, \$1,500, to the total product. If any estimates of wages received by lessees are given under Inquiry 4, they should be erased by drawing red lines through them.

On all such schedules write on the title page in the right margin after the words "Name of the company, etc.," the words "Block lessees." For the sake of uniformity this term should likewise be used in the few cases of placer mines worked on the tribute system, but the words should be in quotation marks.

*Mines worked on shares.*—If the mine is worked on shares no answer is required to Inquiry 4, but the report under Inquiry 5 must read, "Worked on shares," the number of men so employed should be given in the next blank space.

*Inquiry 8.*—The answer to this inquiry must not include any expenditures of a permanent nature which has no direct relation to the mine, such as construction of buildings, mills, dwelling houses, etc. If any such expenditure is included, a request for correction should be made, asking that the expense be eliminated. If no answer is made to this inquiry, write the word "None." In some cases the cost of supplies and materials is reported to include also "Miscellaneous expenses," which ought to be reported under Inquiry 9. No segregation should be attempted, but after the words "Miscellaneous expenses" write in red ink "See Inquiry 8."

*Inquiry 9—Development work.*—The amount reported under this inquiry is, with very few exceptions, also included under Inquiries 4, 7, and 8. In the absence of indications to the contrary, this fact should be noted in red ink, a line should be drawn under the amount expended in development work, and the entire entry should be included in brackets. The amount should not be added with the other items reported under this inquiry, and if it is so added it should be eliminated from the total.

If it appears that the amount reported for development work is not included in the operating expenses, information should be obtained by communicating with the operator for the purpose of apportioning the expenditure under Inquiries 4, 7, and 8. If it is not possible, a note should be made in red ink "Not included in operating expenses." If the amount reported for development work is equal to the total wages and salaries, or total wages alone, or to wages, salaries, and supplies, or wages and supplies, or any of these items in connection with contract work, the item should be erased.

If, however, the amount of development work is equal to the amount paid for contract work alone it should stand.

Expenditures for construction of mills should not be included under "Development work," and the amount so included, if any should be eliminated.

*Rent and royalties.*—Whenever it appears from the answer to Inquiry 12 that land is held on lease, some rent or royalty should, as a rule, be reported under Inquiry 9. In some cases, however, the consideration for the lease is a certain amount of development work, so that if the report shows an expenditure for the same, but no rent or royalties, the answer may be deemed consistent.

Payments on "bond and lease" are in the nature of payments on a purchase-money mortgage and should be eliminated.

If the answer to Inquiry 15c shows that power was supplied to the mine by another establishment, the rent paid for power should be reported either under "Water rent," or, in case any other power was supplied, under "Other rent or royalties."

If water rent or rent of electric power is included among "Supplies and materials" (Inquiry 8), or in the last item of Inquiry 9 (amount paid for taxes, insurance, etc.), it should be eliminated. If the report does not conform with these requirements, a request for correction must be sent.

*Amount paid for taxes, insurance, etc.*—If the cost of supplies and materials is included in this item and no report is made under Inquiry 8, the amount so reported should be transferred to Inquiry 8, and a note in red ink should be made reading, "See Inquiry 8."

*Total.*—The total should always be inserted, even if there is only one item; such item should then be restated as the "Total."

### III. PRODUCT.

The product is reported on Schedules Nos. 10a and 10b, as the case may be, and on Schedule No. 10, Inquiry 10.

#### A. PLACER MINES.

*Schedule No. 10b—Inquiry 3.*—It is intended that the report should give (a) the exact crude weight of the gold product, the

total gross value allowed for it by the mint or private party buying the same, and (b) the average fineness of the gold produced. The crude weight multiplied by the average fineness will furnish the total number of fine ounces. (bb) There are very few schedules, however, where this inquiry has been properly answered. In many cases the value alone is given in round figures, which is usually an estimate; sometimes the average fineness is given with it. In such cases a request for correction should be sent, asking the number of crude ounces. In other cases the price paid per crude ounce is given. The number of crude ounces can be obtained by dividing the value by the price per ounce. In such cases the schedule should be criticised with a view to ascertaining the average fineness. In some cases the average fineness reported represents the ratio between the price per crude ounce and the coining value of a fine ounce, viz, \$20.67. This is incorrect, as the price paid per ounce is always less than the coining value of the gold; such "fineness" should be disregarded.

In those cases where a complete report is made and the value of the product appears to be less than the coining value, i. e., than the number of fine ounces multiplied by \$20.67, the coining value should be substituted for the value reported in answer to Inquiry 3 on Schedule No. 10b as "Gross value," while the amount reported should be erased from Schedule No. 10a and transferred to Schedule No. 10, Inquiry 10, as "Net value of the mining product."

If the number of crude ounces is given and the amount is figured at \$20 per ounce, the ounces should be taken as fine and entered on Schedule No. 10b at *bb*. The value should appear on Schedule No. 10, Inquiry 10, both as *gross* and *net*.

If no reliable data showing the number of fine ounces are available, Inquiry 3bb should be left blank. All such schedules should be assorted into a separate group for tabulation.

*Schedule No. 10—Inquiry 10.*—The gross value of the metallic contents must be equal to the total reported on Schedule No. 10b under Inquiry 5. The "Charges for treatment" should include mint charges, commissions, etc.; the "Freight" represents expressage and insurance on bullion. These questions, however, are hardly ever answered.

The "Net value of the mining product" is usually reported equal to the "Gross value," which is incorrect. Whenever the actual gross value can be obtained, as explained above, the difference between the gross value and the net value will represent the charges for treatment and should be so entered.

In most cases either the gross or the net value alone is reported under Inquiry 10, Schedule No. 10. If this missing item can not be obtained, the amount reported on Schedule No. 10a should be entered on Schedule No. 10 as "Net value of the mining product."

#### B. DEEP MINES.

*Schedule No. 10a—Inquiries 1, 2, and 3.*—There should be a complete answer to these three inquiries. If the total quantity of ore mined in 1902 exceeds the total quantity sold or treated during the same year, then the stock on hand December 31, 1902, should exceed by the same quantity the stock on hand December 31, 1901. Conversely, if the quantity sold or treated exceeds the quantity mined there must be a corresponding decrease of the stock on hand.

If the quantity sold or treated is reported the same as the quantity mined, the stock on hand on both dates must be the same.

Very often the stock on hand is not reported at all. In case the quantity sold or treated is the same as the quantity mined, the omission may be disregarded. In case those quantities are not the same, the increase or decrease, as the case may be, should be entered on the reverse side of Schedule No. 10a under Inquiry 12. In order that the total net increase or decrease of the stock of ore on hand should agree with the total stock on hand December 31, 1901, and December 31, 1902, the increase of stock should also be entered under Inquiry 3 as "stock of ore on hand December 31, 1902," while the decrease should be entered under the same inquiry as "stock of ore on hand December 31, 1901."

*Inquiry 4—Bullion contents of the ore.*—The answer to this inquiry specifies each metal contained in the ore. Enter the name or names of the metals on Schedule No. 10 in the upper corner of the title page, viz, "Gold," or "Silver," or "Copper," or "Lead," or "Gold and silver," or "Silver and lead," or "Gold, silver, and lead," or "Gold, silver, and copper," etc., as the case may be. All schedules have heretofore been marked "Gold and silver;" this designation should be allowed to stand only when it corresponds with the actual contents of the ore, otherwise it should be corrected as above indicated.

*Quantity.*—Gold and silver must be given in fine ounces, copper and lead in pounds.

If iron, zinc, or manganese is contained in the ore, the quantity must be reported, even though no allowance may have been made for it in the value of the ore.

In some cases the answer, instead of giving the total quantity of each metal contained in the product reported, states only the contents per ton. In such cases the contents so reported should be multiplied by the number of tons sold or treated and the totals inserted where they belong.

Base metals are sometimes given in percentages. In such cases the quantity can easily be computed. Usually in adjusting the price of the ore a discount or allowance is made for losses in smelting; as a result, in many cases the quantity reported is the net quantity for which payment was received, instead of the total contents of the ore as shown by assay. This is incorrect, and wherever the fact is disclosed the schedule should be corrected by inserting the actual contents of the ore instead of those for which payment was received. If the actual contents can not be calculated, a request for correction should be addressed to the operator. The value of the product should, however, not be changed.

*Value.*—The value of each metal ought to be reported by the operator. It should in every case be the value actually allowed to him by the smelter or ore buyer. Only where it is impossible to obtain a report from the operator should the averages of the United States Geological Survey be accepted as substitutes.

The United States Geological Survey, in its tabulation, discards the values reported by the operators and substitutes, in lieu of them, uniform average prices, viz, \$20.67 per ounce of gold fine, \$0.52 per ounce of silver, \$0.11 per pound of copper, and \$0.04 per pound of lead.

These averages represent the coining value of refined gold and the annual average New York quotation of all other metals. While the New York quotation of silver is often taken as a basis of settlement for ores, yet there are few schedules, if any, where the value reported by the operator for copper and lead approximates the New York quotation. Copper is usually reported at 5 and 6 cents per pound, instead of 11 cents, as accepted by the United States Geological Survey. Lead is usually reported at 1½ to 2 cents per pound instead of 4 cents. Some of the largest buyers in the United States allow a uniform price of 3½ cents per pound from which 2 cents per pound are deducted for freight from Salt Lake City to New York. Thus actually the net price paid is 1½ cents per pound.

Whenever the average value per ounce of gold is less than \$19 the presumption is that the ounces are not fine, but crude; in such case the schedule should be criticised.

The price for silver in 1902 was subject to considerable fluctuations; the highest price did not exceed 56 cents. If the price reported by the operator is in excess of this rate, the schedule should be criticised.

*Value alone reported.*—When the values alone of the bullion contents are reported but not the quantities, a request for correction should be made. If it is impossible to obtain these data directly from the operator, the quantity should be estimated at this office. In such cases Schedule No. 10, Inquiry 11, should be consulted. If the address of the reduction works is given to which the ore was sold, the rate at which each metal was paid for should be obtained

from the report of the respective mill or smelter. If such information is not available, then the quantities should be estimated on the basis of the United States Geological Survey averages.

*Schedule No. 10, Inquiry 10—Gross value of the metallic contents as reported to the United States Geological Survey.*—This value should be equal to the total value on Schedule No. 10a.

#### DEDUCTIONS.

The deductions consist of the following items:

*Discounts.*—As has been explained above, very frequently a discount is made for losses in smelting. Thus the price per ounce of gold is made \$20, but 5 per cent is deducted as a discount, bringing the actual price down to \$19. Some operators will report the value of gold at \$20 and charge off a corresponding amount under "Discounts." Similarly, some will report discounts on silver and lead. Whenever such discounts are reported separately, they should be preserved under "Deductions," to be subsequently tabulated.

Very frequently only one amount is reported for discounts. No segregation of the discounts need be made in such cases.

*Charges for treatment.*—This item ought to include charges for sampling, assaying, and milling or smelting. If these several charges are reported separately, they should be combined into one item. *In such cases a memorandum giving the name of the mine and mining company, the state and county, should be made and delivered to the expert special agent in charge.* Usually the treatment charges include also discounts. If the latter are not reported separately no segregation should be attempted, but the amount should stand as reported.

In some cases the treatment charges include freight charges. The amount reported should be allowed to stand; no segregation need be made.

*Freight charges.*—These include the cost of packing and haulage by team and railroad freight.

When the two items are reported separately, they should be allowed to stand.

*Charges and freight per ton.*—Besides the total charges, the inquiry calls also for charges and freight per ton. The latter can be given only when every shipment of ore was treated at one establishment.

It frequently happens, however, that the ore is first concentrated at a custom mill and the concentrates are then shipped to a smelter. The tonnage shipped to the mill is then quite different from that shipped to the smelter; average rates per ton would in such cases be misleading and should be erased. *All such schedules should be referred to the expert special agent in charge.*

*No charges.*—In many cases the full value of the gold and silver contents of the ore is paid to the operator, no charges whatever being made for treatment and freight; this is when the ore contains a high percentage of iron and manganese, which are not paid for. Sometimes the percentages of iron and manganese are so high that a bonus is paid to the mine operator, besides free treatment and freight. The amount of the bonus should be entered on Schedule No. 10a, Inquiry 4, as the value of the iron or manganese.

#### NET VALUE OF THE MINING PRODUCT.

The net value of the mining product is equal to the gross value less the deduction for treatment charges and freight.

In some cases the question was misunderstood, and the net profits were reported instead of the net value of the product. The amount should be properly corrected.

In many cases nothing but the net value of the mining product is reported by the operator; it is when the ore was sold "at a flat price per ton." In such cases, if the metallic contents are reported on Schedule No. 10a, Inquiry 4, the total value, as calculated by the United States Geological Survey, should be accepted as the "gross value," the net amount received by the operator as the "net value," and the difference should be entered under "Deductions."

## HIGH-GRADE AND LOW-GRADE ORES.

*Schedule No. 10a, Inquiry 11.*—Divide the total contents of gold and silver given under Inquiry 4 by the total quantity given under Inquiry 2; enter the results under gold and silver. Compute in the same manner the number of pounds of copper, lead, and other metals per ton, and, further, divide each quotient by the number 20, which will give the percentage of copper, lead, etc.; enter the same in the proper places.

Divide the total value given under Inquiry 4 by the amount of ore sold or treated given under Inquiry 2. Enter the result under "aggregate gross value."

If the "aggregate gross value" is less than \$10, it is "low-grade ore," if more than \$10, it is "high grade." The designations "high grade" or "low grade," as the case may be, must be written on the title page of Schedule No. 10 in the blank space after "character of ore."

## INCREASE OR DECREASE OF THE STOCK OF ORE.

*Schedule No. 10a, Inquiry 12.*—Deduct the stock on hand December 31, 1901, from that of December 31, 1902, or vice versa, and enter the difference under increase or decrease.

Divide the "net value of the mining product," given on Schedule No. 10, Inquiry 10, by the number of tons sold or treated and multiply the difference by the increase or decrease of the stock of ore on hand.

## TOTAL ESTIMATED VALUE OF THE MINING PRODUCT.

*Schedule No. 10a, Inquiry 13.*—Add the estimated value of the increase of stock, entered under Inquiry 12, to the net value of the mining product, as given under Inquiry 10 on Schedule No. 10, or deduct the estimated value of the decrease of stock from the net value of the mining product. Enter the result as the "total estimated value of the mining product."

## IV. NAME AND ADDRESS OF MILL OR WORKS AT WHICH THE ORE IS TREATED.

*Schedule No. 10, Inquiry 11.*—The answer to this inquiry should indicate the disposition made of the ore, whether it was sold, or treated at the company's reduction works, or treated at a custom mill. When the ore is treated for the account of the mine operator at a mill directly connected with the mine, the fact should be stated; if not stated, it will appear from the accompanying Schedule No. 11, and the answer should be supplied at this office in terms identical with the underlined phrases above.

If the address of a mill or smelter is given, but the report fails to state whether the ore was sold or treated on tolls, the character of the mill should be ascertained by references to the schedule whereon it is reported. If it proves to be one which both buys ores and treats them for the customer's account, the answer to Inquiry 4, on Schedule No. 10a, will ordinarily be reported in crude ounces, which will appear from the low valuation of the gold. *In cases of uncertainty the schedule should be referred to the expert special agent.*

## V. PROCESS OF TREATMENT.

*Schedule No. 10, Inquiry 11; Schedule No. 10a, Inquiries 8 and 10.*—All ores are classified according to process of treatment into *milling* and *smelting ores*. The process of treatment will appear from the answers to Inquiries 8 and 10, on Schedule No. 10a, or Inquiry 11, on Schedule No. 10.

If the ore is concentrated and then smelted, it should be classed as a *milling ore*.

The designation "milling" or "smelting" should be written on the title-page of Schedule No. 10, in the line reserved for "character of ore."

*Arrastra of mine.*—No Schedule No. 11 is required for "arrastras," but all reports for mines connected with arrastras should be segregated into a separate group.

*Reduction of ores by hand.*—In a number of small mines the ore is reduced by hand in a mortar. All reports for such mines should be assorted into a separate group.

## VI. MINERAL LANDS.

If the dimensions of the claim are reported instead of the acreage, the latter should be computed. If the number of mineral claims is reported, the acreage should likewise be computed by multiplying the number of claims by the average size of the claim as determined by law. If the report shows no land owned and some held on lease, a note should be made on the title-page, in the upper right-hand margin, reading "lessee's report."

## VII. REDUCTION WORKS.

Reduction works have been divided for census purposes into *smelters* and *reduction works other than smelters*, or mills, the former being reported on Schedule No. 12, the latter on Schedule No. 11 and 11a or 11b.

All smelter reports must be referred to the expert special agent in charge. In some cases smelters were erroneously reported on Schedule No. 11. Such schedules should likewise be referred to the expert special agent, together with all Schedules No. 10 relating to mines connected with smelters.

All mills are to be divided for tabulation purposes into two classes, (1) mills without mine connection, commonly designated as "custom mills," and (2) mills connected with mines.

## A. CUSTOM MILLS.

Reduction works, other than smelters, without a mine connection are reported on Schedules No. 11 and No. 11b.

*Inquiries 1, 2, 3, 7, and 11* are substantially identical with *Inquiries 1, 3, 6, 8, and 15*, respectively, on Schedule No. 10. (See instructions above.)

*Inquiry 3* on Schedule No. 11 corresponds to *Inquiry 4* on Schedule No. 10, except that the division "below ground" is absent.

*Inquiry 8* on Schedule No. 11 corresponds to *Inquiry 9* on Schedule No. 10, with the omission of "development work," and of the detailed inquiry into rent or royalties.

*Inquiry 12* serves the same purpose as *Inquiry 11* on Schedule No. 10.

*Inquiry 6—Materials bought in 1902.*—This inquiry is in form a combination of *Inquiry 4* on Schedule No. 10a and *Inquiry 10* on Schedule No. 10, and is intended to bring out the same information, but from the standpoint of the mill owner. (See instructions above.)

Nothing but materials bought should be reported under this inquiry. The values to be reported under this inquiry are those contained in the ore before treatment and are not identical with the values extracted, which are reported on Schedule No. 11a; with the best methods known a portion of the contents is lost in the residue, or "tailings." If, therefore, the assay contents reported appear to be identical with the final product reported, a request for correction should be made.

The "working charges" are those made by the owner of the reduction works on the ore bought by him, and not those deducted from the value of his bullion or concentrates by the mint, smelter, or sampler buying the same. The charges on the final mill product must be reported under *Inquiries 5* or *9*. In case the answer to *Inquiry 6* duplicates in this particular the answer to *Inquiry 5* or *Inquiry 9*, a request for correction should be made. Nor are these charges identical with those under *Inquiry 10*, which relate to "custom work," i. e., to the treatment of ores for patrons' account, and not to ores bought by the mill.

## PRODUCT.

The gross value of the mill product is reported on Schedule No. 11b, under the head of "Production," and transferred therefrom to

Inquiry 9 on Schedule No. 11, as "gross value of metallic contents as reported to the Geological Survey." The inquiry is so worded as to include both the product of *purchased ores* and of those *treated for customers' account*. In actual practice, however, few mills reported the product of custom ores, stating that the bullion or concentrates were returned to owners and no record thereof was kept at the works, except the tonnage treated and the amount received for treatment. In those few cases where the contents of custom ores are given they are confessedly more or less loose estimates, with hardly any exceptions. For the sake of uniformity of results nothing but the product of purchased ores should be allowed to stand under the head of production.

In case no ores were purchased the fact will appear from the answer to Inquiry 6 on Schedule No. 11. In all such cases the total quantity under "Production" on Schedule No. 11b must be identical with that reported under Inquiry 10 on Schedule No. 11. The "total yield in gold," "total yield in silver," copper, lead, and other metals, if reported, should be crossed out and the word "None" should be inserted; likewise should the word "None" be inserted under Inquiry 9 on Schedule No. 11. But the same amounts under "sources of materials treated" should not be disturbed.

In case the mill handled both purchased and custom ores, a comparison of Inquiries 6, 9, and 10 on Schedule No. 11, and "production" and "sources of materials treated" on Schedule No. 11a will assist in determining the product of purchased ores alone. In case of uncertainty a request for correction should be sent.

For particulars in relation to the several items of the yield from purchased ores (gold, silver, lead, copper, etc.), see instruction above for mining product.

*Treatment and freight charges.*—The milling product requires further treatment at a mint, refinery, or smelter. Usually the product is sold, sometimes it is treated on tolls for the account of the mill owner. In the former case the deductions from the gross value of the product should be reported under Inquiry 9, in the latter case under Inquiry 5.

Sometimes the same amounts are duplicated under Inquiries 5 and 9. In such cases it may be safely assumed that the product was sold, and the answer to Inquiry 5 should be erased. When no purchased ores were treated at the mill, the answer to Inquiries 5 and 9 should be "None." For further particulars see above instructions for "Mines."

#### CUSTOM WORK.

*Schedule No. 11, Inquiry 10.*—The "amount received" should represent the mill charges for the work of the mill, not the value realized by the customer from the sale of his bullion.

*Sources of material treated—Schedule No. 11b.*—In a very few schedules this inquiry has been answered. The answer should be supplied at this office. Transfer the tonnage and values given under "Productions" to Inquiry B, on the reverse side of Schedule No. 11b, entering the same under "Total domestic."

If the inquiry is answered, transfer likewise the values to Inquiry B, entering them under "Total domestic" or "Total foreign," as the case may be; for the tonnage repeat that given under "Production."

*Schedule No. 11b, Inquiry A—Bullion contents, assay contents before treatment, and average value per ton of product from purchased materials.*—Divide the amounts given under "Production" by the quantity of ore treated given under the same inquiry; further divide the quotients for the base metals by the number 20; enter the results in the first column.

Divide the "gross value of the metallic contents, etc.," given on Schedule No. 11, under Inquiry 9, by the same quantity of ore, as above, and enter in the space below for "average value per ton."

Divide likewise the assay contents and total gross value of all materials reported on Schedule No. 11, under Inquiry 6, and enter the results in the second column.

#### B. MINES CONNECTED WITH REDUCTION WORKS.

In accordance with the classification of reduction works into "smelters" and "other than smelters" (mills), mines will be found connected with smelters or mills.

*The number of mines connected with smelters is very limited.* The reports for such mines should be attached to the smelter reports and referred to the expert special agent for separate treatment.

Where a mine and reduction works are operated under the same management, separate reports were requested for each on Schedules Nos. 10 and 11. But where this was not possible (because the accounts for the mine and the mill were not kept separately) one report was requested covering both the mine and mill. Inquiries on Schedule No. 10 were to be answered, except Inquiry 10, and answers were also to be given to Inquiries 4, 5, 9, 10, and 12 on Schedule No. 11.

Most of the schedules which have been received report both the mine and the mill together; there are, however, a considerable number of schedules where the mine and mill are reported separately; a further number of separate schedules for reduction works have been prepared at this office from printed annual reports furnished by the mining companies. Accordingly, all schedules should be assorted into two classes: (1) Those where the mine and the reduction works are reported separately, (2) those where they are reported together.

##### 1. Separate reports from mine and mill.

In examining the former, the instructions should be followed which have been laid down for separate mine and mill reports, except that Inquiries 1 and 2 on Schedule No. 11 should be left blank.

Similar to these reports are those where *all inquiries relating to the mine and reduction works are answered separately, except those relating to production, viz, Inquiry 10 on Schedule No. 10 and Inquiry 9 on Schedule No. 11, which are duplicated.* The answer to Inquiry 10 on Schedule No. 10 should in such cases be crossed out.

*Hauling from mine to mill.*—If the mill is at a considerable distance from the mine, the cost of hauling the ore from the mine to the mill is very frequently reported on Schedule No. 10 under Inquiry 10. In all such cases this item should be allowed to stand, and should not be transferred to Inquiry 9 on Schedule No. 11.

*Power.*—In some cases Inquiry 11 on Schedule No. 11 is answered. It must be ascertained whether it contains no duplication of the power reported on Schedule No. 10. If there is no duplication, the answer should be allowed to stand.

##### 2. One report for both mine and mill.

Where only one report is made for the mine and reduction works, all instructions relating to each schedule should be followed as far as applicable.

*Mill supplies.*—Where one report only is made for the mine and the mill, Inquiry 7 on *Schedule No. 11* is sometimes answered. In such cases the cost of mill supplies so reported should be transferred to Inquiry 8 on Schedule No. 10.

*Schedules Nos. 10a and 11a.*—If the mill is confined to the treatment of the product of the mine, the report on Schedule No. 11a will be a duplication of that on Schedule No. 10a. The former shall, in all such cases, be crossed out, with a note reading "See Schedule No. 10a."

*Concentrates.*—If the process of treatment includes concentration, the number of tons of concentrates produced should be entered on Schedule No. 11a, in the blank space reserved for "total quantity of products other than bullion." The word "concentrates" should be inserted in red ink.

##### 3. Milling and smelting ores.

It is a common practice to assort the ores into "first class" ores, which are shipped to the smelter, and low-grade ores, which will not

stand the expense of transportation and must be treated at the mine. In such cases the product should be reported as follows:

*Schedule No. 10a, Inquiry 2.*—The "total quantity of ore sold or treated in 1902" must be divided into "ore sold" and "ore treated" and each quantity stated separately on the right margin.

*Inquiry 4.*—The answer to this inquiry should give nothing but the ore sold; the words "or treated" should be erased.

*Schedule No. 11a.*—The bullion contents of the ore treated at the mill must be reported on this schedule. The quantity of concentrates, if any, should be reported in the manner explained above.

*Schedule No. 10, Inquiry 10.*—The gross value, deductions, and net value of the mining product under this inquiry should be confined to the product sold. A note should be made in each case, reading "see also Schedule No. 11, Inquiry 9."

*Schedule No. 11, Inquiry 9.*—The gross value, deductions, and net value of milling product under this inquiry should be confined to the product treated at the mill.

All such schedules must be segregated into a separate group

#### 4. Calculations.

The answers to the following inquiries on the back of Schedule No. 11a must be supplied at this office:

*Inquiry 1.*—Bullion contents and gross value per ton of ore mined and milled.

If the bullion is all from ores mined by the same company, divide the bullion contents of the precious metals, given on Schedule No. 10a under Inquiry 4, by the total amount of ore treated, given on Schedule No. 10a under Inquiry 2; the result will give the number of fine ounces of gold and silver per ton. Divide the total copper, lead, and other base metallic contents by the same tonnage treated, and further divide the result by 20; the quotients will give the percentages of lead, copper, etc., in the ore. Divide the total value given under the same head by the same tonnage; enter the quotient under aggregate gross value.

*Inquiry 2.*—If the bullion is partly from ore mined by the company, partly from purchased ores, the quantities and values given on Schedule No. 11a must exceed those on Schedule No. 10a under Inquiry 4. Deduct the latter from the former; enter the differences in the first and third columns, respectively.

Divide the amounts entered in the first column by the total tonnage reported on Schedule No. 11a under Inquiry 6; divide further the figures for base metals by the number 20; enter the results in the second column.

Divide the total gross value of the third column by the same tonnage and enter in the same column on the line intended for "average per ton."

Similarly, divide the "total assay contents" and "total gross value" reported on Schedule No. 11 under Inquiry 6 and enter the results in the fourth column.

*Inquiry 6.*—Copy the items entered on the face of this schedule under "Sources of materials treated in 1902." Add separately all domestic and all foreign material and enter the totals on this schedule.

All schedules reporting foreign ores treated must be brought to the attention of the expert special agent.

#### 5. Placers with stamp mills.

As a rule, only the product of deep mines requires further treatment at reduction works. The product of placer mines is gold dust or amalgam, which can be sold to a United States mint or assay office, or to a private refinery. In some cases, however, the placer ground is cement, which must be crushed in order to wash out the gold. This is done in a stamp mill. Accordingly, there are a few reports on placer mines with reduction works. These should also be segregated into a separate group.

#### 6. Old mine dumps and old mill tailings.

A separate class is formed by those mills which treat low grade ore from old mine dumps or old mill tailings, which could not be profitably treated with the old methods. In every case of this kind the report on Schedule No. 11 and 11b should be supplemented by one on Schedule No. 10, giving the rent or royalties under Inquiry 10. These supplemental schedules must be prepared at this office. Where the method of treatment is concentration, a Schedule No. 11a should also be prepared in the manner indicated on a subsequent page.

The reports for old dumps and old tailings should be assorted into two separate groups.

#### INSTRUCTIONS FOR VERIFYING AND CORRECTING THE LABOR AND WAGE INQUIRY ON THE MINING SCHEDULE.

As a general rule, the amount of wages and the specified daily rates reported should be accepted as correct. The main object of the revision of this inquiry should be to harmonize the average number of wage-earners, as returned in the several classes under No. 3, employed during the year and the average number of wage-earners at specified daily rates of pay with the amounts reported for each class of employees, the rates of pay, and the time employed.

In revising the number of wage-earners of the several classes the following rules should be followed:

Multiply separately the minimum and maximum of each daily rate under which employees are reported by the number of employees; then multiply each product obtained by the number of days in operation. The results will show the lowest and the highest amounts that could be received as wages. The results obtained by this calculation should be compared with the amount of wages reported for each class of employees under the first section of the inquiry.

If the computation shows that the amount of wages reported for the different classes is within the maximum and minimum, the number of each class of employees should be considered as the correct average number for the time in operation.

If the schedule is properly filled out, the minimum amount (as derived from the above computations) can not be more, nor the maximum amount less, than the actual amount of wages as reported in the first section of the inquiry. Frequent exceptions to this will be found in the class of engineers, firemen, machinists, etc. These employees usually work full time, and there should be no revision of the average number if the amount of wages reported is equal to the amount obtained by the computations of the minimum daily rates multiplied by 300 days. If the amount of wages reported is less than the result obtained by this computation, the revision should be made in the usual manner.

The average number of miners, quarrymen, boys, and all other classes of wage-earners, however, should in all cases be revised to agree with the daily rates and the number of days in operation, giving due consideration, of course, to the fact that certain classes of employees, as a rule, work a larger number of days than others, particularly if the mine does not work the entire number of days in the year.

In reducing the average number of each class of workmen to the average by the year, the basis on which the reduction should be made is the number of days in operation. Having ascertained the average number of each class of workmen for the number of days in operation, this number should be reduced in the proportion that the number of days in operation is of the entire number of working days in the year, which should be considered as 300. The following is an example: Number of quarrymen and stonemasons reported, 6, which is the average for the number of days in operation, 250:  $\frac{250}{300} \times 6 = 5$ , which is the average of employees for the entire year. Should there be any fractional remainder, the following will serve as an example of the method of revision: Number of miners reported

98, which is the average for the number of days in operation, 178:  $\frac{178}{3.3} \times 98 = 58.14$ , or cutting off the second decimal place, 58.1. In all cases where the average number of wage-earners is less than one, the fraction should be preceded by a cipher, as for instance, "0.9."

Both in the first and second sections of the wage inquiry the average number of wage-earners should be carried out to one decimal place and the corrected figures entered plainly on the schedule in red ink, the old figures being crossed out. This reduction should not be made in the salaried employees.

Where the minimum wages is greater than the actual wages paid, the average number should be reduced to the number that would earn the wages given at the minimum rate; or, should the maximum wages be less than the actual wages paid, the average number should be increased to the number that would earn the wages given at the maximum rate.

In reducing or increasing the number of hands in the second section of the inquiry, specified daily rates, the number to be deducted or added should be taken from the different daily rates, in the same proportion as the original number at each rate is to the total number of the class under consideration.

Another question that should be considered in this connection is the average number of wage-earners employed during each month. As the schedules are originally reported, the number of each class under the first section of the inquiry is usually the actual number employed while the mine was in operation. The average number

of all classes of wage-earners for census purposes is the result obtained by dividing the total of the numbers reported for each month by 12.

An apparent contradiction will sometimes be noted between the number of days in operation and the third section of the wage inquiry, showing the average number employed during each month. For example, the full number of employees may be reported for 12 months, while the number of days in operation may be 250. This may be explained by the fact that the idle days were distributed throughout the 12 months, and in such cases the number of days should be accepted as correct, if consistent with the average number of wage-earners and the amount paid.

If the number of days in operation is in excess of the working days in the number of months reported in the third section, the number of months should be revised to equal as nearly as possible the days in operation. For example, the number of months may have been reported as 7, or 175 days, while the number of days is reported as 240. In this case the number of months should be increased to 9, or 225 days at 25 days per month.

Having revised and corrected the average number of wage-earners in the first and second sections of the inquiry, the average number reported each month should be added and the total divided by 12; if the result is different from the total average number of wage-earners, as revised, in the first and second sections, it should be made to agree by changing the average number for each month in the proportion that each is of the total.