

DEPARTMENT OF THE INTERIOR  
UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, DIRECTOR

---

BULLETIN 428

---

THE  
PURCHASE OF COAL BY THE GOVERNMENT  
UNDER SPECIFICATIONS

WITH ANALYSES OF COAL DELIVERED FOR  
THE FISCAL YEAR 1908-9

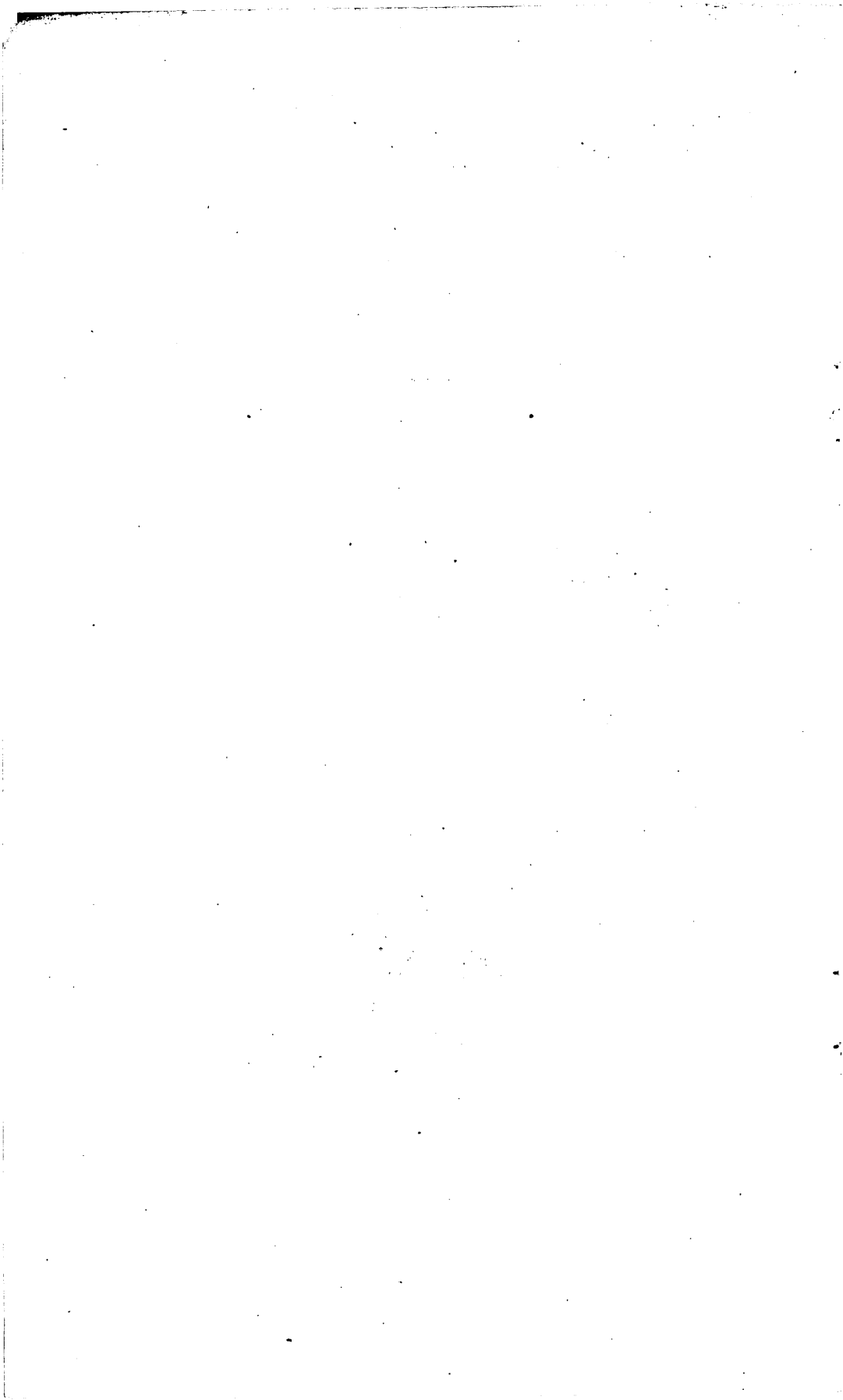
BY

GEORGE S. POPE



WASHINGTON  
GOVERNMENT PRINTING OFFICE

1910



## CONTENTS.

---

	Page.
Introduction.....	5
Scope and objects.....	5
Personnel.....	6
Value of coal as fuel.....	6
Requirements of use.....	6
Factors affecting value.....	7
General statement.....	7
Moisture.....	7
Ash.....	7
Volatile matter and fixed carbon.....	8
Sulphur and clinker.....	8
Size of coal.....	8
Heat units.....	9
Summary.....	9
General plan for coal purchases under specifications.....	9
Historical statement.....	9
Advantages of definite specifications.....	10
Defects of the old plan.....	10
Standard of quality.....	11
Nature of specifications.....	11
Summary of advantages.....	12
Growth of the system.....	12
Methods of sampling and testing.....	13
Mine and car samples.....	13
Comparative study.....	13
Weight of sample.....	13
Moisture content of the coal.....	14
Adjustment of price to weight.....	14
Practical considerations.....	14
Procedure in practice.....	15
In Washington.....	15
Gathering samples.....	15
Preparation of samples.....	15
Removal of dust.....	16
Laboratory treatment.....	16
Outside of Washington.....	16
General directions for sampling.....	17
Need of experience and caution.....	17
Loss of moisture in samples.....	17
Wagonload deliveries.....	17
Cargo deliveries.....	18
Stowage and quartering down.....	18
Shipment.....	18

	Page.
The Government as a coal consumer.....	19
Extent of government purchases.....	19
Practice in the Treasury Department.....	20
Award of contracts.....	20
Comparison of heating values.....	20
Other factors.....	22
Proposals for the fiscal year 1909-10.....	22
Specifications for the fiscal year 1909-10.....	33
General character.....	33
Form of specifications and proposal.....	34
Contracts for coal for the fiscal year 1909-10.....	40
Analyses and results for the fiscal year 1908-9.....	46
Average quality of anthracite.....	46
Details of analyses.....	46
Survey publications on fuel testing.....	76
Index.....	79

---

## TABLES.

---

	Page.
TABLE 1. Bids showing price computations.....	21
2. Coal proposals, Treasury Department, 1909-10.....	23
3. List of anthracite coals, showing contract standard.....	37
4. Price corrections for variations in ash content, anthracite coal.....	38
5. Price corrections for variations in ash content, bituminous coal.....	40
6. Coal contracts for the fiscal year 1909-10.....	41
7. General average of quality of anthracite, fiscal years 1907-1909.....	46
8. Analyses of coals delivered to the Government under contracts, 1908-9.....	47

# THE PURCHASE OF COAL BY THE GOVERNMENT UNDER SPECIFICATIONS.

---

By GEORGE S. POPE.

---

## INTRODUCTION.

### SCOPE AND OBJECTS:

This bulletin is the third of a series <sup>a</sup> showing the results of government purchases of coal according to specifications as to its quality and giving typical forms of proposals for supplying coal and general information relating to government coal purchases.

Numerous calls for authentic information concerning the purchase of coal according to its heat value attest a growing interest in the subject. Many of the commodities of life have long been purchased according to specifications requiring chemical or physical tests, or both, to determine whether the material delivered meets the requirements, the price to be paid depending on the results of the tests.

Until recent years coal consumers purchased coal merely on the statement of the dealer as to its quality, relying on his integrity and on the reputation of the mine or district from which the coal was obtained. It is surprising that the important question whether value was being received for the money expended was not sooner seriously considered.

The purchase of coal by specification is an important step toward the conservation of our national mineral resources, for it results in an increased use of the lower grades of coal. The poorer coals find a market by competing with the better grades, not as to the price per ton but as to the cost of an equal number of heat units.

This paper gives in detail the results of government purchases of coal for the fiscal year 1908-9 and the list of contracts with abstracts of specifications for the fiscal year 1909-10, and summarizes the information on this subject obtained by the Survey. It is hoped that this information will promote a better understanding of the specification

---

<sup>a</sup> Randall, D. T., The purchase of coal under government and commercial specifications on the basis of its heating value, with analyses of coal delivered under government contracts: Bull. U. S. Geol. Survey No. 339, 1908. Burrows, J. S., Results of purchasing coal under government specifications: Bull. U. S. Geol. Survey No. 378, 1909.

method of purchasing coal and furnish data valuable alike to coal dealers and coal consumers, so that equitable contracts can be more readily made.

#### PERSONNEL.

The work reported in this bulletin is under the general charge of J. A. Holmes, chief of the technologic branch of the United States Geological Survey, and H. M. Wilson, assistant chief technologist. The section of coal inspection, under the technologic branch, is charged with the duty of ascertaining the quality of coal delivered under specifications. For the fiscal year 1908-9, up to March, 1909, J. S. Burrows had direction of the work of this section. On the resignation of Mr. Burrows in March the writer took charge, with P. M. Riefkin as first assistant and N. H. Snyder, F. J. Simington, A. A. Straub, Leo Loeb, E. W. Miller, W. J. Harris, jr., and H. H. McKee as inspectors and J. W. Peters as expert computer.

#### VALUE OF COAL AS FUEL.

##### REQUIREMENTS OF USE.

Coal is now burned for power production in gas producers and in boiler furnaces. For coals and lignites high in moisture or high in ash, the gas producer, used in connection with a gas engine, is best adapted to develop power, but for the generation of steam, which can be used for heating as well as for power, coal may be more conveniently burned in a specially constructed furnace under a boiler.

Coal is burned under boilers for producing power, for drying various materials, or for warming buildings. The most valuable coal, therefore, is that which gives up the most heat to the boiler for a given weight burned.

The value of a coal is indicated by the number of heat units it contains. This heating value is expressed in terms of British thermal units (abbreviated B. t. u.) per pound of coal, and is determined by means of a special apparatus called a calorimeter.

In purchasing coal for any power plant the aim should be to obtain a fuel which, all things considered (such as equipment, price of coal, and cost of labor and repairs), will produce a horsepower for the least cost. Experiments seem to indicate that almost any fuel may be burned with reasonable efficiency in a properly designed apparatus. The recognized requirements are as follows: (1) A uniform and continuous supply of fuel to the furnace; (2) an air supply slightly in excess of the theoretical amount required for complete combustion; (3) a temperature sufficiently high to ignite the gases that are driven off from the fuel; (4) a complete mixture of these gases with the air supplied before they reach a cooling surface, such as the shell or tubes of a boiler.

## FACTORS AFFECTING VALUE.

*General statement.*—Some of the factors that may influence the commercial results obtained in a boiler are cost of the coal as determined by price and heating value, care in firing, design of the furnace and boiler setting, size of grate, formation of excessive amounts of clinker and ash, available draft, and size of the coal.

*Moisture.*—Coal as mined contains more or less moisture. It is exposed to the air in shipment and may either dry out or be drenched by rain. The moisture in the coal delivered is worthless to the purchaser and really costs him a considerable amount in freight and cartage and in the loss of the heat required for its evaporation in the furnace. If all coal contained the same proportion of moisture, or if the moisture in coal delivered by a given dealer were constant in amount, the purchaser's problem, so far as this factor is concerned, would be simplified.

Under present conditions the moisture is an important element in the valuation of a ton of coal. It is evidently necessary to consider the coal just as it is received in order to determine its value to the consumer, but chemical reports should be made on both "dry coal" and "coal as received." The report on dry coal is convenient for comparing several coals to determine the relation of each element to the others; this report is important because the moisture in the same coal varies from day to day. The dry-coal report is also convenient for comparing the performance of boilers burning the same or similar coals. Of several coals having a similar composition, the one that has the least moisture and the least ash will generate the most steam when burned under a boiler.

*Ash.*—Earthy matter and other impurities that will not burn are classed as ash. In commercial coals the proportion of ash may range from 4 to 25 per cent. Coals containing small percentages of ash are the most valuable, not only because of their correspondingly higher heating capacity, but because they offer less resistance to the free and uniform distribution of air through the bed of coal in the furnace. The labor and cost of managing the fires and of handling the ashes are also correspondingly less and are items to be considered in the choice of a coal. With the ordinary furnace equipment there may be a considerable loss of efficiency and capacity through a large percentage of ash. With some kinds of equipment it has been found that as the ash increases there is a decided drop in both efficiency and capacity. In some experiments made to determine the influence of excessive amounts of ash, coal containing as high as 40 per cent would generate no steam when fired on a chain grate, and therefore the efficiency and capacity of the plant would be zero.<sup>a</sup> Such coal is

<sup>a</sup>Abbott, W. L., Some characteristics of coal as affecting performance with steam boilers, a paper read before the Western Society of Engineers, Chicago, Ill.

not only worthless, but its use involves a direct expense, due to the cost of handling it. Whether the result would be similar with equipment other than a chain grate has not yet been determined. However, coals so high in ash that they are unsuited to boiler furnaces can be utilized in gas producers.

*Volatile matter and fixed carbon.*—The volatile part of some coals, shown in the analyses, may be all combustible, but it generally contains some inert matter. The amount of this differs in different coals, and therefore it is impossible to determine the heating value of any coal from its proximate analysis alone. Moreover, different coals that contain the same proportion of volatile matter do not behave alike in the furnace. In order to determine the value of one coal as compared with another for the same purpose it is important to know both the chemical composition and the British thermal units.

Of two coals of different character, the one that contains the higher proportion of fixed carbon is most easily burned, so as to give the maximum efficiency. However, if the coal containing the higher volatile matter is properly burned in a suitably designed furnace it may be made equally efficient.

*Sulphur and clinker.*—Sulphur may be present in the free state, or, as is more common, in combination with iron or other elements. Other impurities with sulphur often form a clinker that shuts out the air and increases the labor of handling the furnaces. It is possible, however, to burn coals containing up to 5 per cent of sulphur without great difficulty from clinkers. A little steam introduced under the grate will relieve much of the trouble. Clinker may be due to other causes than sulphur, as any constituents of the ash which are easily fusible may produce it. There is need of further investigation to determine the influence of sulphur and the elements that form ash in furnace fires during combustion.

*Size of coal.*—The size of the coal influences the capacity of any given equipment, owing to its effect on the draft. With a poor draft fine coal can not be burned in sufficient quantities to maintain the rated capacity. If thin fires are resorted to, the efficiency is usually lowered as a result of an excessive supply of air through holes in the fire. As a rule, when dust and very fine coal are fed into the furnace they either check the flow of air or are taken up by the draft and after being only partly burned are deposited back of the bridge wall; or they may pass up the stack, to the annoyance of people in the vicinity of the plant. If this dust is completely burned in passing through the furnace there is of course no loss of fuel. Coal of uniform size forms the most satisfactory fuel, as it does not pack so closely as coal of different sizes mixed.

In general it may be said that in any market the coal obtainable at the lowest price is the most economical, provided the furnace equip-



ment is suitable. If the furnace is not so designed as to permit the use of the cheaper coal it should be changed.

*Heat units.*—The tests tend to show that, other conditions being equal, coals of similar composition are of value in proportion to the British thermal units, and the determination of these units in any coal will give approximately its value. It should be remembered, however, that the value of a coal for any particular plant is influenced by the character of the furnace, for all furnaces are not equally suitable for burning the many grades of coal. Aside from this factor, coals may be compared in terms of the British thermal units obtained for 1 cent, or on the cost per million heat units.

*Summary.*—In the purchase of coal, then, attention should be given to the character of the furnace equipment and the load, the character of coal best suited to the plant conditions, the number of heat units obtainable for a unit price, the cost of handling the coal and ash, and the possibility of burning the coal without smoke or other objectionable features.

## GENERAL PLAN FOR COAL PURCHASES UNDER SPECIFICATIONS.

### HISTORICAL STATEMENT.

Until the last few years little information has been available regarding the coals and the coal supply of the United States. Until such information was obtained the heat-value method of purchase could not be used, because its use requires a knowledge of the chemical and physical properties of the coals, indicating their calorific value as well as their behavior when being consumed.

The lack of such information was recognized in the establishment of the fuel-testing plant of the United States Geological Survey at St. Louis on the grounds of the Louisiana Purchase Exposition, in 1904. Extended general investigations and a comprehensive study of the practical utilization of the coals have been made in this plant and its successors and in the coal fields. Similar investigations are now being made in Pittsburg, Pa. As a result of these investigations authentic information of great practical value has been made available for the government departments as well as the public, and it has been possible to establish the present rational method of purchasing a large part of the Government's coal supply.

A few years before the present system of coal buying was adopted the necessity for a uniform standard became apparent in some of the government departments, and the plan of purchasing coal according to its heat value was introduced. It proved successful, especially in the Treasury Department, under which coal is bought for post-offices and other public buildings throughout the United States.

This work led to the development of general and uniform specifications for purchasing the government fuel supply. In an act making appropriations for sundry civil expenses for the fiscal year 1907, Congress recognized the importance of supervising more carefully the Government's coal purchases and charged the Geological Survey with the work of testing coal for government use. As a result of this legislation a form of specifications was drafted by engineers in the employ of the Government and in March, 1907, was approved by the national advisory board on fuels and structural materials. Contracts based on these specifications went into effect July 1, 1907. Before an attempt was made to draft this form of specifications, the general fuel-testing investigations carried on at St. Louis, Mo., were supplemented by analyses and tests of a large number of samples of coal being delivered under contracts to buildings in Washington and elsewhere, and this work formed the basis for the standards set in the specifications. The same general form of specifications, modified by changes made as the result of their practical application, has since been in use.

#### ADVANTAGES OF DEFINITE SPECIFICATIONS.

*Defects of the old plan.*—Under the old plan of purchasing coal, when the consumer had cause or thought he had cause to find fault with the quality of the fuel he received, he was assured that it must be good because, like all the other coal sent him, it came from a mine with an established reputation. Such a state of affairs made it difficult to take advantage of the competition which usually results when a considerable number of bidders are asked to submit prices. The purchaser was afraid to buy from any dealers but those he knew and trusted, because, although each dealer claimed that his coal was equal in quality to that of the others, yet if it did not prove to be satisfactory there was no standard for settlement or for cancellation of the contract. Many thousands of dollars worth of coal is bought each year in this manner, yet a buyer or investor would consider it absurd to make a contract for a building with no specifications other than that it should be of a certain size and well constructed. Neither would he buy gold, silver, or even copper and iron ores on the mere information that they were mined at certain localities. All products of mines are now purchased to a great extent according to their value as shown by chemical analysis. This is true of coal in only a small degree, but the number of coal contracts made on this basis is increasing every year.

The purchase of coal under specifications is as advantageous as a definite understanding regarding the quality and other features of any other product, or of a building operation or engineering project. The man who buys under specifications gets what he pays for and pays for what he gets.

*Standard of quality.*—When the bidder is allowed to specify the quality of the coal he proposes to furnish, as determined by chemical analysis, he is placed on a strictly competitive basis with other bidders. Such a procedure broadens the field for both the bidder and the purchaser. It makes the bidder's proposal, when accepted, a contract that specifies an established standard of quality. This furnishes a basis for settling disputes regarding the quality of the coal delivered and the price to be paid if the fuel is either better or poorer than has been guaranteed. If other coal must be substituted, as often happens, there is a standard for settlement. If the coal is uniformly poorer than the standard as specified there is a basis for cancellation of the contract.

The quality of coal from a given mine may vary from time to time through the failure of the miners to reject impurities; or the physical and chemical character of the coal of a certain bed may vary from place to place. In some coal fields different beds of coal are mined at the same time and the output is mixed. When there is need of preparation, as by picking slate and other impurities, or jigging or washing, the quality or value of the coal marketed depends a great deal on the care taken in the processes employed. The mining companies are responsible in a large measure for variations in the grade of prepared coal. The purchase of coal under a contract that distinctly specifies its quality stimulates the operator to prepare coal better before shipping it to market. Examples of fluctuation in quality are furnished by the table on pages 47-76, which show variations both in ash and in British thermal units of coal delivered.

*Nature of specifications.*—Government specifications are drawn with a view to the consideration of price and quality. For manufactured articles and materials of constant and uniform quality they generally can be reduced to a clear and simple statement of what is desired, but for coal, which may be considered a finished product when loaded on the railroad cars at the mine, the great and obscure variation in character makes a simple requirement impracticable, and this fact is recognized and provided for in the coal specifications prepared by the Geological Survey. Under these specifications bidders are requested to quote prices on the various sizes of anthracite, a definite standard of quality being specified for each size, and to state the standard of quality and price for bituminous coal. Awards are then made to the lowest responsible bidder for anthracite and to the bidder offering the best bituminous coal for the lowest price, the amount finally paid being determined by the tests made under the terms of the specifications. The specifications become part of the contract, and payment for coal delivered is made according to the standard of quality fixed. The actual quality and value of coal delivered is determined by analysis and test of representative samples taken in a

specified manner by agents of the Government and analyzed in the government fuel-testing laboratory at Washington. For coal of better quality than the standard the contractor is paid a bonus proportional to its excess of value. For coal of poorer quality than the standard, deductions are made from the contract price proportional to its deficiency in value.

It evidently will not be satisfactory to either the buyer or the seller to establish a standard for the coal unless the liability to variation is recognized and provision made for settlement when the coal is better or poorer than the standard. Experience with any method of buying coal shows that it will seldom be rejected when of poor quality, because of the difficulty, delay, and cost of removing it from the bins. The buyer is often confronted with the alternative of burning the coal delivered or going without fuel until more can be procured. Unless the coal is very bad it is usually expedient to use it and pay a smaller price. This is also more favorable to the contractor, as to remove the coal would be costly and it would not be satisfactory as fuel to any other customer.

*Summary of advantages.*—The advantages of purchasing coal under specifications may be briefly summarized as follows:

(1) Bidders are placed on a strictly competitive basis as regards quality as well as price. This simplifies the selection of the most desirable bid and minimizes controversy and criticism in making awards.

(2) The field for both the Government and dealers is broadened, as trade names are ignored and comparatively unknown coals offered by responsible bidders may be accepted without detriment to the Government.

(3) The Government is insured against the delivery of poor and dirty coal, and is saved from disputes arising from condemnation based on the usual visual inspection.

(4) Experience with the old form of government contract shows that it is not always expedient to reject poor coal, because of the difficulty, delay, and cost of removal. Under the present system rejectable coal may be accepted at a greatly reduced price.

(5) A definite basis for the cancellation of contract is provided.

(6) The constant inspection and analysis of the coal delivered furnishes a check on the practical results obtained in burning the coal.

#### GROWTH OF THE SYSTEM.

Contracts for the fiscal year 1908-9 under which the United States Geological Survey was called upon to make tests and analyses covered 611,362 tons, at an estimated cost of \$1,858,750; those for the fiscal year 1909-10 covered 829,289 tons, at an estimated cost of \$2,286,800.

A few government stations have their own laboratories for analyzing and testing coal delivered under specifications. The number of tons and cost covered by these contracts would somewhat increase the quantities and values above given.

## METHODS OF SAMPLING AND TESTING.

### MINE AND CAR SAMPLES.

*Comparative study.*—In connection with the study of the coal deposits of the country and the best methods to prevent waste in mining and utilizing the coal supply, trained inspectors of the United States Geological Survey have visited about a thousand mines in all of the coal-producing States and Territories, taking two or more samples from each mine. A study of the analyses of these samples and of samples taken from cars shipped from more than 200 mines shows that the mine samples are as a rule better than the average coal shipped in cars. The average coal delivered contains about one-third more ash than the mine sample. This difference is due to the fact that the trained government inspector is able to free most of the small mine samples more completely of bone, slate, and other extraneous matter than the miner, who endeavors to get the maximum number of tons past the tippie inspection, the nature of which is presumably determined by trade and market conditions. Most of the samples collected by the government inspectors from the mines show a higher moisture content than the commercial samples, because of the precaution taken by the inspectors to prevent loss of moisture in the collection, preparation, and analysis of the mine sample.

When properly taken, mine samples indicate the general character of the coal and enable one to determine its probable value for any designated purpose.

Samples taken from railroad cars should not be limited to a few shovelfuls of coal procured from the top of the car, for the quality of the coal may not be the same throughout the car; indeed, it is sometimes found that the heavier pieces have gradually shifted in transit toward the bottom. Tests of samples taken at the bottom of a car have shown as much as 8 per cent more ash than samples taken at the top. The moisture content also may vary from top to bottom, depending on the weather. The only way to get a fair sample is to take a number of shovelfuls of coal from different points in the car when the coal is unloaded, so as to procure a representative portion of the coal from top to bottom and from end to end.

*Weight of sample.*—The number of pounds to be taken as a fair sample of a given lot of coal varies according to the size, character, and condition of the coal and depends also upon the character and amount of the extraneous matter as well as on the size of the particles

of both coal and impurities. It is therefore evident that the sampling should not be left to an inexperienced person, but should be done by one who is thoroughly familiar with the significance of the factors just stated and who has some intimate knowledge of the coal to be sampled.

#### MOISTURE CONTENT OF THE COAL.

*Adjustment of price to weight.*—Bituminous coal when exposed to the air gradually depreciates in heating value, owing to loss of volatile matter, but aside from this loss a car of coal should represent the same total number of heat units when it reaches its destination as when it started. If rain falls on the coal it will become heavier and a greater number of pounds will be delivered, but each pound will have a correspondingly lower heat value. On the other hand, if the weather is fair and the coal dries out on the way, it will weigh less and the heating value of each pound will be correspondingly higher. In other words, under specifications such as are used by the Government, neither the dealer nor the purchaser will gain or lose by change in the moisture content of the coal between the time it is weighed at the mine and the time it is weighed on delivery. The price per ton will be correspondingly lower if the coal is wet and higher if the coal is dry.

*Practical considerations.*—The number of heat units per pound of coal "as received" varies in inverse proportion to the variation in its content of moisture, so that for a correct determination of the price to be paid for the coal it is important that the sample analyzed should contain the same percentage of moisture that existed in the coal delivered. It is physically impossible to preserve the same actual amount of moisture in the sample, for in being prepared for the laboratory it is exposed to conditions that tend to vary its content of moisture. The crushing and quartering of the original sample exposes a greater surface to the action of the air, so that even under the most satisfactory conditions it is probable that the percentage of moisture in the sample will be less than the percentage of moisture in the coal weighed at the point of delivery.

This variation favors the coal dealer, for a decrease in the moisture content of the sample below the moisture in the coal delivered represents so much gain in heating value, which increases the price he will receive for the coal.

In coals in which the difference between the moisture in a carload and the percentage of moisture in the air-dried sample is relatively small, and in coals that are easily and quickly sampled and worked down to a laboratory sample, this error is so small that it is practically negligible. It is with coals in which the moisture difference from time to time is relatively large that trouble is experienced, for it is

difficult to determine exactly the amount of moisture in these coals as weighed for delivery.

It is therefore evident that a careful and uniform method of sampling coal and preparing and analyzing samples should be followed in order that the variations in moisture may be reduced to a minimum.

The moisture in an air-dried sample is that remaining after the coal has been reduced to a prescribed size and has been exposed to a prescribed temperature or to specified conditions for a stated period of time. The air-dried condition is virtually a "moisture-balanced" one, depending on the temperature, humidity, and barometric pressure in the laboratory. The percentage of moisture in the air-dried sample is a function of the physical and chemical character of the coal. The minimum percentage is found in anthracite and semibituminous coals, and the proportion increases as the grade of coal decreases, becoming higher and higher in bituminous, subbituminous, and lignite.

Samples of coal that is purchased "as received" should not be taken from coal in the boiler room, for this coal has been exposed to relatively high temperatures; neither should samples be stored in the boiler room, as they will inevitably lose moisture and such loss may materially affect the price paid for wet coals. The drier the coal that is fed to the furnace the greater the evaporation per pound of coal, for less heat is required to evaporate the water in dry coal, but this is a matter of efficiency of plant and not of economy of purchase, though the two are often confused.

#### PROCEDURE IN PRACTICE.

##### IN WASHINGTON.

*Gathering samples.*—Whenever a delivery of coal is to be made at one of the department buildings in Washington an inspector is sent to remain during the unloading of the coal. This inspector is provided with galvanized-iron buckets, each large enough to hold about 65 pounds of coal and equipped with closely-fitting lid and lock. In these buckets portions of coal taken from every part of the lot delivered are placed, care being taken that the samples shall truly represent the coal delivered. These samples are secured by locking the buckets, which are immediately delivered to the crushing or sampling room in the United States Geological Survey building.

*Preparation of samples.*—Machinery for preparing the collected samples is installed in the crushing room. The large samples, weighing 65 to 200 pounds (the weight depending on the character of the coal and the amount delivered), are put through a motor-driven baby hammer crusher, which has a capacity of about 1 ton of furnace anthracite coal per hour. This machine crushes the coal to a

size that will pass through a  $\frac{1}{4}$ -inch mesh. An arrangement of automatic riffles mechanically quarters the crushed coal. The quarter thus separated is then put through a portable mechanical sampler or riffle and reduced to a portion weighing 2 pounds, and is then hermetically sealed in a 3 by 9 inch cylindrical can bearing the number of the gross sample.

If the coal of the 2-pound sample will not pass through a  $\frac{1}{4}$ -inch mesh—and the coal of some samples taken outside of Washington will not—it is reduced to the proper fineness by means of an adjustable chipmunk jaw crusher.

The 2-pound sample is next reduced to 20-mesh fineness in a roll crusher and a 2-ounce portion is segregated and placed in a rubber-stoppered bottle preparatory to determining its content of moisture. The 20-mesh coal is then thoroughly mixed, after which it is passed through riffles and reduced in quantity to about 2 ounces. This 2-ounce sample is further reduced in fineness on a bucking board until all its particles will pass through a 60-mesh screen. It is then placed in a rubber-stoppered bottle and sent to the laboratory for analysis. During this process of reduction the sample has unavoidably become partially air dried, but accuracy in calculation to its condition "as received" is insured by using for this purpose the segregated 2-ounce portion referred to above.

*Removal of dust.*—Much objectionable dust is produced during the process of crushing. To prevent this dust from escaping to circulate about the building the wooden partitions and doors of the crushing room are covered with sheet iron, a system of hoods and pipes collects and carries the dust-laden air to the main furnace stack of the building, and a fan draws fresh air into the room.

*Laboratory treatment.*—On its receipt each sample is numbered and the record identifies this new number with the serial numbers that the sample has borne at each stage of its earlier history. The method of analysis is that adopted by the American Chemical Society. The calorific value is determined with a bomb calorimeter. The results of the analysis are reported to the coal-inspection section for use in the public service.

#### OUTSIDE OF WASHINGTON.

Samples of coal delivered to points outside of Washington are taken in accordance with instructions furnished by representatives of the department for which the coal is purchased. With few exceptions the samples are crushed by hand, prepared, and reduced to quantities weighing about 2 pounds. Each sample is placed in a cylindrical galvanized-iron can 9 inches in length and 3 inches in diameter, with a screw cap 2 inches in diameter. This can is immediately sealed air-tight by wrapping several turns of electrician's adhesive tape around the connection of the cap and can. A wrapper



bearing marks of identification is put on the can and it is sent by mail or express to the coal-inspection section of the United States Geological Survey, at Washington, for analysis of the sample. Detailed information to be placed on record is sent under a separate cover for the identification of the sample.

#### GENERAL DIRECTIONS FOR SAMPLING.

*Need of experience and caution.*—Persons who have had no experience in taking samples are liable to select a sample better than the average run of the coal. Occasionally a lump of coal is broken and shipped to the laboratory in a cloth sack, which allows the moisture to dry out; moreover, the lump selected is usually free from layers of slate and impurities, and of course then represents the best coal in the lot rather than the average, and its analysis will show a higher value than the coal delivered. Especial care should be exercised to note the proportion of slate and other foreign substances, in order that such impurities may be included in the sample in the same proportion. Experience and good judgment on the part of the sampler are necessary to insure the collection of a representative sample; and it is well to remember that as the larger lumps of coal roll down and collect near the bottom of a pile or load a sample taken entirely from near the floor would not fairly represent the whole.

*Loss of moisture in samples.*—In spite of every precaution taken to prevent loss of moisture during the collection, preparation, and analyses of samples, it is certain that loss of moisture may occur, whereby the heat value of the coal as shown by analysis of the sample is greater than that of the coal from which the sample was taken. It is important to the purchaser and fair to the dealer that the quality should be determined on the coal "as received." In the interest of equity, therefore, the suggestions that follow are presented for the guidance of those who wish to send samples to a laboratory for analysis.

*Wagonload deliveries.*—Samples taken from coal delivered at a department building should consist of a shovelful of coal taken from each wagonload or from each third or fifth load, the number of samples taken depending on the loads delivered. It is important to obtain representative portions of coal from every part of the delivery, so that the samples will show the quality of the delivery or order as a whole. The sample should contain about the same proportion of lump and fine coal that is contained in the coal as delivered.

If the quantity delivered is 100 tons or more, at least two samples should be taken, one representing the earlier and the other the later delivery. The average of two or more analyses will represent more accurately the quality of the coal than a single analysis, because it

is difficult to preserve the character of the large sample in reducing it to the small sample required for laboratory use.

*Cargo deliveries.*—In determining definitely the number of samples to be taken to represent different quantities delivered many variable factors must be considered. For cargoes of 4,000 to 6,000 tons the approved method is to take a sample of about 65 pounds from every third railroad car when unloaded; three such samples, representing nine cars, are mixed and reduced by quartering to the regular 2-pound sample. By this procedure 8 to 14 samples are obtained for the cargo. An analysis representing the whole cargo is obtained by averaging the results of analyses. It is impracticable to take a single large sample to be fairly representative and reduce it to a 2-pound sample for laboratory treatment, for the analysis of a single sample would probably not correctly represent the quality of the whole of a large cargo.

*Stowage and quartering down.*—A gross sample should, when taken, be immediately placed in a metal receptacle having a tight-fitting cover and a first-class lock, and when samples are being quartered down each receptacle should be securely locked and the key held by a responsible employee. The receptacle should be placed in a comparatively cool place to minimize loss of moisture from the sample; and for the same reason the process of quartering down and preparing samples for shipment to the chemical laboratory should be carried on as rapidly as possible. This process, briefly described, is as follows:

The contents of the receptacle or receptacles are emptied in a clean, dry space, preferably on a sheet-iron plate of suitable dimensions, so located as to prevent admixture of foreign matter with the sample during its preparation. All the lumps are then broken by a maul or sledge until they will pass through a half-inch mesh. The mass is then thoroughly mixed, formed in a conical pile, and equally quartered by means of a shovel or board. Two opposite sections are next rejected and the remaining sections are mixed. The pile is then reformed and opposite quarters are discarded as before. This process is continued until only about 2 pounds remain. This final sample is immediately placed in a suitable receptacle for shipping and is sealed air tight. The metal can in use by the United States Geological Survey for this purpose is 9 inches high and 3 inches in diameter.

*Shipment.*—The 2-pound samples thus prepared should be forwarded promptly and notice of shipment sent under separate cover. Receptacles should be marked plainly on the outside and a corresponding number or description should be placed inside. A complete record of all deliveries should be kept, showing dates, names of contractor, kind of coal, total weight delivered, condition of coal (wet or dry), and any other important details.

**THE GOVERNMENT AS A COAL CONSUMER.****EXTENT OF GOVERNMENT PURCHASES.**

The United States Government purchases annually from \$6,500,000 to \$7,000,000 worth of fuel. This sum includes the cost of delivery and of stowage. Each department buys coal through its purchasing officers. The Navy, War, Treasury, Interior, and Commerce and Labor departments are large consumers of coal. Much of the coal used by the Government must be delivered by wagon, and the business is therefore limited to dealers having hauling facilities. This is especially the case in the city of Washington, where coal is purchased principally for heating the public buildings.

The Treasury Department is a large consumer of coal delivered in wagons, for the fuel required for post-offices, custom-houses, United States court-houses, marine hospitals, mints, and other federal buildings throughout the country is purchased by this department, which also buys for the Revenue-Cutter Service.

The Navy Department is a large car-lot consumer as well as a purchaser of large cargoes of coal for foreign delivery. The Bureau of Supplies and Accounts of this department purchases the larger quantities for the ships of the navy and the car lots for use in the navy-yards.

The War Department makes purchases of coal for the many forts and army posts in the United States and foreign possessions and for the ships in the army transport service. The car-lot consumers are the Ordnance Department, which buys coal for the arsenals, and the Engineer Corps, which buys fuel for use in river and harbor improvement and other construction work.

Coal for use in the Canal Zone, Isthmus of Panama, is purchased by the Panama Railway Company of New York f. o. b. at an Atlantic port in the United States, being shipped at present from Norfolk, Va.

The Department of Commerce and Labor purchases coal for the vessels of the Coast and Geodetic Survey and for the Immigration Service. At the Ellis Island immigration station, New York, 10,000 tons, mostly bituminous coal, is bought annually. Fuel for the light-houses is purchased by this department, the service being divided into sixteen districts, for each of which a separate contract is made. Each of these contracts covers 1,000 to 13,000 tons and calls for anthracite or bituminous coal. The Bureau of Fisheries is a consumer of anthracite and bituminous coal in small lots, delivered to the cars of the bureau and to its stations throughout the country.

The Interior Department is a large consumer of coal in Washington, where it purchases annually 20,000 tons of bituminous and 1,000 tons of anthracite coal for the Government Hospital for the

Insane. Outside of Washington this department's most important contracts are those for coal to be delivered to Indian schools and agencies.

Most of the coal purchased by the Government is used for warming public buildings and for generating power, though small quantities of blacksmith's or forge coal and coke are bought. The larger individual contracts are those for bituminous coal and the small sizes of anthracite. The larger sizes of anthracite are, as a rule, purchased in small lots and delivered mainly by wagons.

## PRACTICE IN THE TREASURY DEPARTMENT.

### AWARD OF CONTRACTS.

#### COMPARISON OF HEATING VALUES.

An important point which seems not to be thoroughly understood is the manner of making awards in purchasing coal according to its heating value. In order to show how the lowest bid is determined, the proposals for supplying coal to the federal buildings under the Treasury Department have been selected as representing the widest range of coals and conditions throughout the country.

All bids are received on official proposal blanks, in sealed envelopes, in response to advertisements inserted in the daily papers. These bids are opened at a specified time, in the presence of all who desire to attend, and awards are made as soon thereafter as possible.

In order to make a proper award of contract it is necessary to reduce the proposals to a common basis for comparison. This may be done in several ways, but the method chosen is to adjust all bids on a given lot of coal to the same ash percentage by selecting as the standard the proposal that offers the coal containing the lowest percentage of ash. Each 1 per cent of ash content above that of this standard is assumed to have a negative value of 2 cents a ton, the amount of the penalty which is exacted under the contract requirements for 1 per cent excess of ash. The proposal prices are all adjusted in this manner and are so tabulated. On the basis of the adjusted price, allowance is then made for the varying heat values by computing the cost of 1,000,000 British thermal units for each coal offered. In this way the three variables—calorific value, percentage of ash, and basic price per ton—are all merged into one figure, the cost of 1,000,000 British thermal units, by which one bid may be readily compared with another.

For example, take two bids received for coal in Boston, as follows:

TABLE 1.—*Bids showing price computations based on determined ash and calorific values.*

Bid.	Coal offered.	Determinations.		Price per ton (2,240 pounds).		Com- puted cost of 1,000,000 B. t. u.
		B. t. u. per pound.	Ash (per cent).	As bid.	Plus ash difference.	
1	2	3	4	5	6	7
E	Raleigh County, W. Va.....	14,327	5.91	\$4.19	\$4.19	\$0.13056
B	Cambria County, Pa.....	14,200	7.12	4.30	4.3242	.13595

The percentage of ash (column 4) in E is taken as a standard of comparison, and the determined ash in B is shown to be 1.21 per cent higher. Each 1 per cent of ash difference from the contract standard is so rated as to make 2 cents difference in the price per ton; 1.21 per cent of ash is valued at  $0.02 \times 1.21$ , or \$0.0242; bid B is therefore increased to \$4.3242 per ton (column 6). The two bids are then on an equivalent basis, so far as ash is concerned.

The heating values being different, it is desirable to compute the calorific cost by the formula:

$$\frac{1,000,000 \times \text{price per ton}}{2,240 \times \text{B. t. u.}} = \text{cost per 1,000,000 B. t. u.}$$

This computation shows the cost of 1,000,000 B. t. u. to be—

In the case of E—

$$\frac{1,000,000 \times \$4.19}{2,240 \times 14,327} = \$0.13056.$$

In the case of B—

$$\frac{1,000,000 \times \$4.3242}{2,240 \times 14,200} = \$0.13595.$$

In like manner the cost of 1,000,000 British thermal units is calculated for each bid received under the proposal, and the results are entered for ready comparison in column 7 of the table.

The necessity for having such a basis of comparison is evident from an examination of the bids for coal to be delivered on any of the contracts. For instance, in Chicago nine bids were received with guaranties of British thermal units from 11,094 to 14,800, and of ash from 6 to 10 per cent, while the prices ranged from \$2.80 to \$4.10. Notwithstanding these apparent discrepancies, the cost of 1,000,000 British thermal units ranged only from 11.328 to 12.657 cents.

It has been found desirable to award some contracts to bidders other than those naming the lowest price per ton. Should two or more proposals appear equally advantageous, the relative suitability

of the coals for use with the plant to be supplied with fuel may be determined by actual trial tests. An examination of the table on pages 23-32 should dispel any doubt as to the general applicability of the specifications to a wide range of coals delivered in different localities under varying conditions. This table shows the results of analyses of coals mined in ten States—Pennsylvania, Maryland, West Virginia, Illinois, Kentucky, Tennessee, Alabama, Kansas, Virginia, and Colorado—and includes small sizes of anthracite and low and high volatile bituminous and semibituminous coal.

Coals from Pennsylvania, Kentucky, Virginia, and Tennessee compete in Louisville; from West Virginia, Virginia, and Pennsylvania in Toledo; from Illinois, Kentucky, Pennsylvania, and West Virginia in Minneapolis, etc., and fall within the specification limits especially fixed in each city.

#### OTHER FACTORS.

While calorific rating allows an award to be made to the best economic advantage, other factors than the mere theoretical heating value of the coal may, under certain conditions, have considerable weight, especially where uncertainty exists as to the suitability or adaptability of an untried coal to the plant for which it is purchased, and the consideration of this question must take into account the conditions of furnaces, grates, and draft, the labor of handling coal and ash, the storage facilities, etc.

In plants where boiler capacity and grate area are small or draft is weak, only the best grades of coal can be burned, and it is therefore desirable to take bids for coal to be used in such plants on a general specification, so as to determine the result of making radical changes in the plant to take advantage of the coal that will give the best economic results.

The relative facilities, competency, and responsibility of the competing firms must, of course, also be considered in making awards.

#### PROPOSALS FOR THE FISCAL YEAR 1909-10.

Table 2 embodies a summary of the Treasury Department proposals, showing the place of delivery, amount to be supplied, character of coal desired, and maximum limits of ash, volatile matter, and sulphur, all as specified by the Government, together with data furnished by the bidders as to the commercial name of the coal offered, name and location of the mine, designation of coal bed, sizing or screening dimensions, guaranteed British thermal units in the coal as delivered, and percentage of ash in dry coal.

TABLE 2.—Schedule of proposals for coal, United States Treasury Department, fiscal year 1909-10.

City.	Tons of 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Specified limits (per cent in "dry coal").			Commercial designation of coal.	Mine and location.	Coal bed.	Screen (dimensions in inches).		Heat- ing value of "coal as received" (B. t. u.).	Ash in "dry coal" (per cent).	Price per ton.		Cost, in cents, per 1,000,000 B. t. u.	
			Ash.	Volat- ile matter.	Sulphur.				Through.	Over.			Bid.	Plus ash difference.	Com- parative.	Ac- tual.
Albany (court- house and post-office).	250	Coking; run of mine.	8	22	1.5	A	Luzerne.....				13,000	8.00	\$3.60	\$3.60	12.362	.....
	250	Anthracite screenings.	18	9	1	B	Clearfield.....				14,000	8.00	3.44	3.44	10.969	10.969
						A	Lackawanna birdseye.				10,500	18.00	2.60	2.62	11.139	.....
Baltimore..... Court-house and post-office, 2,250 tons; custom-house, 300 tons; appraiser's stores, 100 tons.	2,650	Coking; run of mine.	8	22	1.5	C	Lackawanna Tyson.....				12,000	17.00	2.40	2.40	8.928	8.928
						A	do.				14,000	6.40	3.13	3.148	9.967	.....
						B	Elk Garden, W. Va.	Tyson.....	Run of mine.		14,400	6.50	3.16	3.18	9.858	.....
						C	Cambria County, Pa.	B.....	do.		14,300	6.50	3.16	3.18	9.927	.....
						B	Lincoln, Springfield, and Commercial mines, Vintondale, Cambria County, Pa.	B.....	do.		14,300	6.50	3.18	3.20	9.990	.....
						D	Somerset County, Pa.	C'.....	do.		14,350	6.25	3.13	3.145	9.784	.....
						E	Boswell, Somerset County, Pa.	C'.....	do.		14,300	8.00	3.25	3.30	10.302	.....
						F	Carrollton, Cambria County, Pa.	B.....	do.		14,300	7.00	3.40	3.43	10.708	.....
						G	South Fork, Cambria County, Pa.	B.....	do.		14,400	5.50	3.13	3.13	9.703	9.703
Custom-house.	500	Anthracite screenings.	18	9	1	I	Mines Nos. 2 and 3, Twin Rocks, Cambria County, Pa.	B.....	do.		11,700	18.00	2.35	2.39	9.119	.....
						B	Mammoth mine, Schuylkill region, Pa.	Mammoth.....	do.		12,000	18.00	3.09	3.13	11.644	.....
						A	Black Diamond mine, Wilkes-Barre, Pa.				11,500	16.00	2.28	2.28	8.851	8.851

<sup>a</sup>Standard.





Cincinnati (custom-house).	3,000	Coking; run of mine.	8	22	1.5	Cartersville nit.	Burr mine, Cartersville, Ill.	No. 7.	2½	1½	11,680	10.00	3.02	3.10	11.848	.....
						Majestic nit.	Clinch, Perry County, Ill.	do.	1½	1	11,350	10.00	2.80	2.88	11.328	11.013
						Pana, washed nit.	Springfield mine, Pana, Ill.	No. 5.	3	1½	11,094	10.00	2.968	3.048	12.265	.....
						Quaker nit.	Christopher, Franklin County, Ill.	No. 6.	2	1½	12,500	9.00	3.16	3.22	11.500	.....
						Pana washed.	Pana, Ill.	do.	3	1½	12,136	8.90	3.04	3.098	11.396	.....
						New River, Admiralty smokeless.	Fayette County, W. Va.	Sewell.	.....	.....	14,900	5.00	2.58	2.60	7.790	7.730
						"C. C. and B." Pocahontas	Tazewell County, Va., Mercer and McDowell counties, W. Va.	Pocahontas No. 3.	.....	.....	14,550	6.00	2.59	2.63	8.069	.....
						Smokeless.	Somerset County, Pa.	C'	.....	.....	14,500	6.50	2.67	2.72	8.374	.....
						Jenner.	Macdonald, W. Va.	Sewell.	.....	.....	14,800	5.00	2.57	2.59	7.812	.....
						White Oak, New River smokeless.	Fayette County, W. Va.	do.	.....	.....	14,750	4.75	2.71	2.725	8.247	.....
						Broadhead.	Las Animas County, Colo.	do.	.....	.....	12,300	12.00	4.45	4.49	16.297	.....
						Green Canyon.	do.	do.	.....	.....	13,000	12.00	4.40	4.44	15.247	.....
						Greenville.	Trinidad district, Colo.	do.	.....	.....	12,456	10.00	3.92	a 3.92	14.049	14.049
						Broadhead.	Las Animas County, Colo.	do.	.....	.....	12,300	12.00	4.30	4.34	15.752	.....
						Oak Hill.	Routt County, Colo.	do.	.....	.....	12,300	10.00	4.25	4.25	15.425	.....
						Kanawha gas.	Elk Ridge mines Nos. 1 and 2, Armstrong Creek, W. Va.	Kanawha No. 2.	.....	.....	14,360	5.00	2.90	2.905	9.0311	9.016
						New River smokeless.	Prudence mine, Prudence, W. Va.	do.	.....	.....	14,800	4.75	3.37	a 3.37	10.166	.....
						Kanawha gas.	Berlin mine, Wake Forest, W. Va.	Kanawha No. 2.	.....	.....	14,000	6.00	2.95	2.975	9.4866	.....
						Meadow Brook.	Cannelton No. 2 mine, Cannelton, W. Va.	do.	.....	.....	14,000	7.00	2.86	2.905	9.2634	.....
Detroit (court-house and post-office, 1,400 tons custom-house, 200 tons).	1,600	do.	8	22	1.5	Thick vein Pocahontas.	Elkhorn, McDowell, Empire, Turkey Gap, Mill Creek, and Coaldale mines, McDowell County, W. Va.	No. 3.	.....	.....	15,000	5.00	3.30	3.305	9.8363	.....
						No. 2 Kanawha gas.	Handley and Elk Ridge, W. Va.	do.	.....	.....	14,250	6.00	3.25	3.275	10.260	.....
						do.	do.	do.	.....	Run of mine.	14,250	6.00	3.10	3.125	9.7901	.....
						Pocahontas.	McDowell County, W. Va.	Pocahontas No. 3.	.....	do.	14,800	6.00	3.70	3.725	11.236	.....

a Standard.

## PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 2.—Schedule of proposals for coal, United States Treasury Department, fiscal year 1909-10—Continued.

City.	Tons of 2,240 pounds, except as otherwise stated.	Kind of coal (bituminous, lump, or equal, wise stated).	Specified limits (per cent in "dry coal").		Commercial designation of coal.	Mine and location.	Coal bed.	Screen (dimensions in inches).		Heat- ing value of "dry coal" (B. t. u.).	Ash in "dry coal" (per cent).	Price per ton.		Cost, in cents, per 1,000,000 B. t. u.	
			Ash.	Volatile matter.				Through.	Over.			Bid.	Plus ash difference.	Com- para- tive.	Ac- tual.
Kansas City, Mo. (court-house and post-office).	2,000	Cherokee screened lump, or equal.	12	40	A Cherokee lump.	Cherokee and Crawford counties, Kans.			a 1½	12,900	11.50	\$3 85	\$3.88	13.428	13.324
					B Cherokee deep-shaft screened lump.	do.			a 2	13,100	10.00	4.144	4.144	14.122	
					C do.	Weir City and Mineral, Cherokee County, Kans.			a 2½	12,900	11.00	3.90	3.92	13.566	
					D Cherokee.	Fleming, Cherokee County, Kans.			a 2	12,886	11.27	4.088	44.113	14.284	
Louisville (court-house and post-office).	1,850	Coking; run of mine.	15	42	A Pike Pittsburg.	Monongahela River district.	Pittsburg.	1½ slack and nut.		13,000	11.00	2.12	2.22	7.623	7.280
					B Pittsburg nut and slack.	Pittsburg district.		1½ bar.		13,550	9.00	2.42	2.48	8.171	
					C St. Bernard.	St. Charles, Hopkins County, Ky.	No. 9.	a 2½		11,500	13.00	1.95	2.09	8.113	
					D Roda.	Wise County, Va.		Unscreened.		14,200	8.00	2.50	2.54		
					E First pool, Pittsburg.	Monongahela River district.		1½		13,500	7.00	2.52	2.52	8.333	
					F Black Raven.	Rim, Bell County, Ky.			a 2	13,750	7.00	2.75	2.77	8.994	
					G Westbourne.	Columbia, Campbell County, Tenn.			a 1½	12,250	12.00	2.24	2.36	8.601	
					H Straight Creek.	Bell County, Ky.		Run of mine.		14,500	6.00	2.78	2.78	8.559	
					I Pittsburg.	Western Pennsylvania		a 1½		12,900	10.50	2.32	2.41	8.340	
					J Fox Ridge.	Bell County, Ky.		a 2		13,050	10.00	2.35	2.43	8.313	
					K Pittsburg.	Monongahela River district.		1½ bar.		12,900	11.00	2.35	2.65	9.171	
					L Straight Creek.	Straight Creek, Bell County, Ky.		a 1½		13,600	9.00	2.40	2.46	8.075	
Milwaukee (post-office, court-house, and custom-house).	1,400	Youghiogheny, or equal.	11	35	A Youghiogheny screenings.	Youghiogheny district.		a 1		14,170	5.21	3.05	3.05	9.609	9.609
					B do.	do.		a 1 bar.		13,500	11.00	3.00	3.116	10.304	
					C do.	Washington County, Pa.				13,072	8.28	3.05	3.111	10.621	

Minneapolis (post-office).	600	Youghiogheny lump, or Zeigler, or equal.	12	35	2.5	D	do.	Webster, West New-				1½ bar	12, 196	14. 25	3. 10	3. 281	12. 010																																																																																																																																																																																																																																																			
						E	do.	Westmoreland and			1 bar.	13, 106	9. 95	3. 02	3. 115	10. 611																																																																																																																																																																																																																																																				
						F	do.	Washington coun-																																																																																																																																																																																																																																																												
						G	do.	Bertha mine, Bruceton,			¾ bar.	13, 277	8. 04	3. 18	3. 237	10. 888																																																																																																																																																																																																																																																				
						A	Youghiogheny	Allegheny County,			a 1½	13, 466	9. 67	3. 07	3. 159	10. 473																																																																																																																																																																																																																																																				
						B	Zeigler vein lump,	Westmoreland Coun-			¾ bar.	14, 200	6. 00	5. 00	5. 00	15. 719																																																																																																																																																																																																																																																				
						C	New River	ty, Pa.																																																																																																																																																																																																																																																												
						D	Marrowbone	New River dist.			R u n o f	14, 600	6. 00	5. 14	b 5. 14	15. 717																																																																																																																																																																																																																																																				
						E	Zeigler	Hellier, Ky.			mine																																																																																																																																																																																																																																																									
						F	Marrowbone	Upper Elk-			horn.	1 bar.	14, 000	6. 00	5. 38	5. 38	17. 156																																																																																																																																																																																																																																																			
New Orleans: Custom- house.	1, 450	Pratt lump No. 5, or equal	10	35	3	D	Zeigler Purity	Christopher, Ill.			No. 6.	a 3	11, 500	10. 00	4. 60	4. 68	18. 168																																																																																																																																																																																																																																																			
						E	Youghiogheny	Hellier, Ky.			Upper Elk-	1 bar.	11, 500	6. 00	5. 24	5. 24	16. 709																																																																																																																																																																																																																																																			
						F	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						G	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						H	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						I	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						J	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						K	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						L	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
						M	Marrowbone	Upper Elk-			horn.																																																																																																																																																																																																																																																									
New York: Appraiser's ware- houses.	2, 500	Coking: run of mine.	8	22	1.5	A	Delta	Cambria County, Pa.					14, 000	6. 00	3. 35	b 3. 35	10. 682																																																																																																																																																																																																																																																			
						B	Knickerbocker	Hooverville, Somerset			R u n o f	14, 000	8. 00	3. 60	3. 64	11. 607																																																																																																																																																																																																																																																				
						C	Zeigler	County, Pa.			mine.																																																																																																																																																																																																																																																									
						D	Acme	Portage, Pa.			do.	14, 200	8. 00	3. 43	3. 47	10. 909																																																																																																																																																																																																																																																				
						E	Somerset	Hawk Run, Clearfield			do.	14, 100	6. 90	3. 43	3. 448	10. 917																																																																																																																																																																																																																																																				
						F	Pen-Mar	County, Pa.			do.																																																																																																																																																																																																																																																									
						G	Quemahoning	Pine Hill and Elk			do.																																																																																																																																																																																																																																																									
						H	Scranton	Lick mines, Som-			do.																																																																																																																																																																																																																																																									
						I	Pittston	County, Pa.			do.																																																																																																																																																																																																																																																									
						J	Pittston	County, Pa.			do.																																																																																																																																																																																																																																																									
Barge office.	500	No. 1 pea an- thracle	16	9	1	D	Scranton	Macdonaldton, Som-			B	do.	14, 000	8. 00	3. 37	3. 41	10. 874																																																																																																																																																																																																																																																			
						E	Pittston	County, Pa.			C'	do.	14, 300	7. 00	3. 47	3. 49	10. 896																																																																																																																																																																																																																																																			
						F	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						G	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						H	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						I	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						J	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						K	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						L	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						M	Pittston	County, Pa.																																																																																																																																																																																																																																																												
Custom- house.	2, 500	No. 2 buck- wheat an- thracle.	18	9	1	D	Scranton	Macdonaldton, Som-			B	do.	14, 000	8. 00	3. 37	3. 41	10. 874																																																																																																																																																																																																																																																			
						E	Pittston	County, Pa.			C'	do.	14, 300	7. 00	3. 47	3. 49	10. 896																																																																																																																																																																																																																																																			
						F	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						G	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						H	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						I	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						J	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						K	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						L	Pittston	County, Pa.																																																																																																																																																																																																																																																												
						M	Pittston	County, Pa.																																																																																																																																																																																																																																																												
Nut and slack.																																																																																																																																																																																																																																																																				

**Nut and slack:**

**d Square opening.**

Guaranteed caloric value not considered in making award.

**b Standard.**

**a Round opening.**

## PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 2.—Schedule of proposals for coal, United States Treasury Department, fiscal year 1909-10—Continued.

City.	Tons of 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Specified limits (per cent in "dry coal").		Commercial designation of coal.	Mine and location.	Coal bed.	Screen (dimensions in inches).		Heat- ing value of coal "as re- ceived" (B. t. u.).	Price per ton.		Cost, in cents, per 1,000,000 B. t. u.	
			Ash.	Volatile matter.	Sulphur.			Through.	Over.		Bid.	Plus ash difference.	Com- parative.	Ac- tual.
New York—Con- Court-house and post- office.	11,000	Coking: run of mine.	8	22	1.5	Delta.....	Cambria County, Pa.	Run of mine.		14,000	\$3.37	\$3.37	10.746	10.746
						Knickerbocker..	Hooversville, Som- erset County, Pa.				3.40	3.44	10.969	10.969
						Pen-Mar.....	Macdonaldton, Som- erset County, Pa.				3.37	3.41	10.893	10.893
						Quemahoning...	Jerome, Somers- et County, Pa.				3.57	3.59	11.208	11.208
						Somerset.....	Elk Lick and Pine Hill mines, Somerset County, Pa.				3.43	3.47	11.065	11.065
Subtreasury	150	No. 1 pea an- thracite.	16	9	1	Ætna.....	Portage, Pa.	Run of mine.		14,200	3.47	3.51	11.035	11.035
						Acme.....	Hawk Run, Pa.				3.58	3.58	11.391	11.391
						Pittston.....	Wyoming district.				4.07	4.155	15.458	15.458
						Plymouth.....	Plymouth, Pa.				10.75	4.07	14.117	14.117
						Cherokee.....	Englevalle, Kans.				4.64	4.64	17.262	17.262
Omaha (court- house and post-office).	1,700	Coking: run of mine; screened lump.	12	40		Fleming.....	Fleming, Kans.	Weir- Pitts- burg.	2	12,200	4.84	4.88	17.857	17.857
						Cherokee lump..	Fuller and Mulberry, Kans.				5.58	5.60	21.930	21.930
						Lehigh.....	Deringer, Pa.				3.49	3.537	13.308	13.131
						Philadelphia and Reading white ash.	Schuylkill County, Pa.				3.85	3.85	13.957	13.957
						Lehigh Valley...	Wyoming district.				4.25	4.261	15.852	15.852
Custom- house.	120	Egg anthracite	12	10	1.5	Deringer.....	Deringer, Pa.	Schuylkill County, Pa.		13,488	5.95	5.95	19.693	19.693
						Philadelphia and Reading white ash.	Schuylkill County, Pa.				7.78	5.94	20.166	20.166
						Colonial colliery.	Mount Carmel, Pa.				6.45	6.604	24.569	24.569
						Whitney.....	Clearfield County, Pa.				3.20	3.20	10.061	10.061
						Acme.....	Hawk Run, Clearfield County, Pa.				3.35	3.386	10.797	10.797



## PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 2.—Schedule of proposals for coal, United States Treasury Department, fiscal year 1909-10—Continued.

City.	Tons of coal, 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Specified limits (per cent in "dry coal").		Commercial designation of coal.	Mine and location.	Coal bed.	Screen (dimensions in inches).		Heat-ing value of "coal" received" (B. t. u.).	Ash in "dry coal" (per cent).	Price per ton.		Cost, in cents, per 1,000,000 B. t. u.	
			Ash.	Sulphur.				Through.	Over.			Bid.	Plus ash difference.	Com-parative.	Ac-tual.
Washington: Bureau of Engraving and Printing.	8,500	Run of mine.	7	22	1.5	A	Parker. Orenda.			14,400	6.00	\$3.50	\$3.52	10.913	
							Jerome.			14,300	6.00	3.32	3.34	10.427	
							Elk Lick.			14,300	6.00	3.32	3.34	10.427	
							Star.			14,000	7.00	3.18	3.22	10.268	
							New River.			14,250	5.00	3.04	3.04	9.524	
							Imperial.			14,750	5.00	3.04	3.04	9.201	
							Moshannon.			14,300	7.00	3.15	3.19	9.959	
							New River.			14,700	5.00	3.20	3.20	9.718	
							Clearfield County, Pa.			14,200	6.50	3.29	3.32	10.438	
							Fayette and Raleigh counties, W. Va.			14,780	5.00	3.20	3.20	9.666	
Butler Building.	250	Furnace anthracite.	14			I	New River.			14,700	5.00	3.07	3.07	9.323	
							Admiralty.			14,600	6.00	3.25	3.27	9.999	
							Philadelphia and Reading.					5.80			
							do.								
							Susquehanna.					5.85			
							Philadelphia and Reading.					5.73			
							Mammoth, Philadelphia and Reading.					5.87			
							Girard mammoth.					6.40			
							Morea.					5.74			
							Mahony Thomas.					5.57			
							Susquehanna.					5.71			
												5.08			
												5.70			

Cox Building.	50	Egg anthracite.	14	A	Philadelphia and Reading.							6.24		
				B	do.							6.12		
				C	Mannoth, Philadelphia and Reading.							6.60		
				D	Girard manmoth.							6.05		
				E	Morea.							6.12		
				F	Mahanoy Thomas.							6.13		
				G	Lehigh or William Penn.							6.24		
				A	Philadelphia and Reading.							6.85		
Stables, Ninth and E streets.	10	Stove anthracite.	16	B	do.							6.62		
				C	Mannoth.							6.90		
				D	Girard manmoth.							6.50		
				E	Morea.							6.23		
				F	Mahanoy Thomas.							6.86		
				G	Lehigh or William Penn.							6.65		
				A	Parker Oreanda.					Barrelville, Md	14,400	6.00	3.85	11.998
				B	Jerome.					County, Pa.	14,300	6.00	3.26	10.240
Treasury building.	800	Run of mine.	7							Jerome, Somerset County, Pa.	14,300	6.00	3.26	10.240
										County, Pa.	14,000	7.00	3.12	10.077
										West Salisbury, Somerset County, Pa.	14,250	5.00	3.14	9.837
										Cambridge County, Pa.	14,700	5.00	3.35	10.174
										Payette County, W. Va.	14,300	7.00	3.25	10.271
										Pennsylvania.	14,700	5.00	3.30	10.022
										West Virginia.	14,200	6.50	3.64	11.538
										Clearfield County, Pa.	14,780	5.00	3.30	9.998
75	Stove anthracite.		16							Payette and Raleigh counties, W. Va.	14,700	5.00	3.42	10.386
										Southside and Star mines, Thurmond, W. Va.				
				A	Philadelphia and Reading.							6.80		
				B	do.							6.62		
				C	Mannoth.							6.90		
				D	Girard manmoth.							6.50		
				E	Mahanoy Thomas.							6.83		
				F	Lee Lyth, or William Penn.							6.65		

a Standard.

TABLE 2.—Schedule of proposals for coal, United States Treasury Department, fiscal year 1909-10—Continued.

City.	Tons of 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Specified limits (per cent in "dry coal").		Commercial designation of coal.	Mine and location.	Coal bed.	Screen (dimensions in inches).		Heat- ing value of "as re- ceived" (B. t. u.).	Ash in "dry coal" (per cent).	Price per ton.		Cost, in cents, per 1,000,000 B. t. u.
			Ash.	Volatiles.				Through.	Over.			Bid.	Plus ash difference.	
Washington— Continued. Treasury building (cont'd).	1,200	No. 1 buck- wheat an- thracle.	21	.....	Philadelphia and Reading. moth. Mahanoy Thomas.	.....	.....	.....	.....	.....	.....	\$3.45	.....	.....
Win- d- er Building.	1,200	No. 2 buck- wheat an- thracle.	21	.....	Philadelphia and Reading. moth. Mahanoy Thomas.	.....	.....	.....	.....	.....	.....	3.49	.....	.....
Win- d- er Building.	400	Run of mine.	22	1.5	Parker. Orenda. Jerome. Elk Lick. Star. Imperial. New River. Moshannon. Georges Creek. "P. and R." Mannoth. Girard man- moth. Mahanoy Thomas. Lee Lyth, or William Penn.	Barrelville, Md. Beswell, Somerset County, Pa. Jerome, Somerset County, Pa. West Salisbury, Pa. Cambria County, Pa. Pennsylvania. West Virginia. Clearfield County, Pa. Fayette and Raleigh counties, W. Va. Frostburg, Md. A. B. C. D. E. F. G. H. A. B. C. D. E. F.	C' C' Pittsburg. B. Moshannon. Sewell. D. Sewell and Fire Creek.	.....	.....	.....	.....	3.46	.....	.....
Win- d- er Building.	10	Stove anthra- cite.	16	.....	Philadelphia and Reading. moth. Mahanoy Thomas. Lee Lyth, or William Penn.	.....	.....	.....	.....	.....	.....	3.49	.....	.....

a Standard.



## SPECIFICATIONS FOR THE FISCAL YEAR 1909-10.

## GENERAL CHARACTER.

The current contracts for coal purchased according to its heat value, which have been arranged alphabetically by cities in the table on pages 41-45, will serve as a guide for bidding on coal contracts for the fiscal year 1911. These contracts are all accompanied by the specifications given on pages 34-40.

Two classes of coal, anthracite and bituminous, are recognized and differentiated in the specifications. By anthracite is meant the coal mined in Susquehanna, Lackawanna, Luzerne, Carbon, Schuylkill, Columbia, Sullivan, Northumberland, and Dauphin counties, Pa. By bituminous coal is meant varieties other than anthracite, including the several grades of semibituminous and semianthracite.

The specifications for anthracite provide definite standards of quality for each size. These standards so far have been based on the percentage of ash in dry coal. In this connection it is well to know that the term "dry coal" means coal free from moisture, as determined by drying a small sample at 105° C. It is obvious that the percentage of ash in dry coal must be somewhat higher than in the undried sample.

Some of the anthracite coal bought for the Treasury Department is purchased on the specifications used for bituminous coal, which provide for payment according to the percentage of ash in "dry coal" and the number of British thermal units in coal "as received." It is probable that nearly all of the anthracite coal purchased during the fiscal year 1910-11 and future years will be purchased according to the double standard.

The specifications for bituminous coal are intended to describe clearly the character of the coal desired by the Government and to obtain from the bidder a definite statement of the quality of coal offered, with a view to using such statement as a standard, or as a basis for payment in connection with the price stated.

As will be seen from the specifications for bituminous coal, the bidder is not required to submit a sample of his coal, but is expected to state the percentage of ash in the "dry coal" and the number of British thermal units in the coal as it is to be delivered. If the bidder does not know the value of his coal, he may arrange to submit a properly selected sample with his bid, this sample to be analyzed by the Government and the results to be used as a standard under the contract. It is preferred, however, that the bidder give his own values.

The limits fixed in the specifications in the interest of plant economy are wide enough to permit the use of the output of any mine or group of mines, provided proper care is exercised in mining and picking out

slate, bone, and other impurities. With these points in mind, it is only necessary for the bidder to select coal that will meet the description given and permit deliveries within the limits set.

It is not expected that all deliveries will be absolutely uniform or agree exactly with the standards established by the contractor, but it is necessary that all deliveries shall be within the limits set by the Government.

The standards established by the contractor should, however, be such as to require the least possible correction in price on account of variation in ash and heat units.

The heating value, expressed in British thermal units, of coal containing approximately the same percentage of ash is essentially a direct measure of its actual value to the purchaser, and for this reason the specifications provide for payment in proportion to the number of heat units contained in the coal as received. As the coal is weighed when delivered and payments are made according to the price per ton, it is necessary to determine the heat value of the coal in the condition in which it is received, with whatever moisture it may then contain.

Under this plan neither the contractor nor the Government will gain or lose by change in the moisture content of the coal between the time it is weighed at the mine and the time it is weighed on delivery. The price per ton will be correspondingly lower if the coal is wet, and higher if it is dry.

A further correction in payment is made for variation of the ash in dry coal in order to take account of the cost of handling additional fuel and ash and its effect on the capacity of the boiler and furnace.

#### FORM OF SPECIFICATIONS AND PROPOSAL.

The following is the general form of advertisement, including specifications, schedule, proposal, and guaranty, used in inviting bids for furnishing coal for the Government in the District of Columbia. Suitable modifications of these forms are used in other cities.

#### **SPECIFICATIONS FOR SUPPLYING COAL FOR THE EXECUTIVE DEPARTMENTS AND INDEPENDENT ESTABLISHMENTS OF THE GOVERNMENT.**

OFFICE OF GENERAL SUPPLY COMMITTEE,  
Washington, D. C., .....

Sealed proposals, in triplicate, to furnish the quantities of coal specified in the schedule herewith, required for use of the [name of department, bureau, or institution] for the fiscal year ending June 30, 19.., will be received until 2 o'clock p. m. ...., 19.., at the office of the general supply committee, Washington, D. C., and then opened.

Each bidder shall have the right to be present either in person or by attorney when the bids are opened.

#### ADDRESS OF PROPOSALS.

Proposals in triplicate must be forwarded to the general supply committee, Washington, D. C., postage prepaid. Addressed envelope for mailing is inclosed herewith.

## PROPOSALS—GUARANTY.

Proposals must be made in triplicate on the form furnished by the general supply committee, and must be signed by the individual, partnership, or corporation making the same; when made by a partnership, the name of each partner must be signed. If made by a corporation, proposals must be signed by the officer thereof authorized to bind it by contract, and be accompanied by a copy, under seal, of his authority to sign.

The proposals must be accompanied by a guaranty from a corporate surety, duly qualified under the act of Congress approved August 13, 1894, or a guaranty signed by at least two responsible guarantors, that the bidder shall, within ten days after being called upon to do so, execute contracts in accordance with the terms of the proposal, and give a bond for the faithful performance thereof, with good and sufficient sureties as hereinafter required. The responsibility and sufficiency of the signers of such guaranty must be certified to by a judge or a clerk of a court of record or a United States attorney at or nearest to the place of business of the bidder. The guaranty must be in the penal sum of 10 per cent of the total amount of the bid: *Provided*, That \$10,000 will be accepted as sufficient guaranty for a total bid of \$100,000 or more. If preferred, a certified check for like amount, payable to the Secretary of the Treasury, may be filed in lieu of guaranty, the amount of said check to be forfeited to the Government in the event of failure on the part of the bidder to enter into contract in accordance with the proposal.

## AWARD.

Bids will be considered on each item and on each building separately; and in determining the award of the contract consideration will be given to the quality of the coal (expressed in terms of ash in "dry coal" and British thermal units in coal "as received") offered by the respective bidders, the ability of the contractors to furnish the coal, and the responsibility of the parties submitting bids, as well as to the price per ton.

If the bidder to whom the first award may be made should fail to enter into a contract as herein provided, then the award may be annulled, and contract let to the next most desirable bidder, and such bidder shall be required to fulfill every stipulation embraced herein, as if he were the original party to whom the contract was awarded.

None of the contracts can in any case be lawfully transferred or assigned.

Contracts will be awarded only to established dealers in coal.

No proposal will be considered from any person, firm, or corporation in default of the performance of any contract or agreement made with the United States, or that is conclusively shown to have failed to perform satisfactorily such contract or agreement.

## CONTRACTOR'S BOND.

Each contractor will be required to give bond with two or more individual sureties or one corporate surety (the latter preferred) duly qualified under the act of Congress approved August 13, 1894, in which they shall covenant and agree that, in case the said contractor shall fail to do or perform any or all of the covenants, stipulations, and agreements of said contract on the part of the said contractor to be performed as therein set forth, the said contractor and his sureties shall forfeit and pay to the United States of America the sum specified in said bond, to wit, a sum equal to 25 per cent of the estimated amount of the contract, for which said forfeiture the said contractor and his sureties shall be jointly and severally liable as fixed, settled, and liquidated damages, and not as a penalty, to be sued for in the name of the United States. Such sureties (except corporate sureties) shall justify their responsibility by affidavit showing that they severally own and possess property of the clear value in the aggregate

of double the amount of the above-mentioned forfeiture over and above all debts and liabilities and all property by law exempt from execution; to be sworn to before a judge or a clerk of a court of record or a United States attorney, who must certify of his own personal knowledge that the sureties are sufficient to pay the full penalty of the bond.

If the estimated amount involved in the contract does not exceed the sum of \$200, then the bond may be waived.

#### RESERVATIONS.

The right is reserved to the head of each department or independent establishment to reject any and all bids, to waive technical defects, and to accept any part of any bid and reject the other part if in his judgment the interests of the Government shall require it; also the right to annul any contract, if in his opinion there shall be a failure at any time to perform faithfully any of its stipulations, or in case of a willful attempt to impose upon the Government coal inferior to that required by the contract; and any action taken by the head of any department or independent establishment in pursuance of this latter stipulation shall not affect or impair any right or claim of the United States to damages for the breach of any of the covenants of the contract by the contractor.

The quantity of coal is based upon the previous annual consumption, but the right is reserved to order a greater or less quantity, subject to the actual requirements of the service.

The right is reserved to award the contract at a price higher than that named in lower bid or bids, the award to be based on the quality of the coal offered.

The right to reject any or all bids and to waive defects is expressly reserved by the Government.

#### DELIVERY.

The coal shall be delivered in such quantities and at such times as the Government may direct, deliveries to be made to any point, or points, within the District of Columbia as designated in the order.

The contractor will be allowed to deliver coal during the usual hours of teaming, or between 8 a. m. and dark.

For prompt settlement of accounts it is imperative that contractors shall notify the coal-inspection section of the United States Geological Survey during office hours on the day before deliveries are to be made that such deliveries are contemplated.

The coal will be weighed by representatives of the Government without expense to the contractor, as required by the act of March 2, 1895.

All charges for transportation and cartage must be prepaid by the contractor.

The available storage capacity of the coal bunkers will be placed at the disposal of the contractor to facilitate delivery of coal under favorable conditions. Information is furnished in the schedule herewith in relation to the several places at which the coal should be delivered, and the bidder is invited to visit those places and inspect the conditions.

After verbal or written notice has been given to deliver coal under this contract, a further notice may be served in writing upon the contractor to make delivery of the coal so ordered within twenty-four hours after receipt of said second notice. Should the contractor, for any reason, fail to comply with the second request, the Government will be at liberty to buy coal in the open market, and to charge against the contractor any excess in price of coal so purchased over the contract price.

#### SAMPLING.

As payment is based on the quality of the coal delivered as shown by analyses of representative samples, it is imperative that samples representing every order for coal shall be taken, and it shall be the duty of the proper officials of the government

buildings at which coal is delivered to see that such samples are taken. The coal-inspection section of the United States Geological Survey will have general supervision of such sampling, giving instructions in the methods of taking representative samples and lending all possible assistance.

If practicable, the coal will be sampled when it is being delivered at the building. For small deliveries it may be necessary to take samples from the yards or bins. The sample taken should not be less than 100 pounds, to be selected proportionately from the lumps and fine coal, in order that it may in every respect truly represent the quality of the coal delivered.

In order to minimize the loss in the original moisture content and to obtain a uniform sample the gross sample will be pulverized as rapidly as possible until none of the fragments exceed one-half inch in diameter. The fine coal will then be mixed thoroughly and divided into four equal parts. Opposite quarters will be thrown out, and the remaining portions thoroughly mixed and again quartered, opposite quarters being thrown out as before. This process will be continued as rapidly as possible until the final sample thus obtained can be contained in a 2-pound can or jar and sealed air-tight.

The sample will then be forwarded to the chemical laboratory.

If desired by the coal contractor, permission will be given to him, or his representative, to be present and witness the quartering and preparation of the final sample to be forwarded to the government laboratories.

Immediately on receipt of the sample, it will be analyzed and tested by the method adopted by the American Chemical Society, and by the use of a bomb calorimeter. A copy of the result will be mailed to the contractor on the completion of the analysis and test.

#### ANTHRACITE COAL.

##### CHARACTER OF COAL.

Bids are desired on coal, 2,240 pounds to the ton, of the kinds and sizes shown in Table 3. To receive consideration bids must be based on the percentages of ash shown for the various classes of coal.<sup>a</sup>

These coals may be delivered from the car without being screened, but must be reasonably free from dust and fine coal.

Coal with less ash than the standard will be paid for at a higher price, and vice versa, in accordance with the provisions for payment.

TABLE 3.—*List of coals, showing contract standard and maximum limit of ash.*

Kind and size.	Ash in dry coal (per cent).	
	Contract standard.	Maximum limit.
White-ash anthracite:		
Furnace.....	10	14
Egg.....	10	14
Stove.....	12	16
Chestnut.....	14	18
Pec.....	16	20
No. 1 buckwheat.....	18	21
No. 2 buckwheat.....	18	21
Red-ash anthracite:		
Stove.....	12	16

<sup>a</sup> The economic value of a fuel is affected by the actual amount of combustible matter it contains, as determined by its heating value shown in British thermal units per pound of fuel, and also by other factors, among which is its ash content. The ash content not only lowers the heating value and decreases the capacity of the furnace, but also materially increases the cost of handling the coal, the labor of firing, the cost of the removal of ashes, etc.

## CAUSES FOR REJECTION.

It is understood that the coal delivered during the year will be of the character specified by the contractor. Coal containing more than 1 per cent of sulphur, an excessive amount of dust and fine coal, or a percentage of ash in excess of the maximum limits indicated in Table 3 will be subject to rejection.

## PRICE AND PAYMENT.

Payment will be made at the price named in the proposal for the coal specified, corrected as indicated in Table 4<sup>a</sup> for variations in ash above and below the standard, as shown by analysis.

TABLE 4.—*Price corrections, in cents per ton, for anthracite coal, due to variations in ash in "dry coal" above and below the established standard.*

Ash in "dry coal" (per cent).	Size of coal.				
	Furnace and egg.	Stove.	Chestnut.	Pea.	Buck- wheat.
6.01 to 6.50	24				
6.51 to 7.00	21				
7.01 to 7.50	18				
7.51 to 8.00	15	27			
8.01 to 8.50		24			
8.51 to 9.00		21			
9.01 to 9.50		18			
9.51 to 10.00		15			
10.01 to 10.50	Contract price.		27		
10.51 to 11.00			24		
11.01 to 11.50			21		
11.51 to 12.00		Contract price.	18		
12.01 to 12.50	15		15		
12.51 to 13.00	18			15	
13.01 to 13.50	21			12.5	
13.51 to 14.00	24			10	
14.01 to 14.50		15	Contract price.	7.5	
14.51 to 15.00		18		5	12
15.01 to 15.50		21			10
15.51 to 16.00		24		Contract price.	8
16.01 to 16.50		27	15		6
16.51 to 17.00			18		4
17.01 to 17.50			21	5.0	Con- tract price.
17.51 to 18.00			24	7.5	
18.01 to 18.50			27	10.0	
18.51 to 19.00				12.5	
19.01 to 19.50				15.0	4
19.51 to 20.00					8
20.01 to 20.50					14
20.51 to 21.00					21
21.01 to 21.50					32
21.51 to 22.00					48

NOTE.—Figures above heavy line represent cents per ton to be added to contract price; figures below heavy line represent cents per ton to be deducted from contract price.

## BITUMINOUS COAL.

## CHARACTER OF COAL.

Bids are desired on coal, 2,240 pounds to the ton, described as follows:

To meet the special requirements the coal will be designated as a good steam, coking, run-of-mine, or forge bituminous coal, free from dirt and excessive dust, and adapted for successful use in the particular furnace equipment for which the coal is desired. The foregoing information will be furnished by the Government as may be determined by boiler and furnace equipment, operating conditions, and the local market. The Government expressly reserves the right to have a practical service test made by the

<sup>a</sup> Payment for anthracite coal purchased on the double standard of ash in "dry coal" and British thermal units in coal "as received" is made on the same basis as for bituminous coal (p. 39).

United States Geological Survey, the results to determine the final award of contract. The interested bidder or his authorized representative may be present at such test.

Coals containing ash in excess of 10 per cent, volatile matter in excess of 22 per cent, or sulphur in excess of 2.5 per cent, as shown by analyses of samples representing dry coal, will not be considered.

#### CAUSES FOR REJECTION.

A contract entered into under the terms of these specifications shall not be binding if, as the result of a practical service test of reasonable duration, the coal fails to give satisfactory results, due to its noncoking character, to excessive clinkering, to a prohibited amount of smoke, or to any other cause or causes which make it an undesirable fuel.

It is understood that the coal delivered during the year will be of the character specified by the contractor. It should therefore be supplied, if possible, from the same mine or group of mines.

Coal containing percentages of volatile matter and sulphur higher than the limits indicated herein and coal containing a percentage of ash in excess of the maximum limits indicated in the following table will be subject to rejection.

Payment for coal which has been delivered and used for trial or which has been consumed or remains on the premises at the time its quality is determined will be made at a price computed under the terms of these specifications.

Occasional deliveries of coal containing ash up to the percentage indicated in the column headed "Maximum limit for ash" may be accepted. Frequent or continued failure to maintain the standard established by the contractor, however, will be considered sufficient cause for cancellation of the contract.

#### PRICE AND PAYMENT.

On certification from the coal-inspection section of the United States Geological Survey that samples have been procured from deliveries constituting a completed order, payment will be made at once of 90 per cent of the amount of the bill, 10 per cent being withheld to protect the Government against the delivery of coal of inferior quality and to offset any deduction that may be determined by the United States Geological Survey from the average quality of all the deliveries on the order. On receipt of the Survey's report on the quality of the coal final settlement will be made.

If the 10 per cent withheld should prove insufficient to satisfy the claim of the Government on account of the delivery of fuel of low grade, the balance shall be deducted from the next succeeding order or orders.

Payment will be made at the price named in the proposal for the coal specified therein, corrected for variations in heating value and ash, as shown by analysis, above and below the standard established by the contractor in his proposal.

The correction in price for variations in British thermal units is a pro rata one and is determined by the following formula:

$$\frac{\text{Delivered B. t. u.}}{\text{Standard B. t. u.}} \times \text{contract price} = \text{price to be paid.}$$

For example, if a coal delivered on a contract guaranteeing 14,000 B. t. u. in coal "as received" at a price of \$3 per ton shows by calorific test 14,300 B. t. u. in coal "as received," the price to be paid is found, by substitution in the formula, to be

$$\frac{14,300}{14,000} \times \$3 = \$3.064.$$

The price will also be further corrected for the percentage of ash. For all coal which by analysis contains less ash than that established in this proposal a premium of 1 cent<sup>a</sup> per ton for each whole per cent less ash will be paid. An increase in the ash content of 2 per cent over the standard established by contractor will be tolerated without

<sup>a</sup> In the specifications for the fiscal year 1910-11 this premium will be 2 cents.

exacting a penalty for excess of ash. When such excess exceeds 2 per cent above the standard established, deductions will be made from the price paid per ton in accordance with Table 5.

TABLE 5.—*Price corrections, in cents per ton, for bituminous coal, due to variations in ash in "dry coal" above and below the established standard.*

Contract standard, per cent of ash in "dry coal."	Maximum limit for ash (per cent).	Schedule of variations in ash (per cent).							
		Below—	Higher limits.						
5.....	12	7	7- 8	8- 9	9-10	10-11	11-12	12-13	13-14
6.....	13	8	8- 9	9-10	10-11	11-12	12-13	13-14	14-15
7.....	14	9	9-10	10-11	11-12	12-13	13-14	14-15	15-16
8.....	14	10	10-11	11-12	12-13	13-14	14-15	15-16	16-17
9.....	15	11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
10.....	16	12	12-13	13-14	14-15	15-16	16-17	17-18	.....
11.....	16	13	13-14	14-15	15-16	16-17	17-18	18-19	.....
12.....	17	14	14-15	15-16	16-17	17-18	18-19	19-20	.....
13.....	18	15	15-16	16-17	17-18	18-19	19-20	20-21	.....
14.....	19	16	16-17	17-18	18-19	19-20	20-21	21-22	.....
15.....	19	17	17-18	18-19	19-20	20-21	21-22	.....	.....
16.....	20	18	18-19	19-20	20-21	21-22	22-23	.....	.....
17.....	21	19	19-20	20-21	21-22	22-23	.....	.....	.....
18.....	22	20	20-21	21-22	22-23	.....	.....	.....	.....
Deduction (cents per ton) .....		0	2	4	7	12	18	25	35

It is important that the standards furnished with bids do not establish a higher value than can be maintained under the terms of the contract. In this connection it should be noted that the small mine samples as usually taken indicate a higher economic value than that of the coal delivered in carload lots, owing to the greater care exercised in separating extraneous matter from the coal of the mine sample. It is therefore evident that it will be to the interest of the contractor to furnish a correct description of the coal offered and an accurate statement of its actual value, as a failure to maintain the standard fixed by him will result in deductions from the contract price and may cause a cancellation of the contract, while coal of higher grade than that stated will be paid for at an increased price per ton.

SCHEDULE OF COAL REQUIRED BY THE EXECUTIVE DEPARTMENTS AND INDEPENDENT ESTABLISHMENTS OF THE GOVERNMENT FOR THE FISCAL YEAR ENDING JUNE 30, 19—.

[Here follows in tabulated form a list showing the departments or offices and places of delivery, the capacities and facilities for stowage, and the estimated amounts and kinds of coal required. The bidders are requested to furnish with each bid the commercial name of the coal they propose to deliver; the name and location of the mine or mines; the name or other designation of the coal bed or beds, and the price of coal offered per ton; and for bituminous coal (and also for anthracite when purchased on the double standard) the percentage of ash in "dry coal" and the calorific value in British thermal units of the coal "as received." These values become a part of the contract and constitute the standard according to which payment is made.]

GOVERNMENT CONTRACTS FOR COAL, FISCAL YEAR 1909-10.

Table 6 is a list of contracts made during the fiscal year 1909-10 for coal required for government use, under specifications providing for payment according to quality.



TABLE 6.—Government contracts for coal for the fiscal year 1909-10.

Location.			Abstract of contract.							
City.	Place of delivery.	Department.	Estimated quantity of 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Commercial designation of coal.	Mine and location.	Bed.	Ash in dry coal (per cent).	B. t. u. as received.	Price per ton.
Albany.....	Custom-house.....	Treasury.....	250	Anthracite screenings.		Portage, Clearfield, Pa.	E.....	17	12,000	\$2.40
Do.....	do.....	do.....	250	Run of mine.		Sugarloaf Nos. 2 and 3, Twin Rocks, Cambria Co., Pa.	B.....	8	14,000	3.44
Baltimore.....	Appraiser's stores.....	do.....	100	do.....		do.....	B.....	5.5	14,400	3.13
Do.....	Court-house and post-office.....	do.....	2,250	do.....		do.....	B.....	5.5	14,400	3.13
Do.....	Custom-house.....	do.....	500	Anthracite screenings.		Sugarloaf, Cambria Co., Pa.	B.....	16	11,500	2.28
Do.....	do.....	do.....	300	Run of mine.	Lehigh.....	Wilkes-Barre, Pa.	B.....	5.5	14,400	3.13
Boston.....	Post-office and sub-treasury.....	do.....	3,000	Anthracite screenings.		West Virginia.		18	12,650	2.80
Do.....	do.....	do.....	1,500	Run of mine.	Peachontas or New River.			6	14,350	3.82
Brooklyn.....	Court-house and post-office.....	do.....	5,000	Buckwheat anthracite No. 2.		Pittston mine, Luzerne Co., Pa.		18	11,150	3.15
Buffalo.....	Post-office.....	do.....	1,000	Lump.....		Shammut mines, Elk and Jefferson counties, Pa.	D.....	5	14,100	2.84
Chicago.....	Appraiser's stores.....	do.....	500	Washed nut.....	Pana.....	Pana, Ill.	No. 6.	8.9	12,136	3.04
Do.....	Court-house and post-office.....	do.....	8,000	do.....	do.....	do.....	do.....	8.9	12,136	3.04
Cincinnati.....	Custom-house.....	do.....	3,000	Run of mine.	New River Administration.	Loup Creek, Fayette Co., W. Va.	Sewell.....	5	14,900	2.58
Denver.....	Court-house, post-office, and mint.....	do.....	2,500	do.....	Green Canyon.....	Las Animas Co., Colo.		12	13,000	4.40
Detroit.....	Court-house and post-office.....	do.....	1,400	do.....	Kanawha.....	Elk Ridge Nos. 1 and 2 mines, Armstrong Creek, W. Va.		5	14,360	2.90
Do.....	Custom-house.....	do.....	200	do.....	do.....	do.....		5	14,360	2.90
Kansas City.....	Court-house and post-office.....	do.....	2,000	Lump.....	Cherokee lump.....	Cherokee and Crawford counties, Kans.		11.5	12,900	3.85
Louisville.....	do.....	do.....	1,850	Slack and nut.....	Pike Pittsburg.....	Monongahela River, 50 miles above Pittsburg.	Pittsburg.....	11	13,000	2.12
Milwaukee.....	do.....	do.....	1,400	Screened.....	Youghiogheny.....	Westmoreland Co., Pa.		5.21	14,170	3.05
Minneapolis.....	Post-office.....	do.....	600	Lump.....	do.....	do.....		6	14,200	5.00
New Orleans.....	Custom-house.....	do.....	1,450	do.....	Pratt.....	Pratt mines, Pratt City, Ala.		6	14,500	3.25
Do.....	Mint.....	do.....	800	do.....	do.....	do.....		6	14,500	3.25
Newport.....	Naval training station.....	Navy.....	10,000	Run of mine.	Atlantic Que-mahoning.....	Atlantic mine, Boswell, Pa.	C.....	7	14,500	3.55
New York.....	Appraiser's stores.....	Treasury.....	2,500	Anthracite screenings.	do.....	Pennsylvania.....		17	12,000	2.60
Do.....	do.....	do.....	2,500	Lump.....	do.....	Delta mine, Cambria Co., Pa.		6	14,000	3.35

## PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 6.—Government contracts for coal for the fiscal year 1909-10—Continued.

Location.			Estimated tons of 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Abstract of contract.					
City.	Place of delivery.	Department.			Commercial designation of coal.	Mine and location.	Bed.	Ash in dry coal (per cent).	B. t. u. as received.	Price per ton.
New York	Barge office.	Treasury.	500	Pea anthracite.	Pittston.	Pittston, Luzerne Co., Pa.		14	12,190	\$4.30
Do.	Court-house and post-office.	do.	11,000	Run of mine.		Delta mine, Cambria Co., Pa.		6	14,000	3.37
Do.	Custom-house.	do.	2,500	Buckwheat anthracite No. 2.	Pittston.	Pittston mine, Luzerne Co., Pa.		18	11,150	3.05
Do.	Navy-yard.	Navy.	40,000	Run of mine.		Somerset Co., Pa.		9	14,250	2.67
Do.	Panama Railroad Co.		120,000	do.	Arico.				14,400	2.64
Norfolk.	Naval hospital.	Navy.	2,000	do.		Orange mine, Welch, W. Va.		6	14,600	2.85
Pensacola.	Navy-yard.	do.	15,000	do.		Big Vein Nos. 1 and 2, Pocahontas, Va.	Pocahontas No. 3.	4	14,800	2.57
Do.	Panama Railroad Co.		200,000	do.	Pocahontas.				14,600	2.34
Do.	do.		200,000	do.	do.				14,600	2.44
Omaha.	Court-house and post-office.	Treasury.	1,700	do.	Cherokee	Englevale, Cherokee, and Crawford counties, Kans.		11	12,000	4.64
Pennsylvania.	Navy-yard.	Navy.	2,700	Lump.	Blocton Cahaba.			5.64	14,500	3.21
Philadelphia.	Court-house and post-office.	Treasury.	2,800	Barley anthracite.	Susquehanna.	Nanticoke, Pa.		13	11,500	2.35
Do.	do.	do.	700	Run of mine.		Whitney No. 1, Clearfield Co., Pa.	B.	6	14,200	3.20
Do.	Frankford Arsenal.	War.	3,000	do.	Imperial.	Viola mine, Osceola Mills, Pa.	B.	6	14,250	2.75
Do.	Mint building.	Treasury.	3,500	do.	Star.	Commercial collieries, Nos. 3, 4, and 5, Twin Rocks, Cambria Co., Pa.	B.	5	14,300	3.05
Do.	Engineers' office.	War.	6,000	do.		do.		8.5	14,100	2.90
Do.	do.	do.	10,000	do.		do.		8.5	14,100	3.30
Rochester.	Court-house and post-office.	Treasury.	600	Grate anthracite.		Cambria Co., Pa.		7.07	13,449	6.30
Rock Island.	Rock Island Arsenal.	War.	1,000	Egg anthracite.	Lehigh.	Kingston, Pa.		10		8.59
Do.	do.	do.	5,000	Run of mine.		Pennsylvania.		12	10,900	2.12
Do.	do.	do.	300	do.		Pearless mine, Springfield, Ill.	No. 5.	5	13,600	4.75
St. Louis.	Custom-house.	Treasury.	4,500	Lump.		Knickerbocker Nos. 1 and 2, Hooversville, Pa.		10	12,585	2.20
						Stanton No. 2, Stanton, Ill.				

Springfield.....	Springfield Ar- my.	War.....	5,000	Run of mine.....	Blossburg smokeless.	Morris Run and Spangler mines, Cambria Co., Pa.	.....	14,400	4.14
Syracuse.....	Court-house and post-office.	Treasury.....	300	Egg anthracite.....	Pocahontas.....	Bernice, Pa.	.....	13,700	5.80
Toledo.....	Custom-house.	do.....	500	Screened.....	Pocahontas.....	Greenbrier and Louisville mines.	Pocahontas No. 3.	15,380	3.80
Washington.....	Bethesda, Md.	Agriculture.....	50	Furnace anthracite.....	do.....	do.....	do.....	.....	6.80
Do.....	do.....	do.....	25	Stove anthracite.....	do.....	do.....	do.....	.....	6.35
Do.....	Main building.....	do.....	1,000	Furnace anthracite.....	do.....	do.....	do.....	.....	5.45
Do.....	do.....	do.....	100	Egg anthracite.....	do.....	do.....	do.....	.....	5.97
Do.....	do.....	do.....	75	Stove anthracite.....	do.....	do.....	do.....	.....	6.25
Do.....	do.....	do.....	6,000	Run of mine.....	New River.....	Fayette Co., W. Va.	Sewell.....	14,750	3.10
Do.....	do.....	do.....	5	Forge.....	do.....	do.....	do.....	14,600	3.00
Do.....	Weather Bureau.....	do.....	800	Furnace anthracite.....	do.....	do.....	do.....	.....	5.65
Do.....	do.....	do.....	8	Stove anthracite.....	New River.....	Fayette Co., W. Va.	Sewell.....	14,600	3.10
Do.....	do.....	do.....	2	Forge.....	do.....	do.....	do.....	.....	5.93
Do.....	Bureau of the Cen- sus.	Commerce and Labor.	350	Egg anthracite.....	do.....	do.....	do.....	10	5.97
Do.....	Bureau of Fisher- ies.	do.....	150	do.....	do.....	do.....	do.....	10	5.97
Do.....	Bureau of Stand- ards.	do.....	a 1,500	Furnace anthracite.....	do.....	do.....	do.....	10	6.55
Do.....	do.....	do.....	a 1,500	Buckwheat anthracite No. 1.	do.....	do.....	do.....	18	4.40
Do.....	do.....	do.....	225	Furnace anthracite.....	do.....	do.....	do.....	10	5.40
Do.....	Coast and Geo- detic Survey.	do.....	165	do.....	do.....	do.....	do.....	10	5.59
Do.....	Willard Building.	do.....	350	do.....	do.....	do.....	do.....	10	5.47
Do.....	Botanical Gardens	Congress.....	20	Chestnut anthracite.....	do.....	do.....	do.....	14	6.10
Do.....	do.....	do.....	9,000	Egg anthracite.....	do.....	do.....	do.....	10	5.79
Do.....	Government Printing Office.	do.....	3,700	Furnace anthracite.....	do.....	do.....	do.....	10	5.43
Do.....	Library of Con- gress.	do.....	80	do.....	do.....	do.....	do.....	10	5.63
Do.....	Bureau of Educa- tion.	Interior.....	250	do.....	do.....	do.....	do.....	10	5.61
Do.....	Civil Service Com- mission.	do.....	25	Egg anthracite.....	do.....	do.....	do.....	10	6.15
Do.....	Freedmen's Hos- pital.	do.....	1,925	Run of mine.....	Elk Lick.....	West Salisbury, Pa.	Pittsburg.....	14,000	3.11
Do.....	do.....	do.....	600	Furnace anthracite.....	do.....	do.....	do.....	7	5.73
Do.....	Geological Survey.	do.....	1,000	Stove anthracite.....	do.....	do.....	do.....	12	5.62
Do.....	Hospital for In- sane.	do.....	20,000	Run of mine.....	Georges Creek.....	do.....	do.....	6	3.00
Do.....	do.....	do.....	200	Furnace anthracite.....	do.....	do.....	do.....	10	5.80
Do.....	Howard Univer- sity.	do.....	125	Stove anthracite.....	do.....	do.....	do.....	12	6.75
Do.....	do.....	do.....	4,000	Run of mine.....	do.....	Ocean mine, Allegheny Co., Md.	Pittsburg.....	14,250	3.50
Do.....	Land Office.....	do.....	975	Furnace anthracite.....	do.....	do.....	do.....	7	5.58
Do.....	Pension Office.....	do.....	30	Egg anthracite.....	do.....	do.....	do.....	10	6.15
Do.....	6 Jackson place.	Justice.....	.....	do.....	do.....	do.....	do.....	10	6.15

a Alternate bid; all of either, part of both, but not all of both, will be delivered.

### PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 6.—Government contracts for coal for the fiscal year 1909-10—Continued.

Location.			Abstract of contract.							
City.	Place of delivery.	Department.	Estimated tons of 2,240 pounds.	Kind of coal (bituminous, except as otherwise stated).	Commercial designation of coal.	Mine and location.	Bed.	Ash in dry coal (per cent).	B. t. u. as received.	Price per ton.
Washington	8 Jackson place.	Justice.	25	Egg anthracite.				10		\$6.10
Do.	1435 K street.	do.	135	do.				10		5.90
Do.	1439 K street.	do.	30	do.				10		6.22
Do.	1000 Vermont avenue.	do.	48	do.				10		6.22
Do.	United States Jail.	do.	25	Stove anthracite.	Star.	Cambria Co., Pa.	B.	12		6.22
Do.	do.	do.	400	Run of mine.				7	14,000	3.19
Do.	Mills Building.	Navy.	a 450	Buckwheat anthracite No. 1.				18		3.45
Do.	do.	do.	a 450	Buckwheat anthracite No. 2.				18		3.00
Do.	do.	do.	b 200	Run of mine.	Elk Lick.	West Salisbury, Pa.	Pittsburg.	7	14,000	3.47
Do.	Naval Medical School Hospital.	do.	3,000	do.	Georges Creek.	Ocean mine No. 7, Frostburg, Md.		7	14,250	3.33
Do.	Naval Observatory.	do.	600	Furnace anthracite.				10		6.10
Do.	do.	do.	15	Egg anthracite.				10		6.44
Do.	Navy-yard.	do.	15,000	Buckwheat anthracite No. 1.	Susquehanna.			18		2.85
Do.	do.	do.	15,000	do.	Stanton or Thomas.			18		2.83
Do.	Post-office annex.	Post-office.	400	Pea anthracite.	New River.	Fayette Co., W. Va.	Sewell.	16		4.10
Do.	Post-office Building.	do.	4,500	Run of mine.				5	14,700	3.34
Do.	Post-office carpenter shop.	do.	6	Stove anthracite.				12		6.50
Do.	Zoological Park.	Smithsonian Institution.	95	Furnace anthracite.				10		6.40
Do.	do.	do.	15	Stove anthracite.				12		6.95
Do.	do.	do.	15	Chestnut anthracite.				14		6.95
Do.	do.	do.	300	Run of mine.	Imperial.	Moshannon, Pa.		5	14,700	3.90
Do.	New National Museum.	do.	3,000	do.	New River.	Loup Creek, Fayette Co., W. Va.	Sewell.	5	14,750	3.25
Do.	Old National Museum.	do.	1,000	Furnace anthracite.				10		5.44
Do.	Smithsonian.	do.	4	Egg anthracite.				10		6.05
Do.	Bureau of Citizenship.	State.	35	Furnace anthracite.				10		5.75



## ANALYSES AND RESULTS FOR THE FISCAL YEAR 1908-9.

## AVERAGE QUALITY OF ANTHRACITE.

Not all of the anthracite coal purchased by the Government is paid for on the basis of ash values fixed by the Government; some of the contracts are made under specifications similar to those used for bituminous coal, which permit the bidder to establish the quality of the coal. In Washington, where the method of payment according to ash content as shown by analysis has been practiced, it is thought that the Government may at some time adopt exclusively the method that permits the bidder to establish the standards.

Table 7 shows the general average of moisture, heating value, volatile matter, and ash in the several sizes of anthracite coal delivered in Washington for the fiscal years 1907, 1908, and 1909.

TABLE 7.—General average of quality of anthracite delivered to the Government in Washington, fiscal years 1907-1909.

Size.	Moisture, 1906-7 <sup>a</sup> (per cent).	Volatile matter in dry coal, 1906-7 <sup>a</sup> (per cent).	B. t. u., 1906-7. <sup>a</sup>		Ash in dry coal (per cent).		
			As re- ceived.	Dry coal.	1906-7.	1907-8.	1908-9.
Furnace.....	4.08	2.42	12,861	13,408	10.44	10.00	10.73
Egg.....	4.16	3.10	12,961	13,523	10.57	10.83	11.55
Stove.....						12.05	13.20
Pea.....	4.81	3.02	11,886	12,487	16.04	16.23	15.62
No. 1 buckwheat.....	5.09	2.42	11,485	12,107	18.05	15.93	17.81
No. 2 buckwheat.....						17.13	
Rice.....							19.30

<sup>a</sup> Not determined in succeeding years.

## DETAILS OF ANALYSES.

Table 8 gives the analyses of coal delivered during the fiscal year 1908-9, showing the results of purchasing coal under specifications.

The name of the city, the place of delivery, the description of the coal furnished, the estimated year's supply, the contract price per ton, and the standards of quality guaranteed are fully set forth at the head of each subdivision of the table. In the statement of the standards of quality percentage of ash is understood to refer to dry coal and B. t. u. to coal as received. The kind of coal referred to is bituminous except as otherwise stated, and the ton used is that of 2,240 pounds. The average corrected price per ton is based on the average analysis.

To give a general idea of the quality of the coal delivered during the year, the average quality of the coal delivered each month or of the coal covered by a certain part of the contract is stated. From these results, with their respective weights, the yearly average was determined. Some wide departures from the standard of monthly

values will be noted, both as to penalty and as to bonus; but these departures so balance one another that the general average of results closely approximates that of the standards specified. This statement is true not only of monthly averages, but of averages covering longer periods.

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9.***BALTIMORE, MD., COURT-HOUSE AND POST-OFFICE.**

[Run of mine, B bed, Cambria County, Pa.; 2,250 tons at \$3.19; 6.5 per cent ash, 14,300 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	89.865	1.75	13.31	78.81	6.13	2.80	6.24	14,675	14,936	\$3.2737
August.....	139.297	1.70	20.28	69.79	8.23	2.04	8.37	14,189	14,435	3.1652
September.....	180.360	1.77	16.25	75.84	6.14	1.71	6.25	14,600	14,864	3.2569
October.....	145.842	1.49	21.48	70.95	6.08	1.90	6.18	14,579	14,800	3.2522
November.....	169.713	1.89	19.31	71.94	6.86	1.83	7.00	14,352	14,623	3.2016
December.....	255.497	1.42	18.03	73.98	6.57	1.50	6.66	14,517	14,727	3.2384
1909.										
January.....	115.491	2.78	18.90	72.38	5.94	1.85	6.11	14,480	14,894	3.2302
February.....	196.436	2.39	19.25	72.44	5.92	1.61	6.06	14,539	14,894	3.2433
March.....	279.681	1.87	19.41	71.07	7.65	2.96	7.80	14,216	14,487	3.1713
April.....	94.410	1.39	18.88	72.79	6.94	2.59	7.04	14,549	14,753	3.2455
June.....	98.379	2.86	19.48	71.21	6.45	2.21	6.64	14,133	14,549	3.1527
Total.....	1,764.971									
Average.....		1.89	18.73	72.69	6.69	2.06	6.82	14,430	14,708	3.2190

**BALTIMORE, MD., CUSTOM-HOUSE.**

[Run of mine, B bed, Cambria County, Pa.; 300 tons at \$3.19; 6.5 per cent ash, 14,300 B. t. u.]

1908.										
October.....	29.506	2.81	20.70	70.69	5.80	1.37	5.97	14,479	14,898	\$3.2299
November.....	15.051	2.57	14.92	74.82	7.69	1.56	7.89	13,999	14,368	2.9892
December.....	21.406	1.63	18.01	74.64	5.72	1.51	5.81	14,700	14,944	3.2792
1909.										
January.....	41.046	1.60	18.98	73.34	6.08	1.72	6.18	14,610	14,848	3.2592
February.....	45.781	3.20	18.93	71.41	6.46	1.85	6.67	14,245	14,716	3.1777
April.....	37.529	1.47	19.57	72.37	6.59	1.62	6.69	14,475	14,691	3.2290
Total.....	190.319									
Average.....		2.22	18.91	72.56	6.31	1.64	6.51	14,444	14,770	3.2221

**BALTIMORE, MD., CUSTOM-HOUSE.**

[Anthracite screenings, Mammoth vein, Mount Hope mine, Schuylkill region, Pa.; 500 tons at \$2.74; 18 per cent ash.]

1908.										
October.....	20.663	4.46	7.24	73.61	14.69	0.71	15.38	12,040	12,602	\$2.84
November.....	53.958	5.08	6.49	74.67	13.76	.93	14.50	12,155	12,806	2.86
December.....	45.575	7.09	6.51	73.24	13.16	.72	14.16	11,969	12,882	2.86
1909.										
January.....	78.932	7.15	6.95	71.68	14.22	.77	15.31	11,670	12,569	2.84
February.....	71.625	5.90	6.46	70.11	17.53	.72	18.63	11,290	11,998	2.74
March.....	57.755	2.77	6.13	70.33	20.77	.63	21.36	11,187	11,506	2.42
April.....	24.303	5.76	6.99	67.89	19.36	.69	20.54	10,642	11,292	2.53
Total.....	352.811									
Average.....		5.60	6.61	71.62	16.17	.75	17.13	11,581	12,268	2.74

<sup>a</sup> This corrected price per ton, wherever given in Table 8, is based on the average analysis.

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908—9—Cont'd.

**BOSTON, MASS., POST-OFFICE AND SUBTREASURY.**

[Anthracite screenings; 3,000 tons at \$2.80; 12 per cent ash, 12,650 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.	Ash in dry coal.	As received.	
1908.									
July.....	165.298	3.15	2.98	85.97	7.90	.052	8.16	13,327	\$2.9798
August.....	252.524	2.50	2.92	79.77	14.81	.73	15.19	12,388	2.7020
September.....	282.610	2.84	2.25	79.47	15.44	.47	15.89	12,109	2.6403
October.....	309.901	3.98	4.80	82.15	9.07	.49	9.45	12,840	2.8621
November.....	165.874	5.24	4.06	81.35	9.35	.59	9.87	12,689	2.8286
December.....	305.744	3.94	4.61	87.55	3.90	.56	4.06	13,848	3.1352
1909.									
January.....	319.587	2.24	4.59	82.52	10.65	.57	10.89	13,016	2.8910
February.....	239.244	2.67	5.44	79.76	12.13	1.21	12.46	12,610	2.7911
March.....	244.422	2.93	5.24	81.94	9.89	.66	10.19	12,862	2.8569
April.....	145.066	5.10	6.23	79.01	9.66	1.09	10.18	12,405	2.7558
May.....	252.007	3.79	5.99	80.77	9.45	.58	9.82	12,776	2.8479
June.....	164.312	4.28	6.25	78.98	10.49	.69	10.96	12,574	2.7932
Total.....	2,843.589								
Average.....		3.42	4.55	81.87	10.36	.66	10.62	12,827	2.8492

**BOSTON, MASS., POST-OFFICE AND SUBTREASURY.**

[Beech Creek run of mine, Pardee mine, Cambria County, Pa.; 1,500 tons at \$4.43; 7.12 per cent ash, 14,257 B. t. u.]

1908.										
July.....	63.200	2.78	21.47	68.31	7.44	1.21	7.64	13,954	14,353	\$4.3359
August.....	143.058	.90	21.95	70.76	6.39	1.47	6.45	14,534	14,666	4.5161
September.....	170.690	3.09	23.02	67.53	6.36	1.18	6.56	14,158	14,609	4.3992
October.....	141.762	2.46	16.47	72.41	8.66	1.06	8.88	13,841	14,190	4.3007
November.....	80.500	2.42	16.01	73.22	8.35	1.12	8.56	13,963	14,309	4.3386
December.....	186.035	3.30	16.65	71.72	8.33	1.01	8.62	13,844	14,316	4.3016
1909.										
January.....	157.187	.83	16.17	74.95	8.05	1.11	8.12	14,246	14,365	4.4266
February.....	122.594	.68	17.24	74.23	7.85	1.23	7.90	14,281	14,379	4.4375
March.....	70.218	.96	17.03	73.87	8.14	.97	8.22	14,157	14,294	4.3989
April.....	168.597	1.91	25.78	67.07	5.24	.90	5.34	14,377	14,657	4.4773
May.....	170.800	4.81	24.25	64.99	5.95	.90	6.25	13,790	14,487	4.2839
June.....	110.696	3.72	24.39	65.59	6.30	.96	6.54	13,816	14,350	4.2930
Total.....	1,585.337									
Average.....		2.42	20.31	70.13	7.14	1.10	7.32	14,087	14,436	4.3772

**BROOKLYN, N. Y., COURT-HOUSE AND POST-OFFICE.**

[No. 2 buckwheat anthracite, Pittston, Pa.; 3,500 tons at \$3.38; 18 per cent ash, 11,150 B. t. u.]

1908.										
July.....	497.877	6.09	5.21	70.44	18.26	0.57	19.44	11,077	11,795	\$3.3579
August.....	494.330	5.95	5.75	66.06	22.24	.64	23.65	10,548	11,215	3.0775
September.....	317.531	4.22	4.96	69.35	21.47	.79	22.42	11,145	11,636	3.3085
October.....	526.634	5.63	6.03	70.49	17.85	.56	18.92	11,218	11,888	3.4006
November.....	353.093	6.21	7.11	66.54	20.14	.73	21.47	10,940	11,664	3.2763
December.....	524.191	5.60	7.24	66.42	20.74	.67	21.97	10,967	11,617	3.2845
1909.										
January.....	607.982	6.02	8.50	66.20	19.28	.87	20.51	10,985	11,689	3.3100
February.....	169.935	7.64	6.52	67.60	18.24	.62	19.74	10,653	11,535	3.2293
March.....	744.696	5.64	7.43	69.30	17.63	.72	18.68	11,167	11,836	3.3852
April.....	86.379	7.82	9.76	64.63	17.79	.82	19.30	10,896	11,820	3.3030
May.....	560.971	5.77	8.61	66.50	19.12	.70	20.30	10,914	11,582	3.2885
June.....	238.123	3.89	14.90	63.00	18.21	.96	18.95	11,433	11,896	3.4658
Total.....	5,121.742									
Average.....		5.74	7.33	67.63	19.30	.71	20.47	11,010	11,680	3.3176



TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908–9—Cont'd.***BUFFALO, N. Y., POST-OFFICE.**

[Punxsutawney, Florence, and Eleanor mines, Reynoldsville, Jefferson County, Pa.; 1,250 tons at \$3; 6.5 per cent ash, 14,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
October.....	63.393	1.76	30.12	62.27	5.85	1.04	5.95	14,300	14,556	\$3.0643
November.....	94.196	1.75	29.77	61.75	6.75	1.45	6.85	14,187	14,440	3.0401
December.....	132.589	3.02	29.62	60.03	7.33	1.16	7.56	13,920	14,354	2.9829
1909.										
January.....	163.750	2.74	29.90	60.87	6.49	1.26	6.68	14,183	14,583	3.0392
February.....	137.634	5.03	29.12	59.22	6.63	1.28	6.98	13,586	14,301	2.9113
March.....	132.500	3.96	29.34	60.83	5.87	1.17	6.11	13,891	14,463	2.9766
April.....	91.116	1.66	30.98	62.42	4.94	1.07	5.02	14,510	14,755	3.1193
May.....	78.705	2.82	30.04	61.43	5.71	1.36	5.88	14,057	14,465	3.0122
Total.....	893.883									
Average.....		3.04	29.79	60.85	6.32	1.23	6.52	14,040	14,480	3.0086

**CHARLESTON, S. C., NAVY-YARD.**

[Run of mine, Piney mine, Raleigh County, W. Va.; 3,000 tons at \$4.03; 7 per cent ash, 14,500 B. t. u.]

1908.										
August.....	210	2.36	19.29	73.00	5.35	0.78	5.48	14,573	14,925	\$4.0603
September.....	210	2.11	17.52	75.33	5.04	.60	5.15	14,629	14,945	4.0759
November.....	218	2.81	15.20	75.37	6.62	.76	6.81	14,301	14,715	3.9747
1909.										
January.....	200	2.98	20.66	71.95	4.41	.74	4.54	14,726	15,177	4.1128
February.....	252	2.84	25.17	67.65	4.34	.70	4.46	14,659	15,086	4.0942
	110	1.07	22.44	71.88	4.61	.87	4.66	14,915	15,076	4.1653
	150	2.24	25.30	67.83	4.63	.73	4.74	14,655	14,990	4.0931
April.....	275	2.71	24.06	67.53	5.70	.80	5.86	14,268	14,666	3.9755
	166	3.32	15.39	74.48	6.81	.73	7.04	14,178	14,665	3.9405
	270	1.96	20.20	73.19	4.65	.72	4.75	14,656	14,950	4.0934
Total.....	2,061									
Average.....		2.50	20.58	71.70	5.22	.74	5.35	14,533	14,905	4.0492

**CHICAGO, ILL., APPRAISER'S STORES.**

[Pawnee Nos. 1 and 2 nut, washed; Pawnee mines, Vermillion County, Ill.; 500 tons at \$3.15; 10 per cent ash, 11,442 B. t. u.]

1908.										
July.....	33.080	6.35	32.31	49.06	12.28	2.42	13.11	11,757	12,553	\$3.1967
August.....	29.364	6.98	30.02	53.07	9.93	1.59	10.68	12,127	13,037	3.3386
September.....	33.973	5.82	32.54	49.82	11.82	1.94	12.55	12,005	12,747	3.2850
October.....	30.223	7.21	33.31	50.11	9.37	1.42	10.10	12,167	13,113	3.3496
November.....	45.692	7.03	33.30	48.26	11.41	2.27	12.27	11,905	12,805	3.2575
December.....	43.850	8.62	30.88	46.65	13.85	2.28	15.16	11,321	12,389	2.9967
1909.										
January.....	44.379	7.09	33.17	46.91	12.83	2.94	13.81	11,548	12,429	3.1392
February.....	43.571	7.52	31.62	48.63	12.23	2.03	13.22	11,630	12,576	3.1618
March.....	43.225	5.99	34.41	47.08	12.52	3.41	13.32	11,830	12,584	3.2168
April.....	22.511	6.16	34.85	48.20	10.79	1.32	11.50	11,961	12,746	3.2929
May.....	38.527	6.27	34.80	46.57	12.36	2.99	13.19	11,757	12,543	3.1967
June.....	43.136	7.02	33.86	47.76	11.36	2.11	12.22	11,713	12,597	3.2046
Total.....	451.531									
Average.....		6.90	32.92	48.30	11.88	2.31	12.77	11,780	12,652	3.2431

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## CHICAGO, ILL., COURT-HOUSE AND POST-OFFICE.

[Pawnee Nos. 1 and 2 nut, washed; Vermilion County, Ill.; 8,000 tons at \$3.15; 10 per cent ash, 11,442 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	207.183	8.89	32.03	50.41	8.67	1.77	9.52	11,908	13,071	\$3.2783
	168.554	7.44	31.06	53.10	8.40	1.45	9.08	12,248	13,233	3.3719
August.....	173.192	7.59	30.74	53.60	8.07	1.84	8.73	12,345	13,359	3.4086
	214.842	7.51	31.16	53.69	7.64	1.54	8.26	12,420	13,429	3.4292
September.....	216.719	9.58	32.80	49.98	7.64	1.25	8.46	12,100	13,383	3.3411
	154.589	7.98	33.97	50.13	7.92	1.72	8.61	12,241	13,302	3.3500
October.....	182.377	8.12	32.95	51.52	7.41	1.02	8.07	12,332	13,422	3.4050
	195.375	9.02	33.98	50.00	7.00	1.20	7.69	12,281	13,499	3.4010
November.....	238.877	9.32	34.00	48.78	7.90	1.84	8.71	12,066	13,306	3.3318
	253.493	8.37	34.19	48.57	8.87	2.71	9.68	11,996	13,092	3.3025
	362.027	9.52	34.54	48.11	7.83	1.41	8.66	12,015	13,279	3.3177
December.....	350.147	9.20	33.61	50.19	7.00	1.34	7.71	12,255	13,497	3.3938
1909.										
January.....	376.846	8.56	34.51	49.52	7.41	1.84	8.10	12,184	13,325	3.3643
	319.292	7.61	34.36	50.61	7.42	1.91	8.03	12,385	13,405	3.4196
February.....	350.571	7.36	33.97	49.47	9.20	2.15	9.93	12,084	13,044	3.3267
	329.951	6.77	34.08	51.31	7.84	1.77	8.41	12,440	13,344	3.4348
March.....	314.373	7.04	34.53	50.28	8.15	1.70	8.78	12,258	13,186	3.3846
	310.105	6.78	35.82	49.61	7.79	1.91	7.79	12,385	13,286	3.4196
April.....	257.281	7.05	35.59	47.27	10.09	2.27	10.85	12,011	12,921	3.3066
	228.828	7.26	39.24	45.60	7.90	2.01	8.52	12,321	13,285	3.4020
May.....	216.025	6.86	35.33	49.84	7.97	2.11	8.56	12,321	13,228	3.4020
	132.545	6.20	36.96	48.78	8.06	2.19	8.59	12,353	13,170	3.4108
June.....	79.989	6.62	36.55	47.08	9.75	2.95	10.44	11,950	12,797	3.2899
	152.767	7.75	34.79	48.10	9.36	1.63	10.15	11,889	12,888	3.2731
Total.....	5,785.948									
Average.....		7.93	34.23	49.78	8.06	1.79	8.76	12,215	13,267	3.3728

## CINCINNATI, OHIO, CUSTOM-HOUSE.

[New River, Sewell bed, Fayette County, W. Va.; 3,000 tons at \$2.93; 5 per cent ash, 14,800 B. t. u.]

1908.										
July.....	274.151	1.93	19.70	75.04	3.33	0.55	3.40	14,911	15,204	\$2.9606
August.....	131.25	1.95	18.59	76.09	3.37	.62	3.44	15,034	15,334	2.9863
September.....	156.428	1.65	17.46	76.87	4.02	1.02	4.09	14,922	15,178	2.9542
October.....	277.1428	1.63	18.48	74.80	5.09	.66	5.18	14,753	14,990	2.9207
November.....	254.375	2.17	19.93	73.98	3.92	.74	4.01	14,795	15,122	2.9290
December.....	284.4196	2.40	19.66	73.91	4.03	.68	4.14	14,824	15,188	2.9348
1909.										
January.....	297.589	3.44	22.06	71.52	2.98	.64	3.09	14,835	15,363	2.9469
February.....	235.268	2.61	20.84	73.01	3.54	.71	3.64	14,789	15,285	2.9378
March.....	236.071	1.72	21.97	73.11	3.20	.74	3.26	14,876	15,136	2.9550
May.....	244.473	2.19	20.35	72.92	4.54	.64	4.64	14,622	14,950	2.8948
Total.....	2,391.168									
Average.....		2.22	20.07	73.90	3.81	.69	3.91	14,823	15,160	2.9446

## DETROIT, MICH., COURT-HOUSE AND POST-OFFICE.

[Kanawha run of mine, Berlin and Oakley mines, Sharon and Smithers, W. Va.; 1,400 tons at \$3; 6.1 per cent ash, 14,000 B. t. u.]

1908.										
July.....	92.268	2.17	30.58	59.65	7.60	1.55	7.77	13,836	14,143	\$2.9649
August.....	55.246	4.29	30.01	55.91	9.79	2.10	10.23	12,800	13,374	2.6729
September.....	73.942	1.62	30.26	61.02	7.10	1.80	7.22	14,180	14,413	3.0386
October.....	120.741	1.80	32.91	57.24	8.05	1.85	8.20	13,793	14,045	2.9356
November.....	93.402	2.63	32.06	58.58	6.73	1.56	6.92	13,932	14,308	2.9854
December.....	197.924	3.59	32.38	56.54	7.49	1.81	7.77	13,936	14,455	2.9863
1909.										
January.....	183.384	3.29	32.44	57.36	6.91	1.63	7.14	13,780	14,249	2.9529
February.....	160.576	2.83	32.69	57.74	6.74	1.55	6.94	13,968	14,375	2.9931
March.....	181.504	3.02	32.58	57.73	6.67	1.80	6.88	13,876	14,308	2.9734
April.....	85.504	1.59	33.98	58.79	5.64	1.28	5.73	14,295	14,526	3.0632
May.....	133.728	3.29	32.36	57.14	7.21	1.35	7.45	13,703	14,169	2.9364
Total.....	1,378.219									
Average.....		2.84	32.24	57.76	7.16	1.66	7.37	13,858	14,263	2.9696

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## DETROIT, MICH., CUSTOM-HOUSE.

[Kanawha run of mine, Berlin and Oakley mines, Sharon and Smithers, W. Va.; 200 tons at \$3; 6.1 per cent ash, 14,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
October.....	23.375	1.80	32.91	57.24	8.05	1.85	8.20	13,793	14,045	\$2.9356
December.....	40.286	3.53	33.10	52.85	10.52	2.32	10.91	13,009	13,485	2.7176
1909.										
January.....	42.263	4.15	33.09	53.00	9.76	2.52	10.18	12,969	13,530	2.7091
February.....	20.563	2.18	31.79	58.95	7.08	1.76	7.24	13,915	14,225	2.9818
March.....	26.781	2.91	32.86	58.23	5.99	1.40	6.17	13,986	14,405	2.9970
April.....	8.344	3.01	31.86	56.78	8.35	1.21	8.61	13,488	13,907	2.8703
Total.....	161.612									
Average.....		3.14	32.82	55.37	8.67	2.36	8.96	13,422	13,857	2.856

## KANSAS CITY, MO., COURT-HOUSE AND POST-OFFICE.

[Over 1½" round-opening screen, Cherokee bed, Cherokee and Crawford counties, Kans.; 2,000 tons, at \$4.368; 11.81 per cent ash, 12,894 B. t. u.]

1908.										
July.....	121.236	3.89	32.64	54.73	8.74	3.93	9.09	13,215	13,750	\$4.4967
August.....	118.732	3.65	32.06	57.33	6.96	3.54	7.22	13,486	13,996	4.6085
September.....	136.969	2.93	38.22	48.57	10.28	4.26	10.58	13,247	13,648	4.4976
October.....	149.330	3.32	33.52	52.41	10.75	4.72	11.12	12,965	13,411	4.3921
November.....	141.388	3.24	32.23	49.51	15.02	7.11	15.52	12,132	12,538	4.0699
December.....	165.026	3.32	34.27	53.09	9.32	4.56	9.64	13,252	13,706	4.5093
1909.										
January.....	209.491	3.64	34.19	53.99	8.18	4.22	8.49	13,332	13,835	4.5464
February.....	189.765	3.99	33.48	53.26	9.27	4.24	9.65	13,126	13,671	4.4666
March.....	135.402	3.23	34.98	52.01	9.78	4.90	10.11	13,047	13,483	4.4198
April.....	155.678	2.82	33.27	51.81	12.10	4.77	12.46	12,755	13,125	4.3209
May.....	103.027	3.95	31.96	48.95	15.14	4.59	15.76	12,118	12,616	4.0651
June.....	145.357	4.02	33.12	52.50	10.36	4.39	10.79	12,852	13,346	4.3638
Total.....	1,771.401									
Average.....		3.50	33.73	52.43	10.34	4.60	10.71	12,989	13,460	4.4102

## LOUISVILLE, KY., COURT-HOUSE AND POST-OFFICE.

[Through 1½" bar screen, Camden mine, thin vein, Allegheny County, Pa.; 1,850 tons at \$2.65; 6 per cent ash, 14,000 B. t. u.]

1908.										
July.....	116.565	2.28	28.17	58.23	11.32	1.63	11.58	12,990	13,290	\$2.3388
August.....	108.950	3.05	27.82	55.72	13.41	1.94	13.83	12,602	12,999	2.1354
September.....	127.726	2.88	28.20	54.21	14.71	2.52	15.14	12,263	12,627	1.9712
October.....	120.128	2.89	31.16	53.92	12.03	1.33	12.38	12,867	13,250	2.2555
November.....	134.230	3.11	31.22	53.99	11.68	1.92	12.06	12,742	13,151	2.2319
December.....	157.805	4.09	32.98	53.90	9.03	1.28	9.41	13,111	13,670	2.4417
1909.										
January.....	138.321	4.63	32.13	53.64	9.60	.98	10.07	12,951	13,580	2.3814
February.....	128.134	4.67	30.57	53.57	11.19	1.22	11.74	12,831	13,458	2.3087
March.....	145.640	2.44	31.97	54.82	10.77	1.44	11.04	13,126	13,454	2.3646
April.....	113.955	3.08	30.87	53.97	12.08	1.23	12.46	12,771	13,177	2.2374
May.....	121.141	2.02	32.94	56.08	8.96	1.21	9.14	13,555	13,834	2.5258
June.....	103.549	1.78	32.32	56.30	9.60	1.58	9.78	13,348	13,589	2.4806
Total.....	1,516.144									
Average.....		3.13	30.95	54.79	11.13	1.51	11.49	12,930	13,348	2.3275

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***MILWAUKEE, WIS., COURT-HOUSE AND POST-OFFICE.**

[Youghiogheny screenings, Pennsylvania; 1,200 tons at \$3.50; 9.67 per cent ash, 13,466 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	380.000	3.78	29.15	57.82	9.25	1.46	9.60	13,095	13,610	\$3.4036
November.....	148.016	4.62	30.85	54.16	10.37	.81	10.87	12,802	13,423	3.3279
December.....	159.000	7.87	28.87	52.79	10.47	1.24	11.37	12,379	13,437	3.2175
1909.										
January.....	229.000	5.81	29.42	53.81	10.96	1.56	11.64	12,487	13,257	3.2455
March.....	225.874	3.90	31.89	53.97	10.24	1.59	10.66	13,097	13,628	3.4041
	3.906	6.38	19.10	69.56	4.96	.78	5.30	13,778	14,717	3.6211
Total.....	1,145.796									
Average.....		4.89	29.89	55.13	10.09	1.39	10.61	12,839	13,499	3.337

**MINNEAPOLIS, MINN., POST-OFFICE.**

[Empire lump, Empire mine, No. 5 bed, Peoria County Ill.; 600 tons at \$3.95; 14.78 per cent ash, 12,257 B. t. u.]

1908.										
August.....	61	13.89	32.95	39.56	13.60	2.55	15.79	10,500	12,194	\$3.3838
November.....	98	13.79	32.43	39.10	14.68	2.56	17.02	10,249	11,888	3.2829
December.....	135	12.93	31.63	38.37	17.07	2.42	19.59	10,001	11,486	3.1530
1909.										
January.....	120	13.09	33.52	35.90	17.49	3.31	20.10	9,948	11,448	3.0859
February.....	75	11.90	31.23	36.55	20.32	4.21	23.06	9,594	10,890	2.7418
March.....	116	10.52	35.87	43.59	10.02	2.20	11.20	11,525	12,881	3.7441
April.....	36	9.07	32.92	51.20	6.81	.75	7.49	12,165	13,378	3.9904
Total.....	641									
Average.....		12.41	33.02	39.56	15.01	2.70	17.14	10,426	11,903	3.3399

**MOBILE, ALA., LIGHT-HOUSE TENDER.**

[Belle Ellen run of mine, Belle Ellen mine, Belle Ellen, Bibb County, Ala.; 3,000 tons at \$3.25; 2.24 per cent ash, 14,780 B. t. u.]

1908.										
August.....		1.84	31.08	58.35	8.73	1.21	8.90	13,802	14,061	.....
November.....		1.81	34.07	58.78	5.34	.68	5.44	14,273	14,537	.....
1909.										
March.....		2.88	32.02	48.53	16.57	.71	17.06	11,880	12,232	.....
Average a.....		2.18	32.39	55.20	10.23	.87	10.46	13,318	13,615	.....

a Average irrespective of monthly amounts delivered.

**NEW ORLEANS, LA., CUSTOM-HOUSE.**

[Pratt lump, over 2" bar screen, Mineral Springs group, Jefferson County, Ala.; 1,300 tons at \$3.25; 6 per cent ash, 14,000 B. t. u.]

1908.										
July.....	101.714	1.41	29.96	60.77	7.86	1.75	7.98	14,029	14,230	\$3.2567
August.....	102.534	3.60	28.25	56.62	11.53	2.63	11.96	12,901	13,383	2.8749
September.....	113.071	1.12	28.03	61.23	9.62	2.00	9.71	13,899	14,056	3.1866
October.....	122.652	1.21	30.37	58.55	9.87	1.95	9.98	13,772	13,948	3.1571
November.....	104.397	1.24	30.19	59.15	9.42	2.21	9.54	13,832	14,006	3.1710
December.....	104.788	1.07	30.83	59.65	8.45	2.30	8.55	14,101	14,253	3.2534
1909.										
January.....	126.795	1.11	31.43	59.61	7.85	2.10	7.94	14,193	14,353	3.2948
February.....	113.228	1.25	30.88	58.80	9.07	1.68	9.19	13,957	14,127	3.2000
March.....	125.344	1.05	30.99	58.07	9.89	2.23	9.99	13,725	13,871	3.1462
April.....	101.372	1.04	31.91	58.00	9.05	2.10	9.15	13,952	14,098	3.1989
May.....	119.634	1.18	31.70	57.88	9.24	2.08	9.34	13,851	14,016	3.1754
June.....	101.335	.83	31.92	58.32	8.93	2.27	9.01	13,880	13,996	3.1821
Total.....	1,336.864									
Average.....		1.33	30.55	58.88	9.24	2.10	9.36	13,844	14,030	3.1738

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.*

## NEW ORLEANS, LA., MINT BUILDING.

[Pratt lump, over 2" bar screen, Mineral Springs group, Jefferson County, Ala.; 800 tons at \$3.40; 6 per cent ash, 14,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Mols-ture.	Vola-tile matter.	Fixed carbon.	Ash.	Sul-phur.		As re-ceived.	Dry coal.	
1908.										
August.....	96.621	3.00	29.79	59.17	8.04	1.60	8.29	13,466	13,882	\$3,2503
September.....	74.087	1.46	26.08	57.01	15.45	1.90	15.68	12,834	13,024	2.7668
October.....	97.313	1.11	31.46	60.24	7.19	1.73	7.27	14,398	14,560	3.4967
November.....	67.817	1.44	31.66	59.68	7.22	1.95	7.33	14,178	14,384	3.4432
December.....	71.271	1.30	31.49	59.61	7.60	2.22	7.70	14,252	14,440	3.4612
1909.										
January.....	85.339	1.51	31.51	59.40	7.58	2.01	7.70	13,901	14,114	3.3760
February.....	76.321	1.55	31.41	58.77	8.27	1.93	8.40	13,990	14,210	3.3776
March.....	100.533	1.31	31.74	58.95	8.00	1.97	8.11	13,988	14,174	3.3771
April.....	75.837	1.34	32.41	58.26	7.99	1.92	8.11	14,058	14,240	3.3941
May.....	61.134	1.24	31.43	58.49	8.84	2.14	8.95	13,770	13,943	3.3241
June.....	2.118	1.28	21.68	68.02	9.02	1.96	9.14	13,922	14,103	3.3411
Total.....	808.391									
Average.....		1.55	30.90	59.01	8.54	1.92	8.67	13,886	14,105	3.3509

## NEWPORT NEWS, VA., PANAMA RAILROAD COMPANY.

[New River run of mine, 140,000 tons at \$2.65 to \$2.80; a 14,600 B. t. u.]

1908.										
Apr. 22.....	b 680	2.46					5.40	14,602	14,970	\$2.65
Apr. 29-May 2.....	b 4,544	2.46					5.00	14,611	14,979	2.65
June 5-8.....	b 4,562	3.21					5.04	14,439	14,918	2.64
June 13.....	b 698	3.18					4.81	14,461	14,936	2.64
June 19-22.....	b 5,585	2.66					4.96	14,536	14,934	2.65
July 2.....	b 1,068	3.04					5.18	14,488	14,943	2.64
July 3-6.....	c 4,591	2.41					5.29	14,482	14,840	2.64
July 9-11.....	b 5,090	2.97					4.35	14,440	14,882	2.64
July 17.....	b 1,147	2.11					4.39	14,429	14,740	2.64
July 21-22.....	b 4,993	2.68					5.06	14,545	14,946	2.65
Aug. 6 and 7.....	b 5,100	1.99					5.23	14,401	14,694	2.64
Aug. 11.....	c 715	2.30					4.51	14,629	14,973	2.65
Aug. 18-20.....	c 4,755	2.72					4.89	14,658	15,069	2.65
Sept. 10.....	c 764	3.15					3.99	14,687	15,165	2.80
Sept. 14 and 15.....	b 4,989	2.99					4.79	14,628	15,079	2.80
	b 4,739	2.31					5.16	14,660	15,006	2.80
Oct. 29-30.....	c 4,738	3.37					5.53	14,390	14,892	2.78
Nov. 2 and 3.....	b 4,933	2.96					4.46	14,613	15,058	2.80
Nov. 6-7.....	b 5,556	2.44					4.54	14,655	15,022	2.80
Nov. 23-24.....	c 4,573	2.92					5.28	14,578	15,016	2.80
Dec. 17-18.....	b 4,685	2.62					4.56	14,626	15,019	2.80
Dec. 31.....	b 4,322	3.17					4.98	14,516	14,991	2.80
1909.										
Jan. 5-6.....	b 4,938	2.68					4.70	14,693	15,098	2.80
Jan. 9-11.....	c 2,432	2.81					4.83	14,586	15,008	2.80
Feb. 4-5.....	b 4,791	2.13					4.63	14,706	15,206	2.80
Feb. 24-25.....	b 4,989	3.22					4.61	14,527	15,010	2.80
Feb. 28.....	c 5,517	3.54					4.60	14,563	15,097	2.80
Mar. 21-22.....	b 5,600	2.77					4.91	14,606	15,022	2.80
Mar. 31.....	c 4,777	2.73					4.13	14,703	15,115	2.80
Total.....	115,871									
Average.....		2.77					4.84	14,570	14,985	

a Price f. o. b. steamers: April 1 to August 31, 1908, \$2.65; September 1, 1908, to March 31, 1909, \$2.80. Contract provides for a deduction of 1 cent per ton for each 100 B. t. u. below the standard.

b Delivered by contractor A.

c Delivered by contractor B.

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## NEW YORK, N. Y., APPRAISER'S WAREHOUSE.

[Run of mine, Pine Hill and Elk Lick mines, Somerset County, Pa.; 2,500 tons at \$3.28; 8 per cent ash, 14,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	214.839	1.79	19.99	71.55	6.67	1.10	6.79	14,395	14,657	\$3.3825
August.....	248.616	1.80	10.33	81.05	6.82	1.40	6.95	14,441	14,705	3.3933
September.....	133.317	2.11	17.98	72.94	6.97	1.20	7.12	14,398	14,708	3.3732
October.....	213.538	1.58	21.17	70.90	6.35	1.14	6.45	14,618	14,853	3.4348
November.....	252.095	2.53	20.89	70.10	6.48	1.22	6.65	14,260	14,630	3.3509
December.....	230.208	2.82	21.41	68.94	6.83	1.21	7.03	14,222	14,635	3.3320
1909.										
January.....	154.085	3.68	20.85	69.25	6.22	1.42	6.46	14,195	14,737	3.3357
February.....	344.801	2.27	21.09	69.83	6.81	1.42	6.97	14,223	14,553	3.3422
March.....	253.808	1.86	21.23	70.36	6.51	1.28	6.63	14,355	14,627	3.3732
April.....	258.221	2.99	21.59	68.62	6.80	1.39	7.01	14,045	14,478	3.2905
June.....	255.185	3.89	21.14	69.47	5.50	1.24	5.72	14,095	14,666	3.3223
Total.....	2,559.313									
Average.....		2.47	19.86	71.13	6.54	1.28	6.71	14,284	14,646	3.3505

## NEW YORK, N. Y., APPRAISER'S WAREHOUSE.

[Anthracite screenings, Pennsylvania; 2,500 tons at \$2.70; 18 per cent ash, 12,000 B. t. u.]

1908.										
July.....	150.201	4.22	4.79	77.15	13.84	0.82	14.45	12,266	12,806	\$2.7899
August.....	125.962	5.18	4.65	74.97	15.20	.99	16.03	11,947	12,600	2.6981
September.....	335.446	4.78	4.58	76.88	13.76	.74	14.45	12,239	12,853	2.7838
October.....	62.458	5.82	6.46	73.92	13.80	.88	14.65	11,976	12,716	2.7246
November.....	263.607	4.84	6.70	71.82	16.64	.68	17.49	11,446	12,028	2.5754
December.....	152.614	5.62	6.42	74.34	13.62	.87	14.43	12,065	12,783	2.7446
1909.										
January.....	131.929	4.96	5.70	76.49	12.85	1.05	13.52	12,300	12,942	2.8075
February.....	104.663	3.91	5.41	79.21	11.47	1.04	11.94	12,709	13,226	2.9195
March.....	290.518	4.20	6.47	74.39	14.94	.85	15.59	12,056	12,585	2.7326
April.....	175.661	2.86	7.64	74.01	15.49	1.11	15.95	12,138	12,495	2.7511
May.....	112.047	5.48	7.71	75.76	11.25	.93	11.90	12,388	13,106	2.8473
June.....	179.317	5.00	7.57	74.94	12.49	.91	13.15	12,258	12,903	2.7981
Total.....	2,084.423									
Average.....		4.65	6.12	75.13	14.10	.87	14.79	12,105	12,695	2.7536

## NEW YORK, N. Y., BARGE OFFICE.

[Pea anthracite, Mid Valley, Pennsylvania; 500 tons at \$4.46; 14.89 per cent ash, 12,181 B. t. u.]

1908.										
November.....	64.933	3.88	5.12	77.73	13.27	0.91	13.81	12,491	12,995	\$4.5835
December.....	112.779	4.63	6.04	72.91	16.42	.82	17.22	11,662	12,228	4.25
1909.										
February.....	106.605	2.89	9.75	72.53	14.83	1.00	15.28	12,553	12,926	4.5962
March.....	101.518	4.34	7.83	70.02	17.81	.94	18.61	11,435	11,954	4.1469
Total.....	385.835									
Average.....		3.95	7.38	72.85	15.82	.92	16.48	11,989	12,479	4.3897

TABLE 8.—*Analysis of coals delivered to the Government under contracts, 1908—9—Cont'd.***NEW YORK, N. Y., COURT-HOUSE AND POST-OFFICE.**

[Run of mine, Pine Hill and Elk Lick mines, Somerset County, Pa.; 11,000 tons at \$3.43; 8 per cent ash, 14,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	404.893	2.74	18.00	73.01	6.25	1.05	6.42	14,269	14,672	\$3.5059
	325.638	2.14	18.74	73.45	5.67	1.12	5.79	14,492	14,809	3.5705
	371.585	2.29	15.40	76.47	5.84	1.21	5.97	14,415	14,753	3.5517
August.....	525.857	1.36	20.79	72.12	5.73	1.19	5.81	14,647	14,849	3.6085
	540.362	1.36	19.21	73.58	5.85	1.28	5.94	14,672	14,873	3.6146
September.....	293.491	2.59	19.65	72.00	5.76	1.12	5.91	14,483	14,868	3.5683
	252.191	2.49	19.50	72.09	5.92	1.08	6.07	14,486	14,857	3.5591
October.....	655.705	2.45	22.13	69.66	5.76	1.19	5.91	14,431	14,793	3.5556
	470.348	2.27	21.33	70.62	5.78	1.16	5.91	14,472	14,807	3.5656
November.....	325.843	1.20	21.59	71.49	5.72	1.09	5.79	14,574	14,758	3.5906
	169.638	2.75	20.93	69.85	6.47	1.35	6.65	14,218	14,620	3.4934
December.....	798.174	3.30	21.79	69.02	5.89	1.16	6.08	14,208	14,695	3.4910
1909.										
January.....	327.866	1.01	21.71	71.71	5.57	1.41	5.62	14,697	14,847	3.6208
	267.321	3.08	21.45	69.54	5.93	1.20	6.12	14,322	14,778	3.5189
	664.152	2.99	21.55	69.56	5.90	1.25	6.08	14,319	14,760	3.5182
February.....	466	2.56	21.85	69.75	5.84	1.29	6.00	14,428	14,807	3.5549
	488.013	4.07	21.26	68.89	5.78	1.11	6.03	14,158	14,758	3.4787
March.....	797.772	2.71	21.04	70.38	5.87	1.15	6.04	14,333	14,732	3.5216
April.....	479.152	2.27	21.20	71.06	5.47	1.09	5.60	14,497	14,832	3.5718
	334.759	2.92	21.73	69.59	5.76	1.36	5.94	14,214	14,642	3.5024
May.....	220.960	1.44	22.23	70.98	5.35	1.01	5.43	14,538	14,751	3.5818
	665.098	2.30	22.11	69.75	5.84	1.16	5.97	14,316	14,652	3.5274
June.....	310.161	2.20	22.33	69.29	6.18	1.39	6.32	14,180	14,485	3.4841
Total.....	10,154.979									
Average..		2.43	20.89	70.85	5.83	1.19	5.97	14,399	14,758	3.5478

**NEW YORK, N. Y., CUSTOM-HOUSE.**

[No. 2 buckwheat, Pittston anthracite, Pittston, Pa.; 4,000 tons at \$3.10; 18 per cent ash, 11,150 B. t. u.]

1908.										
September.....	151.652	4.24	5.74	71.86	18.16	0.89	18.96	11,842	12,366	\$3.2924
November.....	264.399	6.70	7.36	67.28	18.66	.66	20.00	11,000	11,889	3.0583
December.....	324.321	8.27	3.70	72.38	15.65	.67	17.05	11,190	12,200	3.1111
1909.										
January.....	486.779	6.82	6.48	67.08	19.62	1.05	21.05	10,743	11,529	2.9468
February.....	291.967	6.58	7.21	66.47	19.74	.73	21.13	10,816	11,577	2.9671
March.....	276.234	6.78	7.96	66.77	18.49	.67	19.84	10,872	11,663	3.0227
April.....	249.335	5.55	6.63	66.63	21.19	.96	22.43	10,843	11,480	2.9446
Total.....	2,044.687									
Average..		6.65	6.42	68.13	18.80	.82	20.14	10,969	11,750	3.0294

**NORFOLK, VA., NAVY-YARD.**

[Run of mine, Oregon, Cephus, and Welch mines, W. Va.; 12,000 tons at \$2.99; 5.5 per cent ash, 1 per cent sulphur, 14,500 B. t. u.]

1908.										
July.....	316.910	2.30	14.10	73.52	10.08	0.65	10.32	13,620	13,940	\$2.7385
	515.800	1.45	14.14	74.43	9.98	.50	10.12	13,941	14,147	2.8047
	231.857	1.85	14.10	73.20	10.85	.43	11.06	13,667	13,925	2.7482
August.....	442.120	2.78	19.96	68.26	9.00	.89	9.26	13,644	14,034	2.7735
	449.62	2.65	16.20	73.18	7.97	.60	8.19	14,034	14,416	2.8739
	421.188	2.61	16.29	72.65	8.45	.68	8.68	14,063	14,440	2.8599
September.....	344.263	2.75	18.29	70.22	8.74	.68	8.99	13,893	14,285	2.8248
	417.834	2.38	13.82	75.12	8.68	.74	8.89	14,147	14,491	2.8772
	572.545	2.03	14.73	74.29	8.95	.76	9.14	14,064	14,355	2.8601
	418.303	2.10	16.68	73.46	7.76	.69	7.92	14,209	14,513	2.9100
October.....	371.406	2.38	17.12	72.51	7.99	.89	8.19	14,178	14,523	2.9036
	286.004	1.95	17.09	73.07	7.89	.71	8.05	14,176	14,458	2.9032
November.....	442.008	2.03	16.87	75.13	5.97	.90	6.09	14,447	14,746	2.9791
	433.683	1.59	17.46	75.20	5.75	.61	5.84	14,542	14,779	2.9987
	433.879	1.41	17.22	75.50	5.87	.57	5.96	14,635	14,840	3.0178
December.....	250.313	2.22	17.17	74.61	6.00	.80	6.14	14,538	14,807	2.9978
	206.949	1.45	15.41	76.26	6.88	.56	6.97	14,482	14,696	2.9863

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## NORFOLK, VA., NAVY-YARD—Continued.

[Run of mine, Oregon, Cephus, and Welch mines, W. Va.; 12,000 tons at \$2.99; 5.5 per cent ash, 1 per cent sulphur, 14,500 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1909.										
January.....	444.420	2.05	16.82	74.96	6.17	1.00	6.30	14,601	14,906	\$3.0108
	444.107	1.75	17.08	75.81	5.36	.63	5.45	14,760	15,023	3.0436
	444.196	2.16	17.17	75.58	5.09	.73	5.20	14,686	15,011	3.0284
	444.487	2.12	17.27	75.15	5.46	.75	5.58	14,628	14,944	3.0164
February.....	442.947	1.80	17.45	75.26	5.49	.66	5.59	14,673	14,943	3.0257
	442.969	1.48	17.38	75.86	5.28	.61	5.35	14,796	15,017	3.0510
	441.339	1.50	17.83	75.14	5.53	.63	5.62	14,754	14,978	3.0424
	442.7	2.06	17.40	75.22	5.32	.66	5.43	14,688	14,997	3.0288
March.....	441.763	1.66	17.34	76.34	4.66	.70	4.74	14,851	15,101	3.0624
	442.388	2.03	17.13	74.97	5.87	.73	5.99	14,530	14,831	2.9962
	220.268	2.19	17.37	75.02	5.42	.63	5.54	14,586	14,912	3.0077
April.....	403.795	3.01	17.38	72.09	7.52	.71	7.75	14,140	14,577	2.8958
	427.969	2.60	16.92	72.81	7.67	.69	7.87	14,146	14,524	2.8970
	438.326	2.91	17.76	73.85	5.48	.77	5.64	14,466	14,899	2.9830
May.....	433.884	1.58	13.94	77.04	7.44	.66	7.56	14,350	14,580	2.9391
	469.598	1.69	18.09	73.46	6.76	.57	6.87	14,338	14,583	2.9566
	509.754	2.02	18.34	72.87	6.77	.67	6.91	14,327	14,622	2.9543
June.....	454.911	2.66	17.41	74.12	5.81	.63	5.98	14,375	14,767	2.9642
	443.103	1.31	18.32	72.51	7.86	.62	7.97	14,237	14,426	2.9158
Total.....	15,087.606									
Average.....		2.07	16.84	74.14	6.95	.68	7.10	14,350	14,653	2.9591

## NORFOLK, VA., PANAMA RAILROAD COMPANY.

[Pocahontas run of mine; 260,000 tons at \$2.65 and \$2.80; a 14,600 B. t. u.]

1908.										
Apr. 24-25.....	5,090	1.65					6.05	14,668	14,914	\$2.65
May 2-4.....	5,720	2.37					6.13	14,553	14,906	2.65
May 12.....	5,137	2.31					4.78	14,738	15,087	2.65
May 20-22.....	5,049.5	2.31					5.27	14,660	15,007	2.65
June 10-11.....	5,724	2.18					4.61	14,778	15,107	2.65
June 26-27.....	4,988	3.45					5.16	14,441	14,957	2.64
	5,048.5	2.73					4.81	14,640	15,051	2.65
July 16-17.....	5,731	2.08					5.10	14,687	14,999	2.65
July 22-23.....	4,842	2.22					5.49	14,594	14,925	2.65
July 25.....	5,473.5	2.87					5.71	14,499	14,927	2.64
Aug. 17-18.....	4,611	2.80					5.59	14,593	15,013	2.65
Aug. 21-24.....	5,590	3.50					6.19	14,400	14,922	2.63
Aug. 24-26.....	5,053	5.81					4.76	14,274	15,154	2.62
Sept. 5-7.....	5,468.5	2.70					5.94	14,581	14,985	2.80
Sept. 9-10.....	4,626	3.19					5.33	14,543	15,022	2.80
Oct. 1-2.....	5,040	2.42					6.27	14,517	14,877	2.80
Oct. 3-7.....	5,600	2.25					6.52	14,572	14,907	2.80
Oct. 22-24.....	5,009.5	1.79					5.89	14,607	14,873	2.80
Nov. 11-12.....	2,879	2.41					5.71	14,586	14,946	2.80
Nov. 27-28.....	5,098	1.93					5.65	14,615	14,903	2.80
Dec. 2-4.....	4,819	1.98					6.50	14,488	14,781	2.79
Dec. 7-9.....	5,613	2.53					6.21	14,403	14,777	2.79
Dec. 14-15.....	5,504.5	2.71					5.76	14,594	15,000	2.80
Dec. 28-29.....	4,763.5	1.77					7.84	14,335	14,593	2.78
1909.										
Jan. 11-12.....	5,515	2.19					7.10	14,397	14,719	2.78
Jan. 20-21.....	5,027	2.53					7.20	14,323	14,695	2.78
Jan. 25-26.....	5,521	2.38					6.66	14,454	14,806	2.79
Jan. 30.....	5,298.5	1.83					6.42	14,527	14,798	2.80
Feb. 9-10.....	3,289.5	2.62					5.54	14,618	15,011	2.80
Feb. 13-15.....	5,621	2.29					6.22	14,509	14,849	2.80
Feb. 18-19.....	4,710	2.13					5.87	14,645	14,964	2.80
Mar. 3-4.....	4,151	2.80					5.96	14,472	14,889	2.79
Mar. 5-6.....	5,005	2.31					6.06	14,544	14,888	2.80
Mar. 13.....	4,774	2.96					6.13	14,303	14,739	2.78
Mar. 17-18.....	4,666	2.52					6.68	14,363	14,734	2.78
Mar. 26-27.....	5,437	2.16					7.22	14,331	14,647	2.78
Total.....	181,493.5									
Average.....		2.51					5.97	14,524	14,898	

a Price f. o. b. steamers: April 1 to August 31, 1908, \$2.65; September 1, 1908, to March 31, 1909, \$2.80.



TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

**OMAHA, NEBR., COURT-HOUSE AND POST-OFFICE.**

[Cherokee run of mine, Englevale, Kans.; 1,700 tons at \$4.41; 11 per cent ash, 12,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	45.826	5.14	21.58	49.75	23.53	3.42	24.78	10,459	11,026	\$3.4937
August.....	26.304	3.41	29.52	51.62	15.45	5.17	16.00	12,119	12,547	4.3837
September.....	43.116	3.82	27.40	46.35	22.43	7.58	23.32	10,757	11,184	3.6032
October.....	121.674	4.29	30.91	48.03	16.77	5.88	17.53	11,399	11,909	4.0091
November.....	217.759	4.02	30.25	48.07	17.66	4.88	18.42	11,732	12,223	4.0615
December.....	260.290	4.23	30.23	48.89	16.65	7.15	17.39	11,824	12,346	4.1653
1909.										
January.....	293.674	4.41	30.87	47.43	17.29	5.88	18.09	11,653	12,190	4.0325
February.....	175.031	4.14	30.73	48.60	16.53	5.71	17.24	11,816	12,325	4.1624
March.....	167.268	5.97	32.39	50.66	10.98	3.53	11.68	12,313	13,095	4.5250
April.....	154.216	5.96	32.01	46.33	15.70	4.58	16.69	11,491	12,216	4.1029
May.....	99.643	6.87	32.03	44.69	16.41	3.37	17.63	11,221	12,049	3.9437
Total.....	1,604.801									
Average.....		4.74	30.63	48.09	16.54	5.37	17.35	11,666	12,246	4.1073

**PHILADELPHIA, PA., APPRAISER'S STORES.**

[Deringer pea anthracite, Deringer mines, Pa.; 350 tons at \$3.89; 14.95 per cent ash.]

1908.										
October.....	30	4.95	4.43	78.21	12.41	0.58	13.06	12,337	12,979	\$4.0150
November.....	42	5.28	3.92	76.22	14.58	.40	15.39	11,897	12,560	3.89
December.....	69	4.91	5.73	73.91	15.45	.60	16.25	11,785	12,395	3.89
1909.										
January.....	63	5.23	5.35	72.69	16.73	.85	17.65	11,578	12,217	3.815
February.....	45	5.31	3.82	74.82	16.05	.62	16.95	11,611	12,262	3.89
March.....	45	5.42	5.02	75.02	14.54	.64	15.37	11,859	12,539	3.89
April.....	51	4.75	5.77	75.69	13.79	.52	14.47	12,023	12,623	3.965
Total.....	345									
Average.....		5.11	4.99	74.87	15.03	.62	15.84	11,831	12,468	3.89

**PHILADELPHIA, PA., COURT-HOUSE AND POST-OFFICE.**

[Mount Hope pink-ash barley anthracite, Mount Hope mine, St. Clair, Schuylkill County, Pa.; 2,860 tons at \$2.35; 14 per cent ash, 11,000 B. t. u.]

1908.										
August.....	134.054	7.12	6.22	67.06	19.60	0.58	21.10	10,449	11,249	\$1.9823
September.....	241.875	6.47	2.72	72.51	18.30	.55	19.57	11,197	11,972	2.2721
October.....	233.795	6.21	5.41	70.44	17.94	.63	19.12	11,214	11,956	2.2757
November.....	289.125	7.00	4.42	71.30	17.28	.70	18.58	10,994	11,822	2.2787
December.....	393.973	5.89	6.03	70.37	17.71	.88	18.82	11,234	11,937	2.3300
1909.										
January.....	362.866	6.21	5.17	71.81	16.81	.77	17.92	11,424	12,180	2.4006
February.....	307.339	7.24	3.91	69.95	18.90	.40	20.37	10,558	11,382	2.0756
March.....	371.435	6.13	5.10	71.88	16.89	.79	17.97	11,259	11,994	2.3653
April.....	271.607	7.33	6.64	70.42	15.61	.70	16.85	11,241	12,112	2.3815
May.....	208.857	6.30	6.71	69.69	17.30	.67	18.46	11,153	11,903	2.3127
June.....	213.406	6.80	6.20	71.45	15.55	.72	16.68	11,341	12,168	2.4029
Total.....	3,028.332									
Average.....		6.55	5.26	70.83	17.36	.69	18.58	11,132	11,912	2.3082

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***PHILADELPHIA, PA., COURT-HOUSE AND POST-OFFICE.**[Acme run of mine, Acme Slope mine, Hawk Run, Clearfield County, Pa.; 350 tons at \$3.30 and \$3.35; <sup>a</sup> 7.8 per cent ash, 14,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	48.491	3.82	18.42	70.70	7.06	2.13	7.34	14,021	14,578	\$3.3550
September.....	50.688	2.19	17.64	72.61	7.56	2.07	7.72	14,277	14,597	3.4163
October.....	41,625	1.63	20.81	70.04	7.52	2.10	7.64	14,266	14,502	3.4137
November.....	65.478	1.84	20.86	70.00	7.30	2.02	7.44	14,314	14,582	3.4251
December.....	24.018	2.69	21.17	68.81	7.33	2.04	7.53	14,105	14,495	3.3751
1909.										
January.....	80,504	2.17	21.23	69.14	7.46	1.92	7.63	14,186	14,501	3.3945
February.....	48.701	2.30	21.23	68.47	8.00	2.13	8.19	14,074	14,366	3.3677
March.....	31.078	2.60	21.35	68.27	7.78	2.08	7.99	13,998	14,372	3.3495
April.....	32.920	2.22	21.40	67.81	8.57	2.59	8.76	13,931	14,247	3.2837
May.....	30.384	2.21	21.51	67.68	8.60	2.41	8.79	13,935	14,250	3.2847
June.....	29.152	2.33	21.22	68.94	7.51	2.11	7.69	14,086	14,422	3.3203
Total.....	483.039									
Average.....		2.33	20.52	69.52	7.63	2.11	7.81	14,140	14,477	

<sup>a</sup> Price per ton: April 1 to June 30, 1908, \$3.30; July 1, 1908, to March 31, 1909, \$3.35.**PHILADELPHIA, PA., FRANKFORD ARSENAL.**

[Buckwheat anthracite, 1,000 tons at \$2.65; 17 per cent ash.]

1908.										
July.....	140						19.13			\$2.51
August.....	420						19.66			2.44
September.....	455						17.91			2.65
October.....	35						23.21			
November.....	35						15.82			2.69
Total.....	<sup>a</sup> 1,085									
Average.....							18.85			2.57

<sup>a</sup> Deliveries amounted to 31 cars, estimated at 35 tons each.**PHILADELPHIA, PA., FRANKFORD ARSENAL.**

[Run-of-mine, Clearfield County, Pa., 5,000 tons at \$2.79; 5 per cent ash, 14,000 B. t. u.]

1908.										
July.....	350	2.20					5.25	14,641	14,970	\$2.9177
August.....	70	3.38					5.56	14,461	14,967	2.8819
September.....	280	2.31					5.61	14,674	15,021	2.9243
October.....	350	2.63					5.45	14,649	15,044	2.9193
November.....	455	2.66					5.60	14,550	14,947	2.8996
December.....	875	2.71					5.49	14,524	14,930	2.8944
1909.										
January.....	840	2.87					5.35	14,555	14,985	2.9006
February.....	490	3.32					5.25	14,506	15,004	2.8908
March.....	350	2.84					5.15	14,601	15,028	2.9098
April.....	420	2.73					5.40	14,511	14,918	2.8918
May.....	175	3.70					7.58	14,012	14,550	2.7724
Total.....	<sup>a</sup> 4,655									
Average.....		2.79					5.48	14,542	14,959	2.8980

<sup>a</sup> Deliveries amounted to 133 cars, estimated at 35 tons each.

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## PHILADELPHIA, PA., LEAGUE ISLAND NAVY-YARD.

[Run of mine, Lower Kittanning bed, Blaine mine No. 1, Dill, W. Va., 16,000 tons at \$2.92; 7 per cent ash (8 per cent, including sulphur), 14,250 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....		1.29	13.54	77.38	7.79	1.62	7.89	14,210	14,396	\$2.9118
		1.51	14.00	76.28	8.21	1.65	8.34	13,359	14,579	2.9423
August.....		2.27	12.50	75.02	10.21	1.51	10.45	13,718	14,037	2.7710
		5.48	15.06	71.87	7.59	1.40	8.03	13,750	14,547	2.8175
September.....		2.28	14.53	73.48	9.71	1.89	9.94	13,942	14,267	2.8369
		6.56	12.56	73.36	7.52	1.74	8.05	13,560	14,512	2.7786
October.....		2.79	15.49	73.36	8.36	1.49	8.60	14,054	14,457	2.8798
		2.34	15.26	73.29	9.11	1.46	9.33	14,002	14,338	2.8492
		2.13	15.58	74.25	8.04	1.74	8.22	14,174	14,482	2.9044
		3.34	15.70	72.98	7.98	1.65	8.26	13,886	14,366	2.8454
November.....		2.15	14.47	72.47	10.91	1.63	11.14	13,649	13,949	2.7268
		2.90	16.38	72.51	8.21	1.68	8.46	13,973	14,390	2.8632
		1.87	16.25	73.20	8.68	1.97	8.84	13,994	14,258	2.8675
December.....		2.80	16.00	71.75	9.45	2.00	9.72	13,676	14,070	2.7824
		4.75	13.93	71.63	9.69	1.74	10.18	13,399	14,067	2.7056
		3.89	14.85	71.53	9.73	1.61	10.12	13,474	14,019	2.7210
		3.40	15.22	72.72	8.66	1.87	8.96	13,755	14,239	2.8186
1909.										
January.....		2.93	15.58	72.15	9.34	1.83	9.62	13,771	14,187	2.8018
		3.56	15.24	72.47	8.73	1.69	9.05	13,835	14,346	2.8150
		4.12	15.86	71.50	8.52	1.97	8.89	13,640	14,226	2.7950
		2.40	15.70	70.68	11.22	2.20	11.49	13,488	13,820	2.6939
		3.16	15.52	72.72	8.60	1.75	8.88	13,760	14,209	2.8196
February.....		2.98	15.88	69.72	11.42	2.24	11.78	13,393	13,804	2.6744
		3.51	16.00	70.95	9.54	1.77	9.89	13,704	14,202	2.7881
		5.01	14.72	71.05	9.22	1.66	9.71	13,499	14,211	2.7461
March.....		3.96	16.22	70.20	9.62	1.80	10.02	13,467	14,022	2.7196
		2.84	15.32	72.81	9.03	1.43	9.29	13,773	14,176	2.8023
April.....		2.05	16.16	72.80	8.99	1.70	9.18	13,880	14,171	2.8242
		4.97	21.16	64.57	9.30	1.84	9.79	13,496	14,202	2.7455
May.....		5.43	.....	.....	8.85	2.02	9.36	13,343	14,109	2.7141
		2.10	16.72	69.35	11.83	1.57	12.08	13,379	13,666	2.6215
June.....		2.74	16.43	72.42	8.41	1.75	8.65	13,788	14,176	2.8253
		1.11	15.43	73.83	9.63	1.81	9.74	13,877	14,033	2.8236
Average..		3.17	15.42	72.26	9.15	1.75	9.45	13,748	14,198	2.7971

## PHILADELPHIA, PA., MINT BUILDING.

[Acme run of mine, Acme Slope mine, Hawk Run, Clearfield County, Pa.; 4,000 tons at \$3.14; 7.8 per cent ash, 14,000 B. t. u.]

1908.										
July.....	49.080	2.03	17.30	73.30	7.37	2.32	7.52	14,158	14,457	\$3.1754
August.....	159.627	2.17	18.66	71.24	7.93	2.16	8.10	14,170	14,485	3.1781
September.....	244.326	1.99	18.76	71.78	7.47	1.97	7.62	14,293	14,584	3.2057
October.....	289.094	2.38	22.56	67.38	7.68	2.27	7.86	14,156	14,497	3.1750
November.....	290.084	2.24	21.55	67.19	9.02	2.84	9.23	13,897	14,216	3.1169
December.....	330.263	2.68	21.74	67.29	8.29	2.55	8.52	14,005	14,377	3.1411
1909.										
January.....	346.303	2.93	20.80	67.89	8.38	2.28	8.63	13,940	14,359	3.1265
February.....	294.205	3.34	20.91	68.10	7.65	2.08	7.92	14,048	14,533	3.1508
March.....	355.344	2.65	21.20	68.83	7.32	1.84	7.52	14,104	14,488	3.1633
April.....	318.906	2.65	21.58	68.51	7.26	2.06	7.46	14,122	14,506	3.1674
May.....	309.009	2.27	21.40	68.82	7.51	1.88	7.69	14,060	14,386	3.1535
June.....	389.397	2.57	20.93	68.30	8.20	2.14	8.41	13,924	14,291	3.1230
Total.....	3,375.638	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		2.56	21.00	68.56	7.88	2.19	8.09	14,054	14,423	3.1520

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***ROCK ISLAND, ILL., ROCK ISLAND ARSENAL.**

[Egg anthracite, 1,000 tons at \$8.62; 6.72 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	175	.....	.....	.....	.....	.....	13.12	.....	.....	.....
November.....	105	.....	.....	.....	.....	.....	12.68	.....	.....	.....
December.....	140	.....	.....	.....	.....	.....	12.18	.....	.....	.....
1909.										
February.....	70	.....	.....	.....	.....	.....	13.48	.....	.....	.....
March.....	70	.....	.....	.....	.....	.....	14.02	.....	.....	.....
April.....	210	.....	.....	.....	.....	.....	13.94	.....	.....	.....
May.....	105	.....	.....	.....	.....	.....	11.60	.....	.....	.....
Total.....	a 875	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	13.03	.....	.....	.....

a Deliveries amounted to 25 cars, estimated at 35 tons each.

**ROCK ISLAND, ILL., ROCK ISLAND ARSENAL.**

[Run of mine, 5,000 tons at \$2.25; 13.2 per cent ash, 11,100 B. t. u.]

1908.										
August.....	140	13.92	.....	.....	.....	.....	17.53	10,141	11,781	\$1.9856
September.....	105	13.82	.....	.....	.....	.....	18.32	10,037	11,646	1.9145
October.....	420	12.94	.....	.....	.....	.....	16.07	10,277	11,804	2.0432
November.....	210	14.17	.....	.....	.....	.....	18.18	10,017	11,671	1.9605
December.....	805	14.70	.....	.....	.....	.....	14.53	10,268	12,038	2.0814
1909.										
January.....	1,260	14.75	.....	.....	.....	.....	15.39	10,353	12,144	2.0786
February.....	490	15.35	.....	.....	.....	.....	14.28	10,328	12,201	2.0935
March.....	805	14.75	.....	.....	.....	.....	14.92	10,250	12,023	2.0777
April.....	175	13.84	.....	.....	.....	.....	13.74	10,615	12,320	2.1517
May.....	245	12.93	.....	.....	.....	.....	12.86	10,991	12,623	2.2279
June.....	245	13.67	.....	.....	.....	.....	14.48	10,461	12,117	2.1205
Total.....	a 4,900	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		14.40	.....	.....	.....	.....	15.18	10,333	12,071	2.0945

a Deliveries amount to 140 cars, estimated at 35 tons each.

**SPRINGFIELD, MASS., SPRINGFIELD ARMORY.**

[Imperial run of mine, Cambria County, Pa.; 5,000 tons at \$4.15; 7 per cent ash, 14,000 B. t. u.]

1908.										
September.....		1.61	.....	.....	.....	.....	7.27	14,470	14,707	\$4.2893
October.....		1.80	.....	.....	.....	.....	8.58	14,128	14,387	4.1879
December.....			.....	.....	.....	.....	9.61	14,068	.....	4.1502
1909.										
March.....		3.48	.....	.....	.....	.....	14.41	12,796	13,257	3.5431
May.....		5.78	.....	.....	.....	.....	8.71	13,455	14,280	3.9884
July.....		1.70	.....	.....	.....	.....	7.82	14,150	14,394	4.1945
Average a		2.87	.....	.....	.....	.....	9.36	13,800	14,208	4.0707

a Average irrespective of monthly amounts delivered; month of December not included in average.

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***ST. LOUIS, MO., CUSTOM-HOUSE.**

[Staunton lump, over 3" round-opening screen, No. 6 bed, Staunton mine No. 7, Staunton, Ill., 4,500 tons at \$2.43; 12 per cent ash, 12,000 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Mois- ture.	Vola- tile matter.	Fixed carbon.	Ash.	Sul- phur.		As re- ceived.	Dry coal.	
1908.										
July.....	252.134	11.68	36.08	41.62	10.62	3.45	12.01	10,945	12,393	\$2.2164
August.....	258.958	12.25	33.62	42.79	11.34	3.74	12.93	10,785	12,290	2.1840
September.....	328.741	9.65	34.34	43.13	12.88	3.99	14.26	10,979	12,152	2.2032
October.....	305.900	11.22	33.29	45.38	10.11	3.90	11.39	11,138	12,546	2.2554
November.....	270.636	10.31	36.33	41.40	11.96	3.80	13.33	10,931	12,191	2.2135
December.....	333.014	10.92	36.30	41.31	11.47	3.70	12.88	10,968	12,313	2.2210
1909.										
January.....	356.386	11.59	35.90	41.28	11.23	3.91	12.70	10,855	12,277	2.1981
February.....	283.083	11.65	35.87	41.27	11.21	3.83	12.69	10,867	12,300	2.2006
March.....	328.657	10.49	36.83	41.00	11.68	4.27	13.05	10,990	12,278	2.2255
April.....	294.164	11.83	38.09	38.53	11.55	3.38	13.11	10,780	12,226	2.1830
May.....	256.023	12.05	37.72	38.74	11.49	3.68	13.06	10,733	12,204	2.1734
June.....	200.134	12.26	37.29	40.36	10.09	3.82	11.50	10,763	12,266	2.1795
Total.....	3,467.830									
Average.....		11.29	35.95	41.41	11.35	3.80	12.79	10,903	12,291	2.2079

**ST. PAUL, MINN., COURT-HOUSE AND POST-OFFICE.**

[Youghiogheny gas lump, over 1" bar screen, thin vein, second pool, Budd mine, Westmoreland County, Pa.; 1,200 tons at \$5.38; 8 per cent ash, 13,300 B. t. u.]

1908.										
July.....	143.701	2.18	35.88	56.44	5.50	1.46	5.62	14,139	14,454	\$5.7394
November.....	166.307	2.13	33.99	56.78	7.10	1.59	7.25	13,889	14,189	5.6174
December.....	43.449	1.41	35.32	56.14	7.13	1.72	7.23	14,049	14,250	5.6830
1909.										
January.....	404.683	2.16	35.59	52.75	9.50	1.79	9.71	13,340	13,634	5.3962
April.....	245.426	2.04	34.25	55.81	7.90	1.85	8.06	13,668	13,953	5.5289
Total.....	1,003.566									
Average.....		2.10	35.02	54.84	8.04	1.72	8.21	13,655	13,948	5.5236

**ST. PAUL, MINN., CUSTOM-HOUSE.**

[Youghiogheny gas lump over 1" bar screen, thin vein, second pool, Budd mine, Westmoreland County, Pa.; 250 tons at \$5.38; 8 per cent ash, 13,300 B. t. u.]

1908.										
July.....	28.08	1.96	35.47	57.86	4.71	1.11	4.80	14,342	14,629	\$5.8315
November.....	29.133	2.46	35.37	56.28	5.89	1.54	6.04	13,835	14,184	5.6064
1909.										
January.....	42.209	3.07	34.50	56.75	5.68	1.03	5.86	13,865	14,304	5.6285
March.....	46.160	1.63	39.58	54.69	4.10	1.92	4.17	14,296	14,533	5.8129
April.....	12.321	1.80	35.00	56.71	6.49	1.71	6.61	14,035	14,292	5.6873
Total.....	157.903									
Average.....		2.24	36.36	56.25	5.15	1.45	5.27	14,084	14,407	5.7171

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## TOLEDO, OHIO, CUSTOM-HOUSE.

[Pocahontas run of mine, McDowell County, W. Va.; 500 tons at \$3.95; 4.45 per cent ash, 14,900 B. t. u.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	7.526	3.71	14.03	78.13	4.13	0.65	4.29	14,569	15,130	\$3.8623
September.....	51.785	2.51	14.06	78.61	4.82	.47	4.94	14,724	15,103	3.9033
November.....	39.772	2.09	16.60	76.44	4.87	.71	4.96	14,648	14,960	3.8832
December.....	45.167	2.65	19.66	74.06	3.63	.61	3.73	14,872	15,277	3.9426
1909.										
January.....	39.685	2.97	18.38	74.06	4.05	.58	4.18	14,730	15,181	3.9049
March.....	64.723	3.27	19.62	73.15	3.96	.92	4.09	14,729	15,227	3.9047
June.....	6.316	3.46	18.81	74.47	3.26	.51	3.38	14,610	15,134	3.8831
Total.....	254.974									
Average.....		2.79	17.65	75.34	4.22	.67	4.34	14,734	15,157	3.9060

## WASHINGTON, D. C., AGRICULTURE DEPARTMENT, MAIN BUILDING.

[Furnace  $\alpha$  anthracite, at \$5.72 per ton; 10 per cent ash.]

1908.										
September.....	25	.....	.....	.....	.....	.....	8.37	.....	.....	\$5.72
October.....	50	.....	.....	.....	.....	.....	11.14	.....	.....	5.72
November.....	50	.....	.....	.....	.....	.....	12.06	.....	.....	5.57
	50	.....	.....	.....	.....	.....	12.47	.....	.....	5.57
December.....	50	.....	.....	.....	.....	.....	11.33	.....	.....	5.72
	75	.....	.....	.....	.....	.....	12.78	.....	.....	5.54
	25	.....	.....	.....	.....	.....	11.55	.....	.....	5.72
1909.										
January.....	75	.....	.....	.....	.....	.....	11.87	.....	.....	5.72
	100	.....	.....	.....	.....	.....	11.22	.....	.....	5.72
February.....	25	.....	.....	.....	.....	.....	12.08	.....	.....	5.57
March.....	100	.....	.....	.....	.....	.....	13.29	.....	.....	5.51
April.....	100	.....	.....	.....	.....	.....	12.17	.....	.....	5.57
May.....	25	.....	.....	.....	.....	.....	10.11	.....	.....	5.72
	25	.....	.....	.....	.....	.....	10.65	.....	.....	5.72
Total.....	775	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....		.....	.....	.....	.....	.....	11.85	.....	.....	5.72

 $\alpha$  Contract provides for 3,600 tons of furnace anthracite, for main building and Weather Bureau.

## WASHINGTON, D. C., AGRICULTURE DEPARTMENT, MAIN BUILDING.

[Egg anthracite; 20 tons at \$6.88; 10 per cent ash.]

1908.										
October.....	15	.....	.....	.....	.....	.....	13	.....	.....	\$6.70
December.....	30	.....	.....	.....	.....	.....	12.63	.....	.....	6.70
Total.....	45	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average.....		.....	.....	.....	.....	.....	12.75	.....	.....	6.70

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., AGRICULTURE DEPARTMENT, WEATHER BUREAU.**[Furnace<sup>a</sup> anthracite, at \$5.72 per ton; 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	50	.....	.....	.....	.....	.....	10.17	.....	.....	\$5.72
October.....	50	.....	.....	.....	.....	.....	10.14	.....	.....	5.72
November.....	50	.....	.....	.....	.....	.....	11.21	.....	.....	5.72
December.....	50	.....	.....	.....	.....	.....	11.69	.....	.....	5.72
1909.										
January.....	49.90	.....	.....	.....	.....	.....	12.46	.....	.....	5.57
February.....	50	.....	.....	.....	.....	.....	9.39	.....	.....	5.72
March.....	50	.....	.....	.....	.....	.....	9.64	.....	.....	5.72
May.....	49.86	.....	.....	.....	.....	.....	10.48	.....	.....	5.72
	50.63	.....	.....	.....	.....	.....	9.28	.....	.....	5.72
	49.81	.....	.....	.....	.....	.....	9.07	.....	.....	5.72
Total.....	500.20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	10.35	.....	.....	5.72

<sup>a</sup> Contract provides for 3,600 tons of furnace anthracite, for main building and Weather Bureau.**WASHINGTON, D. C., AGRICULTURE DEPARTMENT, WEATHER BUREAU.**[Stove<sup>a</sup> anthracite, at \$6.92 per ton 10 per cent ash.]

1908.										
November.....	2	.....	.....	.....	.....	.....	11.90	.....	.....	\$6.92
1909.										
January.....	2	.....	.....	.....	.....	.....	12.64	.....	.....	6.92
March.....	2	.....	.....	.....	.....	.....	16.21	.....	.....	6.65
Total.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	13.58	.....	.....	6.92

<sup>a</sup> Contract provides for 250 tons of stove anthracite, for main building and Weather Bureau.**WASHINGTON, D. C., CONGRESS, BOTANICAL GARDENS.**

[Furnace anthracite, 350 tons at \$5.59; 10 per cent ash.]

1908.										
November.....	50	.....	.....	.....	.....	.....	10.81	.....	.....	\$5.59
December.....	200	.....	.....	.....	.....	.....	11.65	.....	.....	5.59
1909.										
March.....	50	.....	.....	.....	.....	.....	10.40	.....	.....	5.59
April.....	25	.....	.....	.....	.....	.....	8.87	.....	.....	5.59
Total.....	325	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	11.11	.....	.....	5.59

**WASHINGTON, D. C., CONGRESS, BOTANICAL GARDENS.**

[Chestnut anthracite, 20 tons at \$6.65; 14 per cent ash.]

1908.										
December.....	6	.....	.....	.....	.....	.....	15.90	.....	.....	\$6.65

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## WASHINGTON, D. C., CONGRESS, GOVERNMENT PRINTING OFFICE.

[Egg anthracite, 9,000 tons at \$5.78; 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July .....	85	.....	.....	.....	.....	.....	10.78	.....	.....	\$5.78
August .....	500	.....	.....	.....	.....	.....	11.19	.....	.....	5.78
September .....	500	.....	.....	.....	.....	.....	10.21	.....	.....	5.78
October .....	500	.....	.....	.....	.....	.....	11.13	.....	.....	5.78
November .....	500	.....	.....	.....	.....	.....	10.77	.....	.....	5.78
December .....	500	.....	.....	.....	.....	.....	9.90	.....	.....	5.78
	500	.....	.....	.....	.....	.....	11.20	.....	.....	5.78
1909.										
January .....	500	.....	.....	.....	.....	.....	12.03	.....	.....	5.63
	500	.....	.....	.....	.....	.....	11.60	.....	.....	5.78
February .....	500	.....	.....	.....	.....	.....	12.17	.....	.....	5.63
March .....	500	.....	.....	.....	.....	.....	13.03	.....	.....	5.57
	500	.....	.....	.....	.....	.....	12.64	.....	.....	5.60
April .....	500	.....	.....	.....	.....	.....	12.33	.....	.....	5.63
	500	.....	.....	.....	.....	.....	12.69	.....	.....	5.60
May .....	500	.....	.....	.....	.....	.....	11.61	.....	.....	5.78
June .....	500	.....	.....	.....	.....	.....	11.21	.....	.....	5.78
	500	.....	.....	.....	.....	.....	11.82	.....	.....	5.78
Total .....	8,085	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average .....		.....	.....	.....	.....	.....	11.59	.....	.....	5.78

## WASHINGTON, D. C., CONGRESS, LIBRARY OF CONGRESS.

[Furnace anthracite, 3,600 tons at \$5.52; 10 per cent ash.]

1908.										
June .....	614	.....	.....	.....	.....	.....	9.61	.....	.....	\$5.52
July .....	408	.....	.....	.....	.....	.....	9.69	.....	.....	5.52
August .....	546	.....	.....	.....	.....	.....	9.61	.....	.....	5.52
November .....	429	.....	.....	.....	.....	.....	9.35	.....	.....	5.52
December .....	445	.....	.....	.....	.....	.....	9.84	.....	.....	5.52
1909.										
February .....	247	.....	.....	.....	.....	.....	11.48	.....	.....	5.52
March .....	339	.....	.....	.....	.....	.....	11.10	.....	.....	5.52
	292	.....	.....	.....	.....	.....	10.72	.....	.....	5.52
	220	.....	.....	.....	.....	.....	10.27	.....	.....	5.52
June .....	100	.....	.....	.....	.....	.....	12.03	.....	.....	5.37
Total .....	3,700	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average .....		.....	.....	.....	.....	.....	10.07	.....	.....	5.52

## WASHINGTON, D. C., INTERIOR DEPARTMENT, BUREAU OF EDUCATION.

[Furnace anthracite, 100 tons, at \$5.85; 10 per cent ash.]

1908.										
October .....	20	.....	.....	.....	.....	.....	10.73	.....	.....	\$5.85
1909.										
January .....	20	.....	.....	.....	.....	.....	11.65	.....	.....	5.85
March .....	20	.....	.....	.....	.....	.....	9.29	.....	.....	5.85
Total .....	60	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average .....		.....	.....	.....	.....	.....	10.56	.....	.....	5.85



TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., INTERIOR DEPARTMENT, UNITED STATES CIVIL SERVICE COMMISSION.**

[Furnace anthracite, 250 tons at \$5.85; 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.	Ash in dry coal.	As received.	
1908.									
July.....	10	.....	.....	.....	.....	.....	7.88	.....	\$6.00
September.....	4.54	.....	.....	.....	.....	.....	11.57	.....	5.85
November.....	40	.....	.....	.....	.....	.....	12.36	.....	5.70
December.....	30	.....	.....	.....	.....	.....	10.41	.....	5.85
1909.									
January.....	30	.....	.....	.....	.....	.....	10.20	.....	5.85
February.....	30	.....	.....	.....	.....	.....	13.05	.....	5.64
March.....	30	.....	.....	.....	.....	.....	11.78	.....	5.85
April.....	20	.....	.....	.....	.....	.....	11.92	.....	5.85
June.....	20	.....	.....	.....	.....	.....	10.49	.....	5.85
Total.....	214.54	.....	.....	.....	.....	.....	.....	.....	.....
Average.....		.....	.....	.....	.....	.....	11.36	.....	5.85

**WASHINGTON, D. C., INTERIOR DEPARTMENT, FREEDMEN'S HOSPITAL.**

[Egg anthracite, 50 tons at \$6.45; 10 per cent ash.]

1908.									
November.....	10	.....	.....	.....	.....	.....	10.46	.....	\$6.45
1909.									
February.....	10	.....	.....	.....	.....	.....	12.96	.....	6.27
June.....	2	.....	.....	.....	.....	.....	11.92	.....	6.45
Total.....	22	.....	.....	.....	.....	.....	.....	.....	.....
Average.....		.....	.....	.....	.....	.....	11.73	.....	6.45

**WASHINGTON, D. C., INTERIOR DEPARTMENT, FREEDMEN'S HOSPITAL.**

[Pea anthracite, 200 tons at \$4.40; 14 per cent ash.]

1908.									
September.....	25	.....	.....	.....	.....	.....	13.73	.....	\$4.40

**WASHINGTON, D. C., INTERIOR DEPARTMENT, FREEDMEN'S HOSPITAL AND HOWARD UNIVERSITY.**

[Orenda run of mine, Boswell, Somerset County, Pa.; 900 tons at \$3.55; 10 per cent ash, 13,900 B. t. u.]

1908.										
September.....	50	2.20					9.24	14,021	14,339	\$3.5809
October.....	75	1.96					8.68	14,041	14,323	3.5960
November.....	100	3.27					8.38	13,970	14,443	3.5779
	100	3.71					9.82	14,693	14,221	3.4971
	175	1.48					9.80	13,971	14,180	3.5681
December.....	150	2.72					9.14	13,919	14,309	3.5549
	150	3.07					8.42	13,969	14,412	3.5776
	100	2.90					8.98	13,854	14,267	3.5483
1909.										
January.....	150	2.81					9.36	13,807	14,210	3.5262
	100	2.14					8.77	14,016	14,322	3.5896
February.....	100	3.00					8.78	13,788	14,214	3.5314
	100	2.80					8.78	13,933	14,335	3.5684
	100	2.78					9.35	13,858	14,254	3.5393
March.....	200	2.84					9.30	13,750	14,152	3.5117
	150	2.62					8.89	13,881	14,253	3.5551
April.....	100	2.37					9.07	13,896	14,234	3.5490
May.....	100	3.05					8.86	13,725	14,157	3.5153
Total.....	2,000									
Average.....		2.68					9.07	13,879	14,262	3.5446

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., INTERIOR DEPARTMENT, GOVERNMENT HOSPITAL FOR THE INSANE.**

[Stove anthracite, 1,000 tons at \$5.75; 12 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Mois- ture.	Vola- tile matter.	Fixed carbon.	Ash.	Sul- phur.		As re- ceived.	Dry coal.	
1908. November.....	350	.....	.....	.....	.....	.....	12.02	.....	.....	\$5.75
1909. March.....	350	.....	.....	.....	.....	.....	14.12	.....	.....	5.60
April.....	105	.....	.....	.....	.....	.....	14.49	.....	.....	5.60
Total.....	α 805	.....	.....	.....	.....	.....	13.25	.....	.....	5.75
Average.....		.....	.....	.....	.....	.....		.....	.....	

α Deliveries amounted to 23 cars, estimated at 35 tons each.

**WASHINGTON, D. C., INTERIOR DEPARTMENT, GOVERNMENT HOSPITAL FOR THE INSANE.**

[Georges Creek run of mine, big vein, Tyson bed, 20,000 tons at \$3.05; 7.5 per cent ash, 14,300 B. t. u.]

1908. August.....	315	3.34	.....	.....	.....	.....	6.98	14,248	14,740	\$3.0389
September.....	910	2.44	.....	.....	.....	.....	7.21	14,357	14,716	3.0622
October.....	2,030	2.72	.....	.....	.....	.....	8.19	14,009	14,401	2.9879
November.....	875	2.41	.....	.....	.....	.....	8.15	14,052	14,398	2.9971
December.....	1,085	2.87	.....	.....	.....	.....	7.11	14,249	14,670	3.0391
1909. January.....	1,540	3.30	.....	.....	.....	.....	8.72	13,844	14,316	2.9527
February.....	1,505	3.23	.....	.....	.....	.....	7.55	14,049	14,518	2.9965
March.....	1,925	2.63	.....	.....	.....	.....	7.77	14,027	14,404	2.9918
April.....	1,855	2.70	.....	.....	.....	.....	7.83	13,698	14,076	2.9216
May.....	1,015	4.65	.....	.....	.....	.....	10.12	13,253	13,899	2.8067
June.....	525	3.57	.....	.....	.....	.....	9.16	13,568	14,071	2.8939
Total.....	α 13,580	.....	.....	.....	.....	.....	8.07	13,932	14,361	2.9715
Average.....		2.99	.....	.....	.....	.....				

α Deliveries amounted to 388 cars, estimated at 35 tons each.

**WASHINGTON, D. C., INTERIOR DEPARTMENT, HOWARD UNIVERSITY.**

[Furnace anthracite, 400 tons at \$5.75; 8 per cent ash.]

1908. November.....	20	.....	.....	.....	.....	.....	10.85	.....	.....	\$5.57
1909. March.....	10	.....	.....	.....	.....	.....	12.57	.....	.....	5.51
Total.....	30	.....	.....	.....	.....	.....	11.42	.....	.....	5.54
Average.....		.....	.....	.....	.....	.....		.....	.....	

**WASHINGTON, D. C., INTERIOR DEPARTMENT, HOWARD UNIVERSITY.**

[Egg anthracite, 100 tons at \$6.20; 8 per cent ash.]

1908. October.....	88	.....	.....	.....	.....	.....	11.39	.....	.....	\$5.99
1909. February.....	5	.....	.....	.....	.....	.....	15.82	.....	.....	5.72
	10	.....	.....	.....	.....	.....	11.41	.....	.....	5.99
Total.....	103	.....	.....	.....	.....	.....	11.61	.....	.....	5.96
Average.....		.....	.....	.....	.....	.....		.....	.....	

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., INTERIOR DEPARTMENT, HOWARD UNIVERSITY.**

[Stove anthracite, 50 tons at \$6.65; 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
November.....	20	.....	.....	.....	.....	.....	11.72	.....	.....	\$6.65
1909.										
January.....	5	.....	.....	.....	.....	.....	13.50	.....	.....	6.44
February.....	10	.....	.....	.....	.....	.....	16.42	.....	.....	6.26
March.....	5	.....	.....	.....	.....	.....	11.10	.....	.....	6.65
March.....	5	.....	.....	.....	.....	.....	15.02	.....	.....	6.32
Total.....	45	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	13.26	.....	.....	6.44

**WASHINGTON, D. C., INTERIOR DEPARTMENT, LAND OFFICE.**

[Georges Creek run of mine, big vein, Allegany County, Md., 3,600 tons at \$3.65; 8 per cent ash, 14,200 B. t. u.]

1908.										
July.....	250	1.43	.....	.....	.....	.....	7.91	14,274	14,481	\$3.6690
August.....	250	2.48	.....	.....	.....	.....	8.27	13,911	14,265	3.5757
September.....	300	1.95	.....	.....	.....	.....	7.76	14,333	14,617	3.6841
October.....	300	1.60	.....	.....	.....	.....	7.93	14,363	14,600	3.6919
November.....	300	1.75	.....	.....	.....	.....	7.36	14,367	14,622	3.6929
December.....	300	1.28	.....	.....	.....	.....	7.81	14,395	14,582	3.7001
December.....	300	1.72	.....	.....	.....	.....	7.80	14,303	14,554	3.6765
1909.										
January.....	300	2.34	.....	.....	.....	.....	7.66	14,202	14,543	3.6505
February.....	300	1.79	.....	.....	.....	.....	7.39	14,337	14,597	3.6852
February.....	300	2.06	.....	.....	.....	.....	7.76	14,241	14,540	3.6605
March.....	300	1.31	.....	.....	.....	.....	7.27	14,397	14,587	3.7006
April.....	300	1.32	.....	.....	.....	.....	7.37	14,344	14,543	3.6870
May.....	300	1.39	.....	.....	.....	.....	8.00	14,230	14,431	3.6577
June.....	100	1.91	.....	.....	.....	.....	7.10	14,255	14,532	3.6641
Total.....	3,900	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		1.72	.....	.....	.....	.....	7.69	14,289	14,539	3.6729

**WASHINGTON, D. C., INTERIOR DEPARTMENT, PENSION OFFICE.**

[Furnace anthracite, 1,200 tons at \$5.85; 10 per cent ash.]

1908.										
July.....	50	.....	.....	.....	.....	.....	11.13	.....	.....	\$5.85
September.....	100	.....	.....	.....	.....	.....	11.89	.....	.....	5.85
November.....	150	.....	.....	.....	.....	.....	11.06	.....	.....	5.85
December.....	150	.....	.....	.....	.....	.....	10.93	.....	.....	5.85
1909.										
January.....	150	.....	.....	.....	.....	.....	11.34	.....	.....	5.85
February.....	100	.....	.....	.....	.....	.....	11.86	.....	.....	5.85
April.....	100	.....	.....	.....	.....	.....	11.10	.....	.....	5.85
Total.....	800	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	11.30	.....	.....	5.85

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., INTERIOR DEPARTMENT, UNITED STATES GEOLOGICAL SURVEY.**

[Furnace anthracite, 600 tons at \$5.85; 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	15	.....	.....	.....	.....	.....	11.01	.....	.....	\$5.85
August.....	10	.....	.....	.....	.....	.....	9.39	.....	.....	5.85
September.....	10	.....	.....	.....	.....	.....	12.35	.....	.....	5.70
October.....	20	.....	.....	.....	.....	.....	11.25	.....	.....	5.85
November.....	40	.....	.....	.....	.....	.....	10.65	.....	.....	5.85
December.....	65	.....	.....	.....	.....	.....	11.99	.....	.....	5.85
1909.										
January.....	101.78	.....	.....	.....	.....	.....	11.84	.....	.....	5.85
February.....	100	.....	.....	.....	.....	.....	11.76	.....	.....	5.85
April.....	50	.....	.....	.....	.....	.....	11.87	.....	.....	5.85
May.....	20	.....	.....	.....	.....	.....	10.61	.....	.....	5.85
July.....	10	.....	.....	.....	.....	.....	12.45	.....	.....	5.70
Total....	441.78	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	11.60	.....	.....	5.85

**WASHINGTON, D. C., NAVY DEPARTMENT, UNITED STATES NAVAL OBSERVATORY.**

[Furnace anthracite, 600 tons at \$6.20; 10 per cent ash.]

1908.										
August.....	144	.....	.....	.....	.....	.....	11.09	.....	.....	\$6.20
December.....	137.52	.....	.....	.....	.....	.....	11.49	.....	.....	6.20
1909.										
January.....	106	.....	.....	.....	.....	.....	13.97	.....	.....	5.96
February.....	106.11	.....	.....	.....	.....	.....	14.97	.....	.....	5.90
March.....	57.66	.....	.....	.....	.....	.....	11.19	.....	.....	6.20
Total....	551.29	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	12.50	.....	.....	6.05

**WASHINGTON, D. C., NAVY DEPARTMENT, MILLS BUILDING.**

[No. 1 buckwheat anthracite, 500 tons at \$3.70; 18 per cent ash.]

1908.										
November.....	50	.....	.....	.....	.....	.....	17.10	.....	.....	\$3.70
December.....	75	.....	.....	.....	.....	.....	16.22	.....	.....	3.76
1909.										
January.....	52	.....	.....	.....	.....	.....	15.73	.....	.....	3.78
February.....	51.34	.....	.....	.....	.....	.....	18.61	.....	.....	3.70
March.....	53.86	.....	.....	.....	.....	.....	15.11	.....	.....	3.80
April.....	53	.....	.....	.....	.....	.....	17.62	.....	.....	3.70
Total....	335.20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	16.68	.....	.....	3.74

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., POST-OFFICE DEPARTMENT, POST-OFFICE BUILDING.**

[Pea anthracite, 6,000 tons at \$4.35; 16 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Mois-ture.	Vola-tile matter.	Fixed carbon.	Ash.	Sul-phur.		As re-ceived.	Dry coal.	
1908.										
July.....	500	.....	.....	.....	.....	.....	16.52	.....	.....	\$4.35
October.....	500	.....	.....	.....	.....	.....	15.22	.....	.....	4.35
November.....	500	.....	.....	.....	.....	.....	15.71	.....	.....	4.35
December.....	500	.....	.....	.....	.....	.....	14.69	.....	.....	4.40
1909.										
January.....	500	.....	.....	.....	.....	.....	16.21	.....	.....	4.35
February.....	500	.....	.....	.....	.....	.....	16.15	.....	.....	4.35
March.....	500	.....	.....	.....	.....	.....	15.70	.....	.....	4.35
April.....	500	.....	.....	.....	.....	.....	15.68	.....	.....	4.35
May.....	500	.....	.....	.....	.....	.....	15.08	.....	.....	4.35
June.....	500	.....	.....	.....	.....	.....	15.34	.....	.....	4.35
Total.....	5,000	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	15.63	.....	.....	4.35

**WASHINGTON, D. C., SMITHSONIAN INSTITUTION, EMERY BUILDING.**

[Egg anthracite, 80 tons at \$6.29; 10 per cent ash.]

1908.										
July.....	30	.....	.....	.....	.....	.....	10.39	.....	.....	\$6.29

**WASHINGTON, D. C., SMITHSONIAN INSTITUTION, NATIONAL MUSEUM.**

[Furnace anthracite, 1,200 tons at \$5.74; 10 per cent ash.]

1908.										
July.....	175	.....	.....	.....	.....	.....	10.54	.....	.....	\$5.74
November.....	100	.....	.....	.....	.....	.....	10.69	.....	.....	5.74
December.....	100	.....	.....	.....	.....	.....	11.06	.....	.....	5.74
1909.										
January.....	100	.....	.....	.....	.....	.....	11.39	.....	.....	5.74
February.....	200	.....	.....	.....	.....	.....	10.76	.....	.....	5.74
March.....	100	.....	.....	.....	.....	.....	10.64	.....	.....	5.74
April.....	50	.....	.....	.....	.....	.....	10.04	.....	.....	5.74
May.....	25	.....	.....	.....	.....	.....	10.83	.....	.....	5.74
Total.....	850	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	10.76	.....	.....	5.74

**WASHINGTON, D. C., SMITHSONIAN INSTITUTION, NATIONAL ZOOLOGICAL PARK.**

[Furnace anthracite, 1,200 tons at \$6.88; 10 per cent ash.]

1908.										
September.....	25	.....	.....	.....	.....	.....	11.10	.....	.....	\$6.88
1909.										
January.....	21.5	.....	.....	.....	.....	.....	9.05	.....	.....	6.88
February.....	13	.....	.....	.....	.....	.....	11.04	.....	.....	6.88
April.....	6	.....	.....	.....	.....	.....	11.86	.....	.....	6.88
May.....	6	.....	.....	.....	.....	.....	10.23	.....	.....	6.88
Total.....	71.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average..		.....	.....	.....	.....	.....	10.46	.....	.....	6.88

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., SMITHSONIAN INSTITUTION, NATIONAL ZOOLOGICAL PARK.**

[Stove anthracite, 30 tons at \$7.48; 12 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908. September.....	15	.....	.....	.....	.....	.....	13.24	.....	.....	\$7.48
1909. May.....	2	.....	.....	.....	.....	.....	12.19	.....	.....	7.48
Total.....	17	.....	.....	.....	.....	.....	13.12	.....	.....	7.48
Average..		.....	.....	.....	.....	.....		.....	.....	

**WASHINGTON, D. C., SMITHSONIAN INSTITUTION, NATIONAL ZOOLOGICAL PARK.**

[Chestnut anthracite, 30 tons at \$7.48; 14 per cent ash.]

1908. September.....	5	.....	.....	.....	.....	.....	15.44	.....	.....	\$7.48
1909. March.....	4	.....	.....	.....	.....	.....	21.13	.....	.....	7.03
Total....	9	.....	.....	.....	.....	.....	17.97	.....	.....	7.24
Average..		.....	.....	.....	.....	.....		.....	.....	

**WASHINGTON, D. C., SMITHSONIAN INSTITUTION, NATIONAL ZOOLOGICAL PARK.**

[Georges Creek run of mine, 300 tons at \$4.38; 9 per cent ash.]

1908. July.....	100	2.26	.....	.....	.....	.....	7.71	14,283	14,613	\$4.39
December.....	46.29	2.22	.....	.....	.....	.....	8.25	14,123	14,444	4.38
1909. January.....	54	3.01	.....	.....	.....	.....	7.51	14,144	14,583	4.39
February.....	100	2.54	.....	.....	.....	.....	7.48	14,124	14,492	4.39
Total....	300.29	.....	.....	.....	.....	.....	7.68	14,180	14,541	4.39
Average..		2.48	.....	.....	.....	.....				

**WASHINGTON, D. C., STATE DEPARTMENT, STATE STABLES.**

[Stove anthracite, 12 tons at \$6.88; 12 per cent ash.]

1908. November.....	4	.....	.....	.....	.....	.....	13.27	.....	.....	\$6.88
1909. January.....	4	.....	.....	.....	.....	.....	13.45	.....	.....	6.88
April.....	1	.....	.....	.....	.....	.....	16.06	.....	.....	6.61
Total....	9	.....	.....	.....	.....	.....	13.66	.....	.....	6.88
Average..		.....	.....	.....	.....	.....		.....	.....	

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## WASHINGTON, D. C., STATE DEPARTMENT, STATE, WAR, AND NAVY BUILDING.

[No. 1 buckwheat anthracite, 4,500 tons at \$3.7; 18 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Mois- ture.	Vola- tile matter.	Fixed carbon.	Ash.	Sul- phur.		As re- ceived.	Dry coal.	
1908.										
July.....	200						17.57			\$3.70
August.....	213						18.95			3.70
October.....	400						18.80			3.70
November.....	503						17.02			3.70
December.....	500						16.83			3.74
1909.										
January.....	500						17.40			3.70
February.....	500						17.36			3.70
March.....	500						19.73			3.62
April.....	500						18.08			3.70
Total.....	3,816						17.91			3.70
Average..										

## WASHINGTON, D. C., TREASURY DEPARTMENT, BUREAU OF ENGRAVING AND PRINTING.

[New River run of mine, Sewell bed, Fayette and Raleigh counties, W. Va., Loup and Piney creeks, 8,000 tons at \$3.35; 5.7 per cent ash; 14,600 B. t. u.]

1908.										
July.....	205.147	1.89	19.15	73.59	5.37	0.97	5.44	14,569	14,852	\$3.3429
August.....	505.558	1.61	20.79	73.03	4.57	.95	4.64	14,822	15,064	3.4109
September.....	595.174	1.94	18.39	74.75	4.92	.94	5.02	14,691	14,981	3.3709
October.....	298.848	1.53	22.16	71.76	4.55	.98	4.62	14,792	15,022	3.4041
November.....	871.174	1.94	22.20	71.90	3.96	.82	4.04	14,850	15,143	3.4174
December.....	781.750	2.25	22.75	70.75	4.25	.71	4.36	14,619	14,961	3.3644
1909.										
January.....	869.112	2.01	22.71	71.13	4.15	.90	4.23	14,835	15,139	3.4139
February.....	434.665	1.76	22.01	72.53	3.70	.81	3.77	14,938	15,205	3.4376
March.....	862.089	1.76	23.55	70.65	4.04	.90	4.11	14,783	15,048	3.4020
April.....	536.701	3.33	22.10	70.63	3.94	.87	4.09	14,654	15,159	3.3724
	75.522	2.06	22.93	71.03	3.98	.91	4.06	14,691	15,000	3.3809
May.....	507.116	2.77	22.27	70.35	4.61	.97	4.74	14,469	14,883	3.3199
June.....	293.545	1.49	24.49	69.50	4.52	.68	4.59	14,707	14,929	3.3846
Total.....	6,836.401									
Average..		2.06	22.06	71.60	4.28	.87	4.37	14,742	15,052	3.3926

## WASHINGTON, D. C., TREASURY DEPARTMENT, TREASURY BUILDING.

[New River run of mine, Sewell bed, Fayette and Raleigh counties, W. Va., Loup and Piney creeks, 2,000 tons at \$3.55; 5.7 per cent ash; 14,600 B. t. u.]

1908.										
July.....	204.344	3.37	15.33	77.28	4.02	0.84	4.16	14,507	15,013	\$3.5374
October.....	100	2.21	21.37	71.77	4.65	.75	4.75	14,657	14,988	3.5639
December.....	200	2.72	22.46	70.87	3.95	.91	4.06	14,719	15,131	3.5889
1909.										
February.....	203.085	3.10	22.38	70.04	4.48	.87	4.62	14,544	15,009	3.5464
March.....	50.242	5.97	21.26	68.70	4.07	1.13	4.33	14,135	15,032	3.4469
April.....	118.089	3.46	20.07	70.72	5.75	.72	5.96	14,502	15,022	3.5262
May.....	43.487	2.05	22.47	71.20	4.28	.90	4.37	14,669	14,976	3.5768
May.....	38.424	2.74	23.66	68.81	4.79	.73	4.92	14,428	14,834	3.5082
Total.....	957.671									
Average..		3.12	20.50	71.95	4.43	.85	4.57	14,557	15,026	3.5495

## PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## WASHINGTON, D. C., TREASURY DEPARTMENT, TREASURY BUILDING.

[Philadelphia and Reading rice anthracite, 1,500 tons at \$3.35; 18 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
July.....	54.790	5.06	2.40	75.25	17.29	0.76	18.21	11,385	11,992	\$3.35
August.....	145.594	4.27	3.00	74.07	18.66	.71	19.49	11,936	12,468	3.31
November.....	212.991	5.30	3.95	75.65	15.10	.56	15.95	11,687	12,341	3.43
December.....	35.125	6.19	2.92	75.75	15.14	.64	16.14	11,608	12,373	3.41
1909.										
January.....	172.665	5.26	5.70	72.37	16.67	.64	17.60	11,590	12,234	3.35
	51.071	5.51	5.58	64.82	24.09	.70	25.50	10,268	10,867	2.87
February.....	149.290	5.16	5.90	70.71	18.23	.70	19.22	11,287	11,901	3.31
March.....	103.514	4.30	5.56	71.93	18.21	1.07	19.03	11,498	12,015	3.31
	57.884	4.14	5.27	70.33	20.26	.89	21.13	11,132	11,613	3.03
April.....	115.429	3.60	6.26	68.52	21.61	1.10	22.42	11,447	11,875	2.87
May.....	114.746	7.21	5.88	67.75	19.16	.71	20.65	10,772	11,609	3.14
June.....	51.223	5.51	7.13	64.55	22.81	.79	24.14	10,358	10,962	2.87
Total.....	1,264.322									
Average..		5.07	4.99	71.58	18.32	.75	19.30	11,382	11,989	3.35

## WASHINGTON, D. C., TREASURY DEPARTMENT, WINDER BUILDING.

[New River run of mine, Sewell bed, Fayette and Raleigh counties, W. Va., Loup and Piney creeks, 400 tons at \$3.60; 5.7 per cent ash; 14,600 B. t. u.]

1908.										
October.....	18.942	1.32	20.23	74.34	4.11	0.79	4.17	14,797	14,995	\$3.6587
November.....	31.058	3.01	22.36	67.95	6.68	.89	6.89	14,220	14,661	3.5063
December.....	50.058	1.95	20.97	71.05	6.03	.90	6.15	14,611	14,902	3.6027
1909.										
January.....	67.576	3.18	22.39	70.11	4.32	1.00	4.46	14,508	14,984	3.5773
February.....	27.741	3.69	22.94	69.94	3.43	.51	3.56	14,633	15,194	3.6281
March.....	32.705	3.54	22.44	68.53	5.49	1.14	5.68	14,231	14,753	3.5090
April.....	39.067	2.24	22.04	70.62	5.10	.78	5.22	14,438	14,769	3.5601
May.....	10.933	3.69	24.26	66.99	5.06	.88	5.25	14,243	14,789	3.5120
Total.....	278.080									
Average..		2.79	22.06	70.09	5.06	.89	5.20	14,466	14,882	3.5670

WASHINGTON, D. C., WAR DEPARTMENT.<sup>a</sup>

## FURNACE ANTHRACITE, ARMY MEDICAL MUSEUM.

1908.										
July.....	86						9.36			\$5.74
October.....	39						8.95			5.74
1909.										
February.....	75						11.64			5.74
April.....	25						10.97			5.74
Total....	225									
Average..							10.23			5.74

<sup>a</sup> The War Department contract provides for anthracite coal as follows: Furnace, 400 tons at \$5.74, 10 per cent ash; egg, 450 tons at \$6.29, 10 per cent ash; stove, 375 tons at \$6.49, 12 per cent ash; chestnut, 20 tons at \$6.49, 14 per cent ash. To supply the following buildings: Army Medical Museum; buildings at 1725 and 1800 F street NW.; Ford Building; buildings at 1712 and 1744 G street NW.; Lemon Building; and War Department stables.



TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## WASHINGTON, D. C., WAR DEPARTMENT—Continued.

## EGG ANTHRACITE, 1725 F STREET NW.

Date.	Tons delivered.	Proximate analysis, as received.					B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.	Ash in dry coal.	As received.	
1908.									
July.....	18						9.90		\$6.29
December.....	15						11.52		6.29
1909.									
February.....	10						11.50		6.29
March.....	5						10.44		6.29
Total.....	48								
Average.....							10.80		6.29

## EGG ANTHRACITE, 1800 F STREET NW.

1908.									
July.....	20						10.46		\$6.29
1909.									
January.....	18						10.47		6.29
March.....	5						9.60		6.29
April.....	1						11.18		6.29
Total.....	44								
Average.....							10.38		6.29

## STOVE ANTHRACITE, 1800 F STREET NW.

1908.									
October.....	3						10.65		\$6.49
1909.									
January.....	3						10.08		6.49
Total.....	6								
Average.....							10.37		6.49

## STOVE ANTHRACITE, FORD BUILDING.

1908.									
July.....	100						11.57		\$6.49
November.....	100						11.56		6.49
1909.									
February.....	100						13.91		6.49
April.....	50						14.31		6.34
Total.....	350								
Average.....							12.63		6.49

## EGG ANTHRACITE, 1712 G STREET NW.

1908.									
July.....	3						18.73		\$6.29
December.....	3						10.32		6.29
1909.									
January.....	3						12.59		6.11
February.....	3						13.49		6.08
March.....	2						10.58		6.29
Total.....	14								
Average.....							11.18		6.29

## PURCHASE OF COAL UNDER SPECIFICATIONS.

TABLE 8.—Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.

## WASHINGTON, D. C., WAR DEPARTMENT—Continued.

## CHESTNUT ANTHRACITE, 1712 G STREET NW.

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908. August.....	2	.....	.....	.....	.....	.....	11.43	.....	.....	\$6.67
1909. February.....	2	.....	.....	.....	.....	.....	12.49	.....	.....	6.49
Total..... Average.....	4	.....	.....	.....	.....	.....	11.96	.....	.....	6.64

## EGG ANTHRACITE, 1744 G STREET NW.

1908. July.....	32	.....	.....	.....	.....	.....	10.81	.....	.....	\$6.29
1909. January.....	15	.....	.....	.....	.....	.....	13.47	.....	.....	6.08
February.....	15	.....	.....	.....	.....	.....	10.29	.....	.....	6.29
March.....	5	.....	.....	.....	.....	.....	10.92	.....	.....	6.29
April.....	5	.....	.....	.....	.....	.....	10.45	.....	.....	6.29
Total..... Average.....	72	.....	.....	.....	.....	.....	11.24	.....	.....	6.29

## EGG ANTHRACITE, LEMON BUILDING.

1908. July.....	10	.....	.....	.....	.....	.....	11.30	.....	.....	\$6.29
August.....	35	.....	.....	.....	.....	.....	9.93	.....	.....	6.29
September.....	20	.....	.....	.....	.....	.....	11.64	.....	.....	6.29
October.....	25	.....	.....	.....	.....	.....	10.51	.....	.....	6.29
November.....	15	.....	.....	.....	.....	.....	8.99	.....	.....	6.29
December.....	15	.....	.....	.....	.....	.....	11.80	.....	.....	6.29
.....	15	.....	.....	.....	.....	.....	10.93	.....	.....	6.29
1909. January.....	15	.....	.....	.....	.....	.....	10.49	.....	.....	6.29
.....	15	.....	.....	.....	.....	.....	11.87	.....	.....	6.29
.....	15	.....	.....	.....	.....	.....	12.17	.....	.....	6.14
February.....	15	.....	.....	.....	.....	.....	10.39	.....	.....	6.29
.....	15	.....	.....	.....	.....	.....	9.60	.....	.....	6.29
March.....	15	.....	.....	.....	.....	.....	11.14	.....	.....	6.29
.....	15	.....	.....	.....	.....	.....	9.90	.....	.....	6.29
April.....	15	.....	.....	.....	.....	.....	12.57	.....	.....	6.11
May.....	15	.....	.....	.....	.....	.....	12.44	.....	.....	6.11
June.....	10	.....	.....	.....	.....	.....	9.87	.....	.....	6.29
Total..... Average.....	280	.....	.....	.....	.....	.....	10.85	.....	.....	6.29

## EGG ANTHRACITE, WAR DEPARTMENT STABLES.

1908. July.....	20	.....	.....	.....	.....	.....	9.92	.....	.....	\$6.29
--------------------	----	-------	-------	-------	-------	-------	------	-------	-------	--------

## STOVE ANTHRACITE, WAR DEPARTMENT STABLES.

1908. July.....	10	.....	.....	.....	.....	.....	11.50	.....	.....	\$6.49
--------------------	----	-------	-------	-------	-------	-------	-------	-------	-------	--------

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WASHINGTON, D. C., WAR DEPARTMENT, ISTHMIAN CANAL COMMISSION.**

[Furnace anthracite, 125 tons at \$5.80, 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	15						8.51			\$5.80
December.....	25						10.43			5.80
1909.										
January.....	25						11.68			5.80
March.....	25						10.54			5.80
May.....	25						9.22			5.80
May.....	25						10.42			5.80
Total.....	140									
Average..							10.25			5.80

**WASHINGTON, D. C., WAR DEPARTMENT, UNITED STATES SOLDIERS' HOME.**

[Furnace anthracite, 460 tons at \$5.95; 10 per cent ash.]

1908.										
November.....	64.00						9.87			\$5.95
1909.										
January.....	109.53						9.95			5.95
February.....	81.15						10.29			5.95
March.....	109.79						10.70			5.95
Total.....	364.47									
Average..							10.24			5.95

**WASHINGTON, D. C., WAR DEPARTMENT, UNITED STATES SOLDIERS' HOME.**

[Stove anthracite, 350 tons at \$6.75; 12 per cent ash.]

1908.										
November.....	107.00						16.08			\$6.48
1909.										
January.....	51.82						10.71			6.75
March.....	24.21						13.57			6.75
	43.32						13.94			6.75
	61.99						12.66			6.75
Total.....	288.34									
Average..							13.85			6.75

**WASHINGTON, D. C., WAR DEPARTMENT, UNITED STATES SOLDIERS' HOME.**[Orenda run of mine, C' bed, Boswell, Somerset County, Pa., 5,600 tons at \$3.58 and \$3.29;<sup>a</sup> 6 per cent ash, 14,300 B. t. u.]

1908.										
July.....	251.43	2.45					8.86	14,034	14,386	\$3.4934
August.....	261.17	2.39					9.14	13,970	14,312	3.4573
October.....	300.03	1.97					9.01	14,032	14,311	3.4729
November.....	568.86	1.94					9.50	13,981	14,257	3.4601
December.....	584.21	2.91					8.51	13,935	14,351	3.4686
	<sup>b</sup> 221.80	2.91					8.51	13,935	14,351	3.1860
1909.										
January.....	714.85	2.44					9.31	13,926	14,274	3.1640
February.....	647.45	2.71					8.44	14,010	14,400	3.2033
March.....	728.44	3.11					9.98	13,662	14,101	3.1032
April.....	896.24	2.85					8.72	13,893	14,301	3.1764
May.....	345.92	2.68					8.35	13,913	14,296	3.1810
June.....	263.57	2.02					8.37	13,988	14,275	3.1982
Total.....	5,783.97									
Average..		2.60					8.97	13,918	14,289	

<sup>a</sup> Price per ton: July 1 to December 31, 1908, \$3.58; January 1 to June, 1909, \$3.29.<sup>b</sup> Payment based on January price per ton.

TABLE 8.—*Analyses of coals delivered to the Government under contracts, 1908-9—Cont'd.***WATERTOWN, MASS., WATERTOWN ARSENAL.**

[Furnace anthracite, "D. &amp; H." Plymouth mine, Lehigh bed, 300 tons at \$5.70; 10 per cent ash.]

Date.	Tons delivered.	Proximate analysis, as received.					Ash in dry coal.	B. t. u.		Corrected price per ton.
		Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.		As received.	Dry coal.	
1908.										
August.....	70	4.17					11.86	12,799	13,356	\$5.70
November.....	33	4.07					10.39	12,878	13,424	5.70
December.....	105						12.84			5.52
1909.										
March.....	70	4.75					10.09	12,936	13,581	5.70
April.....	70	3.76					12.86	12,723	13,220	5.52
June.....	105	3.17					12.17	12,657	13,071	5.55
Total.....	a 455									
Average..		3.89					11.65	12,777	13,294	b 5.70

a Deliveries amounted to 13 cars, estimated at 35 tons each.

b Month of December not included in average.

**WATERTOWN, MASS., WATERTOWN ARSENAL.**

[Orenda run of mine, C' bed, Boswell, Somerset County, Pa., 4,000 tons at \$4.21; 8 per cent ash, 14,300 B. t. u.]

1908.										
August.....		2.57					9.11	13,977	14,345	\$4.1149
October.....		2.96					8.52	14,009	14,436	4.1243
November.....		2.82					9.38	13,813	14,214	4.0666
December.....							10.82	13,420		3.9309
1909.										
January.....		2.40					9.16	13,483	13,815	3.9695
February.....		3.00					8.66	13,840	14,268	4.0746
March.....		3.25					10.13	13,576	14,032	3.9768
June.....		2.28					9.70	13,695	14,015	4.0319
Average <sup>a</sup> ..		2.75					9.24	13,770	14,160	4.0540

a Averages irrespective of monthly amounts delivered; month of December not included in average.

**SURVEY PUBLICATIONS ON FUEL TESTING.**

The following publications, except those to which a price is affixed, can be obtained free by applying to the Director, Geological Survey, Washington, D. C. The priced publications can be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C.

**BULLETIN 261.** Preliminary report on the operations of the coal-testing plant of the United States Geological Survey at the Louisiana Purchase Exposition, in St. Louis, Mo., 1904; E. W. Parker, J. A. Holmes, M. R. Campbell, committee in charge. 1905. 172 pp. 10 cents.

**PROFESSIONAL PAPER 48.** Report on the operations of the coal-testing plant of the United States Geological Survey at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; E. W. Parker, J. A. Holmes, M. R. Campbell, committee in charge. 1906. In three parts. 1492 pp. \$1.50.

**BULLETIN 290.** Preliminary report on the operations of the fuel-testing plant of the United States Geological Survey at St. Louis, Mo., 1905, by J. A. Holmes. 1906. 240 pp. 20 cents.

- BULLETIN 316. Contributions to economic geology, 1906, part 2, by M. R. Campbell and others. 1907. 543 pp. 70 cents.
- BULLETIN 323. Experimental work conducted in the chemical laboratory of the United States fuel-testing plant at St. Louis, Mo., January 1, 1905, to July 31, 1906, by N. W. Lord. 1907. 49 pp. 10 cents.
- BULLETIN 325. A study of four hundred steaming tests, made at the fuel-testing plant, St. Louis, Mo., 1904-1906, by L. P. Breckenridge. 1907. 196 pp. 10 cents.
- BULLETIN 332. Report of the United States fuel-testing plant at St. Louis, Mo., January 1, 1906, to June 30, 1907; J. A. Holmes, in charge. 1908. 299 pp.
- BULLETIN 334. The burning of coal without smoke in boiler plants; a preliminary report, by D. T. Randall. 1908. 26 pp. 5 cents. (See Bulletin 373.)
- BULLETIN 336. Washing and coking tests of coal and cupola tests of coke, by Richard Moldenke, A. W. Belden, and G. R. Delamater. 1908. 76 pp. 10 cents.
- BULLETIN 339. The purchase of coal under government and commercial specifications on the basis of its heating value, with analyses of coal delivered under government contracts, by D. T. Randall. 1908. 27 pp. 5 cents. (See Bulletin 378.)
- BULLETIN 343. Binders for coal briquets, by J. E. Mills. 1908. 56 pp.
- BULLETIN 362. Mine sampling and chemical analyses of coals tested at the United States fuel-testing plant, Norfolk, Va., in 1907, by J. S. Burrows. 1908. 23 pp. 5 cents.
- BULLETIN 363. Comparative tests of run-of-mine and briquetted coal on locomotives, including torpedo-boat tests and some foreign specifications for briquetted fuel, by W. F. M. Goss. 1908. 57 pp.
- BULLETIN 366. Tests of coal and briquets as fuel for house-heating boilers, by D. T. Randall. 1908. 44 pp.
- BULLETIN 367. Significance of drafts in steam-boiler practice, by W. T. Ray and Henry Kreisinger. 1909. 61 pp.
- BULLETIN 368. Washing and coking tests of coal at Denver, Colo., by A. W. Belden, G. R. Delamater, and J. W. Groves. 1909. 54 pp.
- BULLETIN 373. The smokeless combustion of coal in boiler plants, by D. T. Randall and H. W. Weeks. 1909. 188 pp.
- BULLETIN 378. Results of purchasing coal under government specifications, by J. S. Burrows; Burning the small sizes of anthracite for heat and power purposes, by D. T. Randall. 1909. 44 pp.
- BULLETIN 385. Briquetting tests at Norfolk, Va., by C. L. Wright. 1909. 41 pp.
- BULLETIN 392. Commercial deductions from comparisons of gasoline and alcohol tests on internal-combustion engines, by R. M. Strong. 1909. 38 pp.
- BULLETIN 393. Incidental problems in gas-producer tests, by R. H. Fernald, C. D. Smith, J. K. Clement, and H. A. Grine. 1909. 29 pp.
- BULLETIN 402. The utilization of fuel in locomotive practice, by W. F. M. Goss. 1909. 28 pp.
- BULLETIN 403. Comparative tests of run-of-mine and briquetted coal on the torpedo boat *Biddle*, by W. T. Ray and Henry Kreisinger. 1909. 49 pp.
- BULLETIN 412. Comparative tests of run-of-mine and briquetted coal on a locomotive boiler, by W. T. Ray and Henry Kreisinger. 1909. 32 pp.
- BULLETIN 416. Recent development of the producer-gas power plant in the United States, by R. H. Fernald. 1909. 82 pp.
- MINERAL RESOURCES, 1907. Coal briquetting in 1907, by E. W. Parker. pp. 223-228.
- MINERAL RESOURCES, 1908. Coal briquetting in 1908, by E. W. Parker. Pt. 2, pp. 213-221.



# INDEX.

	Page.
Acme coal, analyses of .....	58, 59
Agricultural Department, deliveries to, analyses of .....	62-63
Alabama, Bibb County, coal from .....	52
Jefferson County, coal from .....	52
Anthracite coal, specifications for .....	37-38
Anthracite, barley, analyses of .....	57
buckwheat, analyses of .....	48, 55, 58, 68, 71
chestnut, analyses of .....	63, 70, 74
egg, analyses of .....	60, 62, 64, 65, 66, 69, 73, 74
furnace, analyses of .....	62-69, 72, 75, 76
pea, analyses of .....	54, 57, 65, 69
rice, analyses of .....	72
screenings, analyses of .....	47, 48, 54
stove, analyses of .....	63, 66, 67, 70, 73, 74, 75
Anthracite-coal deliveries, quality of .....	46
Ash, proportion of, from coal .....	7-8
Baltimore, Md., deliveries in, analyses of .....	47
Beech Creek coal, analyses of .....	48
Belle Ellen, Ala., coal from .....	52
Berlin mine, W. Va., coal from .....	50, 51
Bibliography of Survey publications .....	76-77
Bituminous coal, specifications for .....	38-40
Blaine mine, W. Va., coal from .....	59
Boston, Mass., deliveries in, analyses of .....	48
Boswell, Pa., coal from .....	65, 75, 76
Botanical Gardens, deliveries to, analyses of .....	63
Brooklyn, N. Y., deliveries in, analyses of .....	48
Budd mine, Pa., coal from .....	61
Buffalo, N. Y., deliveries in, analyses of .....	49
Burrows, J. S., work of .....	6
Camden mine, Pa., coal from .....	51
Canal Zone. <i>See</i> Panama Railroad Company	
Cargoes, sampling of .....	18
Car samples, character of .....	13-14
Cephas mine, W. Va., coal from .....	55, 56
Charleston, S. C., deliveries in, analyses of .....	49
Cherokee coal, analyses of .....	57
Chicago, Ill., deliveries in, analyses of .....	49-50
Cincinnati, Ohio, deliveries in, analyses of .....	50
Civil Service Commission, deliveries to, analyses of .....	65
Clinker, effect of, on value of coal .....	8
Coal, price of and economy in, relations of .....	8
size of, effect of, on combustion .....	8-9
standards for purchase of .....	9-13
advantages of .....	10-12
history of .....	9-10, 12-13
value of, as fuel .....	6-9
factors affecting .....	7-9
Coal deliveries. <i>See</i> Government, deliveries to.	
Combustion, efficient, requirements for .....	6
Commerce and Labor, Department of, coal consumption of .....	19

	Page.
Congress, deliveries to, analyses of .....	63
Contracts. <i>See</i> Government contracts.	
Deringer mines, coal from .....	57
Detroit, Mich., deliveries in, analyses of .....	50-51
Dill, W. Va., coal from .....	59
Dust, removal of, from sample .....	16
Economy, relation of, to price .....	8-9
Education, Bureau of, deliveries to, analyses of .....	64
Eleanora mine, Pa., coal from .....	49
Elk Lick mine, Pa., coal from .....	54, 55
Empire mine, coal from .....	52
Engle vale, Kans., coal from .....	57
Engraving and Printing, Bureau of, deliveries to, analyses of .....	71
Fixed carbon, effect of, on value of coal .....	8
Florence mine, Pa., coal from .....	49
Frankford Arsenal, Pennsylvania, deliveries to, analyses of .....	58
Freedman's Hospital, deliveries to, analyses of .....	65
Gas engines, fuel fitted for .....	6
Geological Survey, deliveries to, analyses of .....	68
Georges Creek coal, analyses of .....	66, 67, 70
Government, coal consumption of .....	19-20
deliveries to, details of .....	46-76
Government contracts, list of .....	40-45
Government Printing Office, deliveries to, analyses of .....	64
Harris, W. J., jr., work of .....	6
Hawk Run, Pa., coal from .....	58, 59
Heat production, coal value measured by .....	6, 9
measurement of .....	6
Heating value, purchasing by, importance of .....	5-6
Holmes, J. A., work in charge of .....	6
Howard University, deliveries to, analyses of .....	65, 66-67
Illinois, Peoria County, coal from .....	52
Staunton district, coal from .....	61
Vermilion County, coal from .....	49, 50
Imperial coal, analyses of .....	60
Insane, Government Hospital for, deliveries to, analyses of .....	66
Interior Department, coal consumption of .....	19-20
deliveries to, analyses of .....	64-68
Isthmian Canal Commission, deliveries to, analyses of .....	75
Kanawha coal, analyses of .....	50, 51
Kansas City, Mo., deliveries in, analyses of .....	51
Kansas, Cherokee and Crawford counties, coal from .....	51
Engle vale region, coal from .....	57
Land Office, deliveries to, analyses of .....	67
League Island Navy-Yard, Pennsylvania, deliveries at, analyses of .....	59

	Page.		Page.
Library of Congress, deliveries to, analyses of.	64	Pratt coal, analyses of.	52, 53
Loeb, Leo, work of.	6	Publications, list of.	76-77
Louisville, Ky., deliveries in, analyses of.	51	Punxsutawney mine, Pa. coal from.	49
Loup Creek, W. Va., coal from.	71, 72	Reynoldsville, Pa., coal from.	49
McKee, H. H., work of.	6	Riefkin, P. M., work of.	6
Maryland, Allegany County, coal from.	66, 67, 70	Rock Island, Ill., deliveries in, analyses of.	60
Mid Valley, Pa., coal from.	54	St. Clair, Pa., coal from.	57
Miller, E. W., work of.	6	St. Louis, Mo., deliveries in, analyses of.	61
Milwaukee, Wis., deliveries in, analyses of.	52	St. Paul, Minn., deliveries in, analyses of.	61
Mine samples, character of.	13-14	Samples, shipment of.	16-17, 18
Mineral Springs mines, coal from.	52, 53	Sampling, directions for.	17-18
Minneapolis, Minn., deliveries in, analyses of.	52	methods of.	13-18
Mobile, Ala., deliveries in, analyses of.	52	Sharon mine, W. Va., coal from.	50, 51
Moisture, effect of, on value of coal.	7, 14-15	Simington, F. J., work of.	6
Mount Hope Mine, Pa., coal from.	47, 57	Smithers, W. Va., coal from.	50, 51
National Museum, deliveries to, analyses of.	69	Smithsonian Institution, deliveries to, analyses of.	69-70
Naval Observatory, deliveries to, analyses of.	68	Snyder, N. H., work of.	6
Navy Department, coal consumption of.	19	Soldier's Home, deliveries to, analyses of.	75
deliveries to, analyses of.	68	Specifications, character of.	33-34
New Orleans, La., deliveries in, analyses of.	52-53	coal purchases under.	9-13
Newport News, Va., deliveries in, analyses of.	53	advantages of.	10-12
New River coal, analyses of.	50, 53, 71	history of.	9-10, 12-13
New York, N. Y., deliveries in, analyses of.	54-55	form of, 1909-10.	34-40
Norfolk, Va., deliveries in, analyses of.	55-56	nature of.	11-12
Oakley mine, W. Va., coal from.	50, 51	Springfield, Mass., deliveries in, analyses of.	60
Omaha, Nebr., deliveries in, analyses of.	57	Standards. See Coal, standards of.	
Oregon mine, W. Va., coal from.	55, 56	State Department, deliveries to, analyses of.	70-71
Orenda coal, analyses of.	65, 75, 76	Staunton mine, Ill., coal from.	61
Panama Railroad Company, coal consumption of.	19	Steam boilers, fuel fitted for.	6
deliveries to, analyses of.	53, 56	Straub, A. A., work of.	6
Pardee mine, Pa., coal from.	48	Sulphur, effect of, on value of coal.	8
Pawnee mines, Ill., coal from.	49, 50	Testing, methods of.	13-18
Pension Office, deliveries to, analyses of.	67	Toledo, Ohio, deliveries in, analyses of.	62
Pennsylvania, Allegheny Co., coal from.	51	Treasury Department, coal consumption of.	19
Cambria County, coal from.	47, 48, 55, 60	proposals of, 1909-10.	22-32
Clearfield County, coal from.	58, 59	purchasing practice of.	20-22
Deringer district, coal from.	57	deliveries to, analyses of.	71-72
Jefferson County, coal from.	49	Volatile matter, effect of, on value of coal.	8
Mid Valley, coal from.	54	Wagons, samples from.	17-18
Schuylkill region, coal from.	47, 57	War Department, coal consumption of.	19
Somerset County, coal from.	54, 55, 65, 75, 76	deliveries to, analyses of.	72-75
Westmoreland County, coal from.	62	Washington, D. C., deliveries in, analyses of.	62-75
Youghiogheny Valley, coal from.	52	sampling and testing in.	15-16
Peters, J. W., work of.	6	Watertown, Mass., deliveries to, analyses of.	76
Philadelphia and Reading, deliveries in, analyses of.	57-59, 72	Weather Bureau, deliveries to, analyses of.	63
Philadelphia coal, analyses of.	72	Welch mine, W. Va., coal from.	55, 56
Pine Hill mine, coal from.	54, 55	West Virginia, Dill district, coal from.	59
Piney Creek, W. Va., coal from.	71, 72	Fayette County, coal from.	50, 71, 72
Piney mine, W. Va., coal from.	49	McDowell County, coal from.	55, 56, 62
Pittston, Pa., coal from.	48, 55	Raleigh County, coal from.	49, 71, 72
Pocahontas coal, analyses of.	56, 62	Wilson, H. M., work in charge of.	6
Pope, G. S., work of.	6	Youghiogheny coal, analyses of.	52, 61
Post-Office Department, deliveries to, analyses of.	69	Zoological Park, deliveries to, analyses of.	69-70