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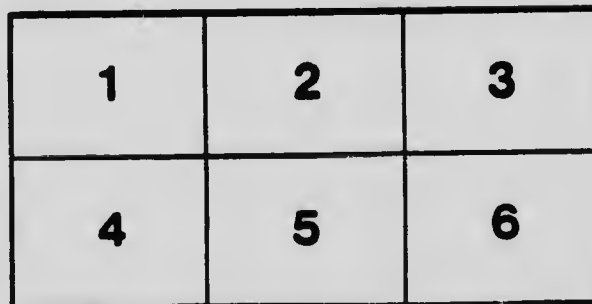
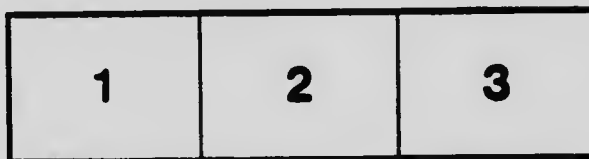
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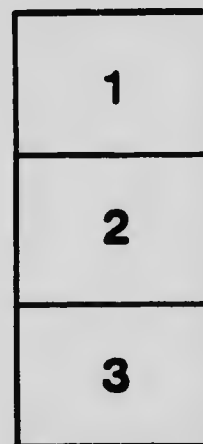
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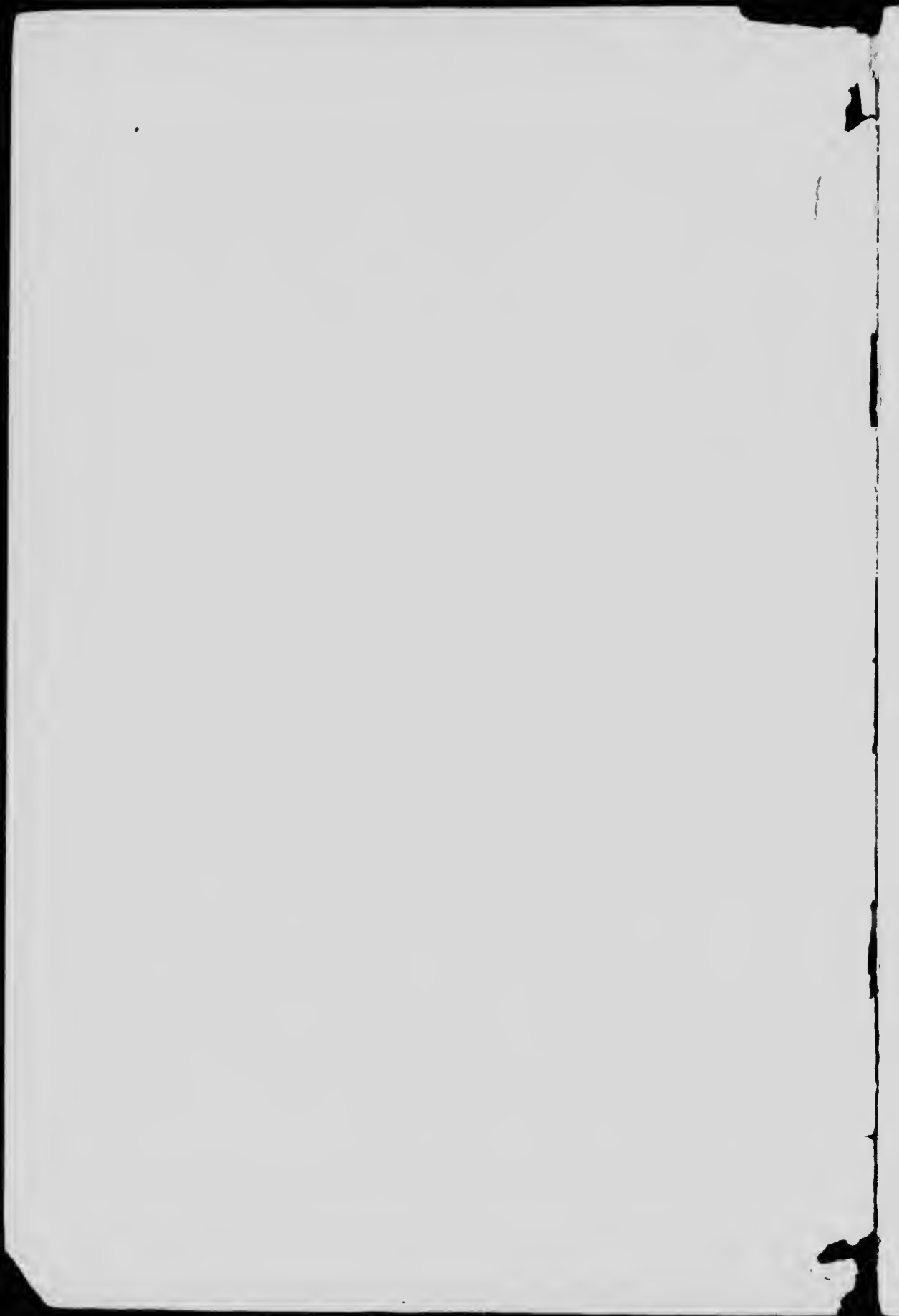
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**Report**  
**ON**  
**Tests of Gas Meters**

**MADE BY**  
**PROF. ROBERT W. ANGUS.**

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**1908**



## REPORT ON TESTS OF GAS METERS MADE FOR THE CITY OF TORONTO, MAY AND JUNE, 1908.

TORONTO, JUNE 20TH, 1908.

*His Worship Mayor Oliver, City Hall, Toronto:*

SIR,—Herewith please find my report on tests of gas meters, and the methods of inspection used in Toronto.

I have the honor to be, Sir,

Your obedient servant,

ROBERT W. ANGUS.

### THE SELECTION OF THE METERS TO BE TESTED.

#### (a) *The First Set of Meters.*

Thursday, May 21, 1908, I received a letter from Mayor Oliver, dated May 20, appointing me to represent the City of Toronto on the tests of a number of gas meters to be made at the Gas and Electric Inspection Office of the Inland Revenue Department, in the rear of 10 Toronto Street. The letter also stated that a list of the meters to be tested would be given me by Mr. R. C. Harris, Property Commissioner. I, therefore, obtained this list, which included 53 meters, and began the tests on May 21st.

The meters mentioned above were delivered by the Consumers' Gas Company to the Inspector's office, and it was therefore impossible for me to get definite information as to their history or location. Some of them were in the Inspector's office when I began the tests, the remainder having been delivered to the place of testing on or about May 23rd.

#### (b) *The Second Set of Meters.*

It is impossible for anyone to interfere with the mechanism of a gas meter without the case showing clear evidence of the fact. However, exposure of the meters to considerable heat or pressure does have an effect on the leather in the bellows, and in an investigation of this kind it is in the interest of all concerned that a disinterested person should see the meter removed from the building in which it is used, and should have it completely under his control till the investigation is finished. It was for this reason alone that the second set of meters was chosen. There was no desire to cast any reflection on the Gas Company; and in going over their shops with considerable care, I was impressed with the careful handling and storage of meters after inspection by the Government.

It was, therefore, thought best that I should choose a number of meters without the previous knowledge of the Gas Company as to which ones

would be selected. Accordingly, on June 10th, I went with a representative to the Gas Company's offices, and their books giving a record of a large number of their meters were handed over to us. Twelve meters were selected from the books, the list being kept in our possession. On the afternoons of June 10th and 11th, my representative went around with an employee of the Gas Company and collected the meters, simply notifying the latter where he was to go next after a meter had been taken. As soon as the meters were brought in they were sealed with a Government seal and kept at the Inspector's office until tested.

In the collection of these meters the work was facilitated by Messrs. Pearson and Hewitt, of the Gas Company, who enabled me to get information from their books which would secure an average set of meters.

#### THE METHOD OF TESTING THE METERS.

In deciding upon the method of testing the meters, I had to be guided by the Gas Inspection Act, and I shall give certain sections of this Act so that the plan adopted may be understood:

Section (4)—"The only standard or unit of measure for the sale of gas by meter shall be the cubic foot, containing sixty-two pounds and three hundred and twenty-one thousandths of a pound avoirdupois weight of distilled water, weighed in air at the temperature of sixty-two degrees of Fahrenheit's thermometer, the barometer being at thirty inches."

Section (19)—"No meter shall be stamped which is found by the Inspector to register, or capable of being made to register, quantities varying from the true standard measure of gas, more than three per centum in favour of the seller, or four per centum in favour of the consumer."

Section (25)—"The verification and testing of meters and gas shall be performed in accordance with the provisions of this Act, and with such further regulations not inconsistent therewith as are, from time to time, made by the Governor in Council."

Section (26)—"The following rules shall be observed by the Inspector in testing meters:

"(a) The wheelwork and other appliances whereby the registering indices are moved, shall be verified in such manner as, from time to time, is prescribed by regulations made by the Minister;

"(b) The meter shall be tested for soundness or leakage only, and not for percentage of error, when fixed on a horizontal base, and with air or gas under a pressure equal to a column of water three inches high—and passing not more than one-twentieth part of its measuring capacity per hour marked thereon, nor less than one-half of a cubic foot per hour for all meters of a measuring capacity not exceeding one hundred cubic feet per hour—and not more than one-fortieth part of



its said capacity per hour for all meters of any greater measuring capacity per hour than one hundred cubic feet, and all meters found to work under such test, and none other, shall be deemed sound meters;

"(c) The meter to be tested for percentage of error shall be fixed on a horizontal base, and shall be tested at a pressure equal to a column of water one inch high, and also under a pressure equal to a column of water five-tenths of an inch high, and passing the quantity of gas or atmospheric air per hour, which shall be marked thereon as its measuring capacity per hour; and the water used in such testing, and the air of the room in which such testing is made, shall be as nearly as practicable of the same temperature as the gas or air passed through the meter."

This section (14) gives the definition of the cubic foot which is to be used as the unit of measurement. Section (26) gives the rules to be observed in making the tests and the conditions under which the latter are to be made. Section (19) gives the limits of error to be allowed in meters as tested; but, it is not clear whether the meters may be tried in any way whatever, or must be tried under the conditions named in section 26 (c). I shall refer to this matter again at the end of my report; but, in the meantime, I have interpreted it as meaning that the error is not to exceed that given in section (19), when the test is made according to the rules laid down in section (26).

The regulations permitted by section (25) of the Act are embodied in a printed circular sent to each of the inspectors of meters, and these regulations give the details of the method of carrying out and interpreting the Act.

#### APPARATUS.

In order to facilitate the work of the Inspector, the Act further provides that gasholders carefully compared with the standard cubic foot shall be used, so that the meters are not tested directly by the standard cubic foot measure, but by a gasometer or gasholder which is first graduated by means of a standard cubic foot "bottle." This "bottle" is kept in the possession of the Inland Revenue Department at Ottawa, and is sent around from time to time to the different inspectors, so that by comparison with this, their holders may be always maintained in good and accurate condition.

In the Gas Inspection Offices in Toronto, there are in all five gasholders, each having a capacity of about eleven cubic feet. One holder is located in the office at the rear of 10 Toronto Street, and the remaining four in a room controlled by the Gas Inspector, on the premises of the Consumers' Gas Company.

Each of these holders is provided with a scale divided into feet and fiftieths of a foot, so that the exact amount of air passing out of it during a given time may be read to fiftieths of a foot, and the nearest hundredth may be readily estimated.

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TESTING OF APPARATUS USED.

(a) *The Standard Bottle.* As the only unit for the measurement of gas is the cubic foot as defined by section (4) of the Act, it was necessary that the standard cubic foot "bottle" should be tested. This was done by filling it with distilled water between the marks limiting the cubic foot, and then weighing this water and correcting the result for difference of temperature. I found that the bottle held 62.172 lbs. of distilled water at a temperature of 74° F., which when corrected for temperature to correspond to the standard of 62° F., gave a weight of 62.257 lbs., which differs from the standard weight of 62.321 lbs. by about one-tenth of one per cent. The bottle was, therefore, assumed to be correct.

(b) *The Gasholder.*—As all the meter tests described in this report were made at the Gas Inspection Office in the rear of 10 Toronto Street, the holder in this office was very carefully calibrated by means of the standard cubic foot bottle. I found during the tests that this holder was somewhat out of adjustment; but, as it worked with perfect freedom and gave quite uniform results, I decided to continue the tests and afterwards to calibrate the holder under the exact conditions under which it had been used. I found that certain corrections had to be made on this account, but, allowance has been made for all these in the results.

I next examined the divisions on the scale on the gasholder by means of a steel scale divided into hundredths of an inch, and I found that the divisions had not been accurately made and were irregular in many places. For example, I found that in certain cases divisions were 0.05 in. and in others 0.08 in. apart, whereas they should have been .064 in. apart. The scale on this holder is not good; in some places the markings are almost illegible, and there are frequent errors of division of the kind mentioned. These inaccuracies have been allowed for in the tests.

This holder is not in good condition mechanically, and there are clear indications that it is frequently out of adjustment. It should be put in first-class condition and provided with a new scale at once.

I think it only fair to point out that the holder is not used on regular work, meters for the general city service being tested at the Government Office on the Consumers' Gas Company's premises.

THE TESTS.

In making the tests, the procedure was as follows:—The meter to be tested was first placed upon a level bench and its inlet connected by means of a pipe to the gasholder. In the case of five and three light meters, provisions was made for taking the temperature of the air as it left the holder, as it entered the meter and as it left the meter, special attachments being provided at the meter for the purpose. The temperatures of the room and of the water in the holder were also taken. In the case of the ten and

twenty-eight meters, the temperatures were not taken at entrance to the meter, but were taken at exit in most cases.

After the meter had been connected as above described, the outlet was closed by a cap, and the meter, pipes and holder were subjected to a pressure corresponding to three inches of water column for a period of five minutes. This test was to determine the condition of the case of the meter, and the results of it are set down in the table under the heading "Leakage." This leakage test is *not* the one prescribed in section (26 b) of the Act, but, as the requirements of this sub-section could not be carried out in reasonable time without opening the meters, I decided to substitute the above leakage test. As the sub-section is apparently meant to show whether a meter will register properly or not when passing a small quantity of gas at high pressure, I think the Gas Company will look after its interests in this respect, as it is apparently framed for the protection of the safety of gas.

The next test was that for percentage of error under the conditions described in section 26 (c). As required by the Act, the meter was tested under two different pressures, which were as near to one inch and to one-half an inch of water column as possible. In these tests the amount of air passed through the meter per hour was as near as possible equal to the capacity per hour stamped on the face of the meter, except in two cases.

Mrs. A. L. Martin and Cowan Avenue Firehall.—See Tables I. and II.

It was difficult to realize exactly the requirements of the Act either as to quantity or pressure; but, the actual conditions approached those required very closely in all cases, and the actual discharges and pressures are given in the table. The rate of discharge of the air was controlled by screwing a cap on the outlet of the meter, which had an orifice of suitable size to pass the desired quantity.

To test the accuracy of the wheelwork and recording devices as required by section 26 (a) of the Act, would require the opening and dismantling of each meter, and I did not desire to have this done. I had one of the meters opened and found the train of wheels correct. I also obtained one of the dials from the stock room of the Gas Company and found it to be correct. As I consider the liability to error on this point to be small, I did not carry the investigation further.

#### RESULTS OF THE TESTS.

Particulars as to the meters submitted to me for test are given in Table I. I have arranged them in groups as to the makers.

Col. 3 gives the date on the tin label soldered on each meter by the Gas Company.

Col. 4 gives the date of removal of the meter, and was taken from the tag attached to the meter giving the name of the consumer, etc.

Col. 5, the date of the Government inspection is shown on wax seal placed on the top of the meter, and generally corresponds with the date label attached by the Gas Company.

The remaining columns give data placed upon the case of the meter by the maker as required by the Gas Inspection Act. With reference to this, it may be said that in practically all cases the number of feet of gas per light was reckoned as six by the makers, while the Act states that "each light" shall be "computed to consume five cubic feet of gas per hour under a pressure equal to a column of water five-tenths of an inch high." It may also be stated that many of these meters have been repaired and, in some cases, almost re-made by the Gas Company, so that the maker's date may, in these cases, mean little more than the date on which the case was made.

The results of the tests are given in Table II. The leakage in five minutes is the quantity which leaked out of the case when the meter was subjected to a pressure equal to a column of water three inches high with the outlet pipe closed. It is an indication as to the quantity of gas that would leak into a cellar through the meter case, and, as is evident from the table, was in all cases very small.

The remaining columns give the exact pressure in inches of water during the test, the number of cubic feet per hour passing through the meter, and the percentage of error fast or slow, all quantities being given for the two pressures specified in the Act.

In computing the percentage of error, a correction was made for temperature in all cases where the temperature of the air passing through the meter differed by one degree or more from the temperature of air in the holder. In making such correction, the temperature of the air in the holder was taken as the mean of the room and of the air leaving the holder, and the temperature of the air at the meter as the mean of the inlet and outlet temperatures, or if these were not known, the temperature at the outlet of the meter was taken. This differed very little from the temperature of the room.

For convenience, I have placed in Table III, a list of the meters included in Table II, which should be rejected by an inspector as being outside the limits of error allowed by law.

Of the total number of meters tested 14 were rejected, 24 were fast and 19 were slow. One meter of the ordinary three-light size had been reconstructed by the Gas Company, and a dial for a five-light meter had been put in. The dial registered correctly however.

S. Eagen's meter, No. 18183, was further examined to find out, if possible, the cause of such a large error. First, 100 cu. ft. of air was passed through it at 1 in. pressure, and at the rate of 75 cu. ft. per hour (a much

higher rate than required by the Act), and the meter registered about 150 cu. ft., showing that it ran somewhat faster under this higher rate of flow. The meter was then taken apart and the leather in the back bellows was found to be in very bad condition, and hard, and the stroke of the back diaphragm was very small. The cause of this defect is unknown to me.

Tables IV., V. and VI give similar results to the former three tables; but, on the twelve meters that I selected from the City in the manner described in the early part of this report, ten of these meters were slow, and of the other two, neither was fast enough to exceed the percentage allowed by law. I did not measure the leakage for any of these meters, as no complaint had been made, so far as I know, about any of them, and leakage would have been noticed at once.

I have made notes about each of these meters, which were obtained when my representative went to the houses to remove them. These notes are as follows:—

James Chan—Chinese laundry. Meter close to outside frame wall on ground floor. Temperature fairly high in room on account of irons.

M. Soloway—Meter in cellar wall; no furnace in cellar; not quite vertical.

E. G. Lynch—Meter on cellar wall; no furnace.

J. A. Woodward—Meter on cellar wall 20 feet away from hot air furnace and 5 ft. from window. Thought bills high.

Geo. Yeo—Meter on cellar wall, 10 ft. from hot air furnace and 5 ft. from a flue. Thought bills reasonable.

J. D. McGill—Meter on cellar wall, set at an angle of 15 degrees to vertical, 25 feet from hot water furnace, 1 ft. from window. Large bill last quarter.

J. W. Reeves—Meter on cellar wall, 20 ft. from hot air furnace.

J. M. Percy—Meter on cellar wall, 10 ft. from hot air furnace, 5 ft. from a window. Thought bills reasonable.

Milburn Co.—Meter on cellar wall; furnace in adjoining room.

Reid Bros., Cabinet makers—Meter on cellar wall, 3 ft. from window; gas engine 20 ft. away.

Stan. Walker, Furrier—Meter on cellar wall 15 ft. from hot air furnace and 2 ft. from a window.

F. R. Bettie, Butcher—Meter on cellar wall 3 ft. from window; no furnace. Gas engine.

As there are over 50,000 meters in the city, it is not possible to make very certain deductions from such a small number as twelve; but, it would indicate that the meters have a tendency to run slow rather than fast.

#### FURTHER INVESTIGATIONS.

##### *(a) Examination of the Four Gasholders used in Testing the Meters for Regular Consumers.*

As I pointed out in the earlier part of this report, there are five gasholders in the Inspection Offices of this City, the four which are used for the testing of consumers' meters being placed in a room on the Gas Company's premises, the room being in control of the Gas Inspector. In view of the fact that these holders are used as described, I thought it necessary for the investigation that I should examine their accuracy. The results of the tests on these gasholders are given in Table VII. The scales on these holders were, on the whole, well divided, and the latter appeared to be in good mechanical condition. Wherever errors occur in the volume shown by the holder, they are all of such a nature as to make the meters appear faster on the test than they are actually.

##### *(b) The Variations in Pressure of the Gas and the Effect on the Meter.*

Unknown to the Gas Company, I had a record taken of the pressure of the gas in my residence in Howland Avenue. This record was taken for an entire week beginning Saturday, May 30th, and ending the following Saturday. In all cases, the gas burners in the house were almost entirely shut off during the reading of the pressure.

The minimum pressure was 1.9 inches at 8 a.m., June 1, although at several other times the pressure only slightly exceeded this. The maximum pressure was 4.9 inches, which occurred at 7 p.m., June 1, and I found several times that toward this same hour the pressure ran over 4.5 inches. Several variations of pressure of about 1 in. in an hour occurred.

I used the above data as the basis for a few experiments on a certain meter, on the afternoon of June 16, and I had hoped to make some complete experiments along this line, but, as the investigation has already lasted a considerable time, I thought best to curtail the work as much as possible.

The results of this investigation are given in Table VIII., and show that the error in the meter will depend on the pressure at which it is working, and the rate of flow of gas through it. The table is well worthy of careful study and shows that the error may be increased from 3.1 per cent. to 6.3 per cent. by an increase in pressure and discharge, and that this error may be reduced at the higher pressure by decreasing the discharge of the meter.

This investigation shows that the error of the meter varies with the conditions of its use; but, I have not taken the time to find if these conditions might be varied so as to make the meter run faster. Such an investigation would be very desirable.

(c) I have also made sufficient investigation to convince me that a meter will not register unless gas is passing through it. That is, variations in pressure alone are not sufficient to cause registration. Further, unless a meter is out of repair, it cannot be made to go backward more than one revolution of the small dial at the top of the meter.

#### REPRESENTATIVES AT THE TESTS.

The Government was represented at the tests by Mr. Ormond Higman, Chief Electrical and Gas Engineer of the Inland Revenue Department, and by Mr. J. A. Whyte, his assistant. Mr. Higman was present at both the beginning and end of the tests and during the testing of the holders. Mr. White acting for the Government at other times. The Consumers' Gas Company was represented by Mr. W. J. Spearman, Foreman of the Meter Department. All of these gentlemen did what was in their power to facilitate the work and to make a very tedious task pleasant, and I wish to return them my thanks.

#### CONCLUSIONS.

##### *Remarks on Results of Tests.*

In all there were 53 meters on the City list, and of these 21 were fast, 19 were slow and 9 were fast on one pressure and slow on the other, while one would not work. The fastest meter was 35.6 per cent. fast, and the slowest was 11.11 per cent. slow. Of this lot, 26.1 per cent. had errors greater than are allowed by the Act and would be rejected.

Of the 12 meters selected by me, 41.7 per cent. had errors greater than are allowed by the Act, and would be rejected. The fastest meter was 2.01 per cent. fast, and the slowest was 8.68 per cent. slow.

What strikes me most forcibly is the large proportion of the meters that would be rejected by the Act. Whether these meters are slow or fast, they are inaccurate and are in bad condition.

With regard to this percentage, I have not found it easy to get comparison with the work in other countries, because in many American places there seems to be no very rigid or systematic inspection. The following figures are, however, from the Reports of the Board of Gas and Electric Light Commissioners of Massachusetts. In comparing the figures with the results of my tests, it must be borne in mind that in Massachusetts the

allowable percentage of error is 2 per cent. fast or slow. (The Canadian Act allows 3 per cent. fast or 1 per cent. slow.) The figures are for the years 1905, 1906 and 1907, and give the tests on meters against which a complaint was made; they are thus in the same class as the 53 sent in by the City.

#### RESULTS OF TESTS MADE IN MASSACHUSETTS.

Year.	Number Tested.	Number of Slow Meters.	Number of Fast Meters.	Number of Meters Rejected.	Percentage Error in Fastest Meter.	Percentage Error in Slowest Meter.
1905 .....	758	63	359	434	25	47
1906 .....	424	25	212	246	17	35
1907 .....	356	29	177	208	15	45

#### PERCENT INVESTIGATION ON THE 53 COMPLAINT METERS.

53	19	24	14	35.6	11.11
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The percentage of meters rejected in Massachusetts is, therefore, greater than in my tests, for there would have been 26 meters rejected here if the limits of error were 2 per cent., which is a smaller proportion of the total than in the case above quoted.

#### REGARDING THE GAS INSPECTION ACT.

As the Gas Inspection Act appears to be founded upon the corresponding Act passed in England on August 13, 1859, I desire to quote here certain corresponding sections in the two Acts, for the sake of comparison.

##### Section 19. Canadian Act:—

"No meter shall be stamped which is found by the inspector to register, or capable of being made to register, quantities varying from the true standard measure of gas, more than *three per centum* in favour of the seller, or *four per centum* in favor of the consumer."

##### Section XII., Act of 1859:—

"No meter shall be stamped which shall be found by the Inspector to register, or be capable of being made by any contrivance for that purpose . . . or by any other means, practically prevented in good meters, to register quantities varying from the true standard measure



of gas more than *two per centum* in favour of the seller or *three per centum* in favour of the consumer, and every meter, whether stamped or unstamped, which shall be found by such Inspector to register, or be so capable of being made to register, quantities varying beyond the limits aforesaid, shall be deemed incorrect within the meaning of the Act; and every meter which shall be found by such Inspector to measure and register quantities accurately or not varying beyond the limits aforesaid and shall be found incapable by any such means as aforesaid, of being made to register quantities varying beyond the limits aforesaid, shall be considered to be correct. . . . ."

A comparison between these sections shows at once that the Canadian Act is less strict than the other one, the allowable percentages of error in the Canadian Act being greater than in the British Act. While the difference may seem small, yet I think it has the effect of allowing the use in Canada of a class of meters inferior to those in use in England, and where a maker sells meters in both countries, the natural inference would be that the poorer grade come to Canada and the better grade go to England. The inferior meter, of course, does not stand so well and is liable to develop defects in much less time than the better one.

The British Act also makes it clear that the meter may be tested in various ways to find whether it exceeds the allowable limits of error or not. In the Canadian Act the matter does not appear clear, and I could only interpret section (19) in connection with section (26 c). This interpretation corresponds with that in the Departmental Regulations of 1899.

In this connection, I would call attention to Table VIII., showing the results of a short investigation on a certain meter when working at different pressures and rates of flow. When this meter was tested according to the rules laid down in section (26 c), it came within the limiting error of four per cent. slow, as shown by the first test in the table; and yet, by subjecting it to various other pressures and rates of flow, it has been possible to make it run over six per cent. slow. I should also point out that I did not in any case subject to excessive pressure, as it would in every day use be liable to pressures considerably over three inches of water column, and it might easily have to pass much larger volumes of gas than 30 cu. ft. per hour. I would, therefore, call attention to the fact that section (19) is indefinite.

If the limits of error allowed in the British Act were applied to the 53 meters tested, there would be 19 rejected as against 14 under the Canadian Act.

This difference is rather striking, as the conditions of the British Act would raise the percentage of meters rejected from 26.4 per cent. to 35.8 per cent.

(NOTE.—In the British Act, the meters have to be tested at the one pressure of one-half inch of water column only.)

I believe that the Canadian Act should be so modified as to bring into use here the best class of meter, and that the allowable errors should be not greater than elsewhere.

Referring again to the British Act of 1859, it is found that there is no section corresponding to section (26a) of the Canadian Act, referring to the proving of the wheelwork. The regulations laid down in this section cannot be carried out without having the meter opened to give access to the gear wheels and dials. Since, in testing for accuracy, the observations are made to depend upon the small dial, it is evident that this dial might be registering with accuracy and yet through incorrect gearing, the meter may be giving entirely wrong results. I do not think such conditions are common, but I do think that there should be no chance of such a thing happening, and, therefore, that some means of checking each of the trains of gears used in a meter should be adopted.

Further, the pressures mentioned in the Canadian Act, under which the meters are to be tested, are not those to which the meter will be subjected in practice, and hence, a meter which may come within the limits of error allowed by the Act, under the test conditions, may be much more inaccurate under actual working conditions. An examination of Table VIII. will throw some light on this point.

The test prescribed by section (26b) for soundness or leakage is also difficult to execute in any reasonable time, where a meter is closed and ready for service. The rate at which the gas is to be passed through the meter for this test is so low that it would take about fifty minutes to pass one cubic foot on a five-light meter, and I doubt if the spirit of the clause could be followed when less than one cubic foot, or at the very least, one-half a cubic foot of gas has passed through the closed meter. It will thus be seen that the time required in such work would be very great. The Gas Company make a test of similar nature to this, but it is always made before the top is soldered on the meter, in which case the test can be applied in a few minutes. It is obvious that tests made by a Government Inspector on a meter which is open, and which can be again thrown out of adjustment, are useless.

After a careful study of the whole matter, I feel that the Government should go carefully to the question of gas meters, and draft rules for testing which will bring the Government tests more into accordance with the working conditions of the meters, and should deal with other matters

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connected therewith. The work along this line is altogether too great to be attempted in connection with the present investigation.

This investigation began Wednesday afternoon, May 20th, and with the exception of the 25th, 26th and 27th May, has continued uninterruptedly since. The actual testing work stopped June 16th.

All of which is respectfully submitted.

ROBERT W. ANGUS.

Toronto, June 20th, 1908.

TABLE 1.  
DESCRIPTION OF METERS SENT IN FOR TESTING.

Consumer.	Consumers' Gas Co.'s Designation.		Date of Removal of Meter.		Date of Government Inspection.	Maker's Designation.		Maker's Name and Other Information
	Number.	Date Label.	1908			No.	Date.	
(a) <i>Three Light Meters.</i>								
1 J. J. Graham, 306 Dovercourt.....	14589	4-08	Not given.		4-08	31641	1902	These meters made by Robert Mitchell & Co., Montreal. All have 2-ft. small dial, and a capacity of 18 cu. ft. per hr. and 125 cu. ft. per revolution.
2 L. Bentley, 1218 Yonge St. ....	422	10-07	May 20.		10-07	23861	1900	
3 C. A. Taylor, 48 Phoebe St. ....	A2413	6-08	May 21.		5-08	58184	1907	
4 H. S. Mitchell, 127 Harbord.....	10226	2-08	May 21.		2-08	8028	1896	
5 F. Haseldon, 89½ Beaconsfield.....	9803	12-06	May 20.		12-06	5224	1895	
6 R. Hay & Co., 513 Bld. of Trade Bldg.	15	1-05	May 20.		1-05	24829	1900	These meters made by the Standard Meter Co., Toronto. All have 2-ft. small dial, and a capacity of 18 cu. ft. per hr., and 125 cu. ft. per revolution.
7 W. J. Chapman, St. George Apt's ..	A750	9-06	May 20.		9-06	16139	1908	
8 J. E. O. Blagden, 654 Parliament ..	19066	1-05	May 20.		1-05	5902	1905	
9 E. Adams, 49 Broadview .....	A3572	6-07	May 20.		6-07	22190	1907	
10 H. W. Hill, 39 Phillips .....	17168	7-05	May 20.		7-05	1112	1906	
11 J. E. Loney, 55 Macpherson .....	19683	7-05	May 20.		8-05	8564	1905	
12 S. Eugen, 223 Spadina Ave .....	18183	7-04	May 21.		7-04	3172	1904	
13 R. G. Myles, 328 Margueretta .....	19607	1-07	May 20.		1-07	8378	1905	
14 H. S. Munger, 735 Dovercourt .....	A3450	4-08	May 21.		4-08	21810	1907	
15 J. B. Perry, 26 Prince Arthur.....	A2967	12-06	May 20.		1-07	18611	1906	

16 W. M. Atkins, 11 Myrtle Ave. ....	3591	8-06	May 20	8-06	6067 29 1884	These meters made by Thos. Glover and Co., London, England. All have 2-ft. small dial, and a capacity of 18 cu. ft. per hr. and .125 cu. ft. per revolution.
17 C. H. Rudd, 877 Queen W. ....	6560	6-05	May 20	6-05	6357 51 1889	
18 A. E. Tomlinson, 15 Buchanan. ....	9372	1-06	May 20	12-05	7552 87 1894	
19 E. Edwards, 801 Queen W. ....	4170	1-05	May 21	1-05	6396 71 1886	
20 S. Eagen, 224 Spadina Ave. ....	8223	6-06	May 21	6-06	7400 88 1892	
21 A. Wainwright, 110 Synington ....	21192	7-06	May 21	7-06	15253 1906	John S. Moore, London, Ont., maker. 2-ft. dial, 18 ft. cu. ft. per hr., .1111 cu. ft. per revolution.
22 Mrs. A. L. Martin, 117 McNeil ....	7653	11-07	May 20	11-07	99 1892	Cous. Gas Co., maker, Glover, 5 light dial.
(b) Five Light Meters.						
1 Fire Hall (N) Ossington Ave. ....	208	10-07	May 19	10-07	26273 1901	R. Mitchell & Co., Montreal, maker, 2-ft. small dial, capacity, 30 cu. ft. per hr., and 166 cu. ft. per revolution.
2 J. O. Finlay, 374 Bathurst St. ....	10090	9-07	May 20	8-07	3694 1895	
3 Mrs. J. May, 22 Shannon St. ....	14353	10-07	May 20	10-07	39159 1903	
4 A. Clouston, 180 Walmer. ....	14611	6-03	May 20	6-03	39395 1903	
5 E. W. Roblin, 8 Carlton St. ....	13981	3-08	May 21	3-08	34262 1902	
6 Tait & Co. 645 King E. ....	10390	2-08	May 20	2-08	4580 1895	
7 E. L. Stoneman, 51 Lansdowne. ....	13908	6-02	May 20	6-02	32234 1902	R. Mitchell & Co., Montreal, maker. 2-ft. small dial, capacity, 30 cu. ft. per hr., and .166 cu. feet per revolution.
8 R. W. King, 503 Markham ....	15634	12-03	May 20	12-03	41953 1903	
9 L. Bentley, 307 Markham ....	17812	4-05	May 20	4-05	6356 1905	Standard Meter Co., Toronto, maker. 2-ft. small dial, capacity, 30 cu. ft. per hr., and .166 cu. ft. per revolution.
10 Joseph Wilder, 239 Queen W. ....	1310	8-07	May 20	8-07	23121 1907	
11 F. C. Stevenson, 79 Czar ....	16585	9-04	May 20	9-04	4659 1904	
12 H. Frost, 185 Avenue Road ....	18522	9-05	May 20	9-05	9087 1905	
13 J. B. Ray, 693 D'Hara ....	17413	1-05	May 20	1-05	5634 1905	
14 Miss Huggitt, 109 Alexander. ....	17238	12-04	May 20	12-04	5422 1904	
15 Fire Hall, Bolton Avenue. ....	8344	6-05	May 19	6-05	742143 1892	Thos. Glover & Co., London, Eng-land, maker, 2-ft. small dial, capacity, 30 cu. ft. per hr., and .166 cu. ft. per revolution.
16 E. D. Armour, 103 Avenue Road. ....	7138	4-08	Mar. 12	4-08	724698 1891	
17 J. B. Perry, 26 Prince Arthur. ....	1659	11-05	May 20	11-05	601168 1883	
18 Rev. A. W. Chapman, 733 Ontario. ....	9505	2-08	May 21	2-08	756232 1894	
19 R. W. King, 503 Markham. ....	2014	1-08	May 20	1-08	617161 1884	
20 H. Nield, 122 Ossington. ....	6258	4-08	May 18	4-08	709931 1890	Can. M. Co., Windsor. 2-ft. dial, capacity, 50 cu. ft. per hr., and .166 cu. ft. per revolution.
21 Fire Hall, Cowan Ave. ....	13590	2-05	May 19	2-05	1504	

TABLE 1—Continued.  
DESCRIPTION OF METERS SENT IN FOR TESTING.

Consumer.	Consumers' Gas Co.'s Designation.		Date of Removal of Meter.		Date of Reinspection.	Maker's Designation.		Maker's Name and Other Information.
	Number.	Date Label.	1908			No.	Date.	
<i>(b) Five Light Meters.—Continued.</i>								
22 P. Quenne, 36 Elm St.....	3955	11—05	Mar. 16	11—05		39053	1888	Das, Mulue & Son, 30 ft. hr., .166 ft. rev., 2-ft. dial.
23 F. W. Willard, 132 Ossington.....	20014	5—06	May 20	5—06		14273	1906	J. S. Moore, 30 ft. hr., .166 ft. rev., 2-ft. dial.
24 A. B. Barry, 702 Spadina Ave.....	12696	11—06	May 15	11—06		Seymour M. Capacity, 30 cu. ft. per hour, and Co., 697. Remade by Consumers' Gas Co. No. 1086.		.166 per rev., 2-ft. small dial.
<i>(c) Ten Light Meters.</i>								
Fire Hall No. 10, Yorkville Ave.....	1654	6—05	May 18	6—05		19316	1899	R. Mitchell & Co., Montreal, maker, 5-ft. small dial; capacity, 60 cu. ft.
S. Fire Hall, Ossington Ave.....	1907	10—04	May 19	10—04		39534	1903	per hr., .333 cu. ft. per rev.
Cattle Market, Farley Ave.....	1936	2—04	May 19	2—04		5	1903	Standard M. Co., 5-ft. small dial, 60 cu. ft. per hr., .333 cu. ft. per rev.

C. F. Heebner, 265 Wellesley.....	1247	8-07	May 20....	8-07	40627 1888 J. Milne & Son, 5-ft. small dial. 60 cu. ft. per hr., 312 cu. ft. per rev.
(d) <i>Twenty Light Meters</i>					
Police Station, Court St.....	674	2-08	May 19....	2-08	27649 1908 Standard M. Co., 10-ft. small dial. 120 cu. ft. per hr., 50 cu. ft. rev.
Police Station, Wilton Ave.....	46	2-05	May 19....	2-05	84189 1856 Crole & Glover, 5-ft. small dial. 120 cu. ft. per hr., 50 cu. ft. rev.
Police Station, Agnes St.....	279	6-05	May 19....	6-05	642692 1886 F. Glover & Co., 5-ft. small dial. 120 cu. ft. per hr., 50 cu. ft. rev.

TABLE II.  
RESULTS OF TESTS ON METERS SENT IN.

Consumer.	Date of Test.	Leakage in 5 min. cu. ft.	Higher Pressure.			Lower Pressure.		
			Pressure in inches.	Cu. ft. air discharged per hr.	Percentage error of meter.	Pressure in inches.	Cu. ft. air discharged per hr.	Percentage error of meter.
Three Light Meters.								
1 J. J. Graham.....	June 4	0	1.06	16	0.30 fast	33	18	1.23 slow
2 L. Bentley.....	June 1	.01	.95	14	5.04 fast	.43	14	6.55 fast. Rejected
3 C. A. Taylor.....	June 2	.01	.95	15	0.25 fast	.33	18	0.99 slow
4 H. S. Mitchell.....	June 3	.01	1.05	15	2.51 fast	.33	17	1.19 slow
5 S. Hazelden.....	June 4	.005	1.05	16	0.25 fast	.51	18	0.94 slow
6 R. Hay & Co.....	June 4	.01	.95	15	3.09 fast	.45	15	3.09 fast. Rejected
7 W. J. Chapman.....	May 23	0	.94	16	1.94 fast	.42	14	1.94 fast
8 J. E. O. Blagden.....	June 1	0	.95	15	2.83 fast	.50	18	2.35 fast
9 Mrs. E. Adams.....	June 2	.02	1.05	16	1.63 fast	.52	17	0.30 fast
10 H. W. Hill.....	June 2	.01	1.05	15	3.94 slow	.53	16	4.85 slow. Rejected
11 J. E. Loney.....	June 3	.02	1.05	16	5.71 fast	.52	14	7.41 fast. Rejected
12 S. Eagen, No. 18183.....	June 5	.01	1.05	15	32.45 fast	.52	13	35.50 fast. Rejected
13 R. G. Myles.....	June 4	0	1.09	16	0.0	.52	17	0.99 slow
14 H. S. Munger.....	June 4	0	1.05	17	0.96 fast	.54	18	2.15 fast
15 J. B. Perry.....	June 5	.01	1.05	15	2.39 slow	.53	17	2.15 slow
16 W. M. Atkins.....	June 1	0	.95	14	1.63 fast	.52	17	0.61 slow
17 C. H. Rusk.....	June 2	0	1.00	14	11.11 slow	.50	13	9.09 slow. Rejected
18 A. E. Tomlinson.....	June 2	0	1.05	15	0.65 slow	.51	16	1.43 slow
19 E. Edwards.....	June 3	.01	1.02	14	1.38 slow	.53	17	1.19 slow



<i>Five Light Meters</i>									
20 S. Eagen, No. 8223	June 3	.01	1.04	16	1.63 fast.	.52	19	2.09 fast.	
21 A. Wainwright	June 3	.02	1.02	15	0.81 fast.	.50	17	0.50 slow.	
22 Mrs. A. L. Martin	June 3	0	1.05	16	1.57 slow	.51	18	0.15 slow.	
<i>Five Light Meters</i>									
1 N. Fire Hall (Ossington)	June 8	.01	1.05	31	0.70 slow.	.53	30	0.30 fast.	
2 J. G. Findlay	June 6	.015	1.05	30	1.28 slow.	.53	27	0.25 fast.	
3 Mrs. J. May	May 28	0	.90	28	0.55 slow.	.45	27	0.20 slow.	
4 A. Chatterton	May 28	.015	1.01	31	2.58 slow.	.42	25	2.58 slow.	
5 E. W. Roblin	May 29	.005	1.01	33	1.06 fast.	.52	30	1.90 fast.	
6 Tait & Co.	May 29	0	.99	30	1.28 slow.	.41	27	0.30 slow.	
7 E. J. Stoneman	May 30	.005	.97	30	3.47 slow.	.42	25	2.15 slow.	
8 R. W. King, No. 15634	June 3	.015	1.04	31	1.47 fast.	.53	28	1.90 fast.	
9 L. Bentley	May 28	.015	.93	31	1.42 fast.	.45	32	1.63 fast.	
10 Jos. Wilder	May 28	0	1.01	32	0.81 fast.	.45	27	1.94 fast.	
11 F. C. Stevenson	May 28	0	1.01	33	1.21 fast.	.43	29	1.21 fast.	
12 H. Frost	June 6	0	1.04	31	4.66 fast.	.52	28	4.33 fast.	Rejected
13 J. B. Ray	May 30	0	.96	31	1.63 fast.	.44	27	0.25 fast.	
14 Miss Huggell	June 1	.015	.95	30	2.46 fast.	.45	25	4.93 fast.	Rejected
15 Fire Hall (Bolton)	May 21	0	.95	24	.50 fast.	.42	29	.81 fast.	
16 E. D. Arnour	June 6	0	1.05	32	1.53 slow.	.53	29	2.10 slow.	
17 J. B. Perry	June 8	0	1.05	32	4.93 slow.	.53	30	3.52 slow.	Rejected
18 Rev. A. W. Chapman	June 1	.01	1.00	33	1.62 slow.	.46	26	1.19 slow.	
19 R. W. King, No. 2014	June 5	.01	1.1	32	3.33 slow.	.53	30	3.71 slow.	
20 H. Neild	June 5	0	1.13	31	7.06 slow.	.53	28	7.28 slow.	Rejected
21 Fire Hall (Owan)	June 8	.01	1.05	31	2.25 slow.	.53	28	.5 slow.	
22 P. Querrie	June 8	.005			Meter passed air freely but refused to register.			Rejected	
23 F. W. Willard	May 21	0	1.05	31	2.20 fast.	.53	29	1.99 fast.	
24 A. B. Barry	June 5	0	1.05	31	3.09 fast.	.53	29	3.52 fast.	Rejected
<i>Ten Light Meters</i>									
1 Fire Hall, No. 10 (Yorkville)	June 8	.015	1.06	58	2.25 slow.	.52	45	0.77 slow.	
2 Fire Hall (S. Ossington)	June 8	.015	1.06	58	0.17 fast.	.53	57	1.19 fast.	
3 Cattle Market, Farley	June 8	.015	1.05	57	1.34 fast.	.54	52	1.11 fast.	
4 C. F. Heehner	June 8	.01	1.06	58	0.22 slow.	.53	59	0.68 slow.	

TABLE II—*Concluded.*  
RESULTS OF TESTS ON METERS SENT IN.

Consumer.	Date of Test.	Leakage in 5 min. cu. ft.	High Pressure.			Lower Pressure.			Remarks.
			Pressure, inches.	Cu. ft. air dis- charged per hr.	Percentage error of meter.	Pressure, inches.	Cu. ft. air dis- charged per hr.	Percentage error of meter.	
<i>Twenty Light Meters.</i>									
1 Police Station, Court	June 9	0	1.05	132	2.56 fast.	.53	109	4.17 fast.	Rejected
2 " " Wilton Ave	June 9	0	1.05	131	2.88 fast.	.53	112	4.30 fast.	Rejected
3 " " Agnes	June 9	0	1.05	140	0.99 slow.	.52	110	0.60 low.	

NOTE.—The word "fast" means that less gas passes through the meter than the dials would indicate, i.e., that the gas bills are higher than they should be, and the word "slow" means the reverse, i.e., the meter registers less than it should.

TABLE III.  
METERS ON THE LIST SENT IN BY THE CITY WHICH HAVE BEEN REJECTED UNDER THE ACT.

Consumer.	Size of meter Lights.	Maximum Error.	Remarks.
L. Bentley .....	3	6.55 fast.	Failed on the tests at both pressures.
R. Hay & Co. ....	3	3.09 fast.	Failed on the tests at both pressures.
H. W. Hill .....	3	4.85 slow.	Failed on the lower pressure test. Within limit on higher pressure.
J. E. Loney .....	3	7.41 fast.	Failed on the tests at both pressures.
S. Eagen, No. 18183 .....	3	35.59 fast.	Failed on the tests at both pressures.
C. H. Ruld .....	3	11.11 slow.	Failed on the tests at both pressures.
H. Frost .....	5	4.66 fast.	Failed on the tests at both pressures.
Miss Hingett .....	5	4.93 fast.	Failed on lower pressure test. Within limit on higher pressure.
J. B. Perry .....	5	4.63 slow.	Failed on higher pressure test. Within limit on lower pressure.
H. Neild .....	5	7.28 slow.	Failed on tests at both pressures.
P. Querric .....	5	.....	Meter passed air freely, but would not register.
A. B. Barry .....	5	3.52 fast.	Failed on the tests at both pressures.
Police Station, Court St. .	20	4.17 fast.	Failed on lower pressure test. Within limit on higher pressure.
Police Station, Wilton Ave.	20	4.30 fast.	Failed on lower pressure test. Within limit on higher pressure.

TABLE IV.

TWELVE METERS SELECTED BY THE CITY'S REPRESENTATIVE AND UNDER HIS CONTROL FROM THE TIME OF REMOVAL UNTIL THE TIME OF TESTING. ALL THESE METERS WERE REMOVED ON JUNE 10 AND 11, 1908.

Consumer	Consumers' Gas Co.'s Designation.		Date of Government Inspection.		Data Supplied by the Maker.				Capacity.	
	Number.	Date label.	Inspection.	Maker's Name.	Number.	Date.	Size of small dial in. ft.	Lights	Cubic ft. per rev. per hr.	
James Chan, 149 Adelaide W.	14875	7-02	7-02	R. Mitchell & Co.	33754	1902	2	3	.125	18
M. Soloway, 58 Widmer St.	13075	2-05	2-05	R. Mitchell & Co.	22305	1899	2	3	.125	18
E. G. Lynch, 100 Farley Av.	18884	11-04	11-04	Standard Meter Co.	4887	1904	2	3	.125	18
J. A. Woodward, 4 Fenning's St.	12434	7-04	Not legible	R. Mitchell & Co.	19906	1899	2	3	.125	18
Geo. Yeo, 325 Ossington Av.	12754	12-05	12-05	R. Mitchell & Co.	20390	1899	2	3	.125	18
J. D. McGill, 282 College St.	1723	11-02	11-02	T. Glover & Co.	607306	1884	2	5	.166	30
J. W. Reeves, 193 Ossington	2728	10-07	10-07	T. Glover & Co.	648887	1886	2	5	.166	30
J. M. Percy, 143 Harrison St.	8423	6-05	6-05	T. Glover & Co.	739822	1892	2	5	.166	30
Millburn Co., 643 King St. W.	19594	3-06	2-06	John S. Moore.	13558	1906	2	5	.166	30
Reid Bros., 1110 Queen St. W.	1341	4-03	4-03	T. Glover & Co.	703157	1890	5	10	.333	60
Stan. Walker, 536 Queen St. W.	1637	4-05	4-05	R. Mitchell & Co.	17269	1898	5	10	.333	60
F. R. Bettie, 150 Dundas St.	319	11-04	11-04	T. Glover & Co.	665573	1887	5	20	.50	120

TABLE V.  
RESULTS OF TESTS OF METERS SELECTED BY CITY'S REPRESENTATIVE.

Consumer	Date of Test.	Higher Pressure.			Lower Pressure.			Remarks.
		Pressure inches.	Cu. ft. air discharged per hr.	Percentage error of meter.	Pressure inches.	Cu. ft. air discharged per hr.	Percentage error of meter.	
Jas. Chan	June 15...	1.00	14	8.68 slow	Meter refused to work or pass air at Rejected.			
M. Solway	June 15...	1.00	15	No error...	.46	16	No error...	
E. G. Lynch	June 15...	1.00	14	3.29 slow	.48	14	4.90 slow...	Rejected.
J. A. Woodward	June 15...	1.00	14	1.13 slow	.48	14	3.52 slow...	
Geo. Yeo	June 15...	1.00	15	8.05 slow	.47	16	2.91 slow	Rejected.
J. D. McGill	June 15...	1.00	30	4.17 slow	.47	26	3.05 slow	Rejected.
J. W. Reeves	June 15...	1.00	32	2.72 slow	.48	25	3.10 slow...	
J. M. Percy	June 15...	1.00	32	0.86 fast...	.48	28	2.04 fast...	
Millburn Co.	June 15...	1.00	50	3.57 slow	.45	24	4.71 slow...	Rejected.
Reid Bros	June 16...	1.00	54	1.48 slow	.48	52	1.38 slow...	
S. Walker	June 16...	.98	55	0.40 slow	.48	51	1.11 fast	
F. R. Beetle	June 16...	.97	100	1.67 slow	.45	82	0.70 slow...	

TABLE VI.  
METERS ON THE LIST SELECTED BY THE CITY'S REPRESENTATIVE WHICH HAVE BEEN REJECTED.

Consumer.	Size of Meter.	Maximum Error.		Remarks.
		Lights.	Per cent.	
James Chan.....	3		8.68 slow.	Would not work nor pass air on $\frac{1}{2}$ -in. pressure.
E. G. Lynch.....	3		4.90 slow.	Failed on $\frac{1}{2}$ -in. pressure test. Within the limit on the 1-in. pressure.
Geo. Yeo.....	3		8.05 slow.	Failed on 1-in. pressure test. Within the limit on the $\frac{1}{2}$ -in. pressure.
J. D. McMill.....	5		4.17 slow.	Failed on 1-in. pressure test. Within the limit on the $\frac{1}{2}$ -in. pressure.
Milburn Co.....	5		4.71 slow.	Failed on $\frac{1}{2}$ -in. pressure test. Within the limit on the 1-in. pressure.

TABLE VII.  
TESTS ON HOLDERS USED TO TEST THE GAS METERS FOR REGULAR CITY SERVICES.  
*Holders were all Tested at about 1 in. Pressure.*

No. 9 Holder in 1st Corner of Room.				Holder No. 14 in Centre of North Wall of Room.			
(1)	(2)	(3)	Error in Holder.	(1)	(2)	(3)	Error in Holder.
Part of Holder Scale Tested.	Volume shown by Holder Scale	Actual Volume of Air put into Holder.	Difference between Columns (2) and (3).	Part of Holder Scale Tested.	Volume shown by Holder Scale.	Actual volume of air put into Holder.	Difference between Columns (2) and (3).
	Cu. ft.	Cu. ft.	Cu. ft.		Cu. ft.	Cu. ft.	Cu. ft.
10.00-9.00	1.00	1.00	0	10.00-9.007	0.993	1.00	0.007
9.00-8.007	0.993	1.00	0.007	9.00-8.007	0.993	1.00	0.007
8.00-7.01	0.990	1.00	0.01	8.00-7.00	1.00	1.00	0
7.00-6.00	1.00	1.00	0	7.00-6.01	0.99	1.00	0.01
6.00-5.014	0.986	1.00	0.014	6.00-5.005	0.995	1.00	0.005
5.00-4.00	1.000	1.00	0	5.00-4.00	1.00	1.00	0
4.00-3.013	0.987	1.00	0.013	4.00-3.00	1.00	1.00	0
3.00-2.005	0.994	1.00	0.006	3.00-2.005	0.995	1.00	0.005
2.00-1.00	1.00	1.00	0	2.00-1.00	1.00	1.00	0
1.00-0	1.00	1.00	0	1.00-0	1.00	1.00	0
			Per cent.				Per cent.
			0				0.7
			0.7				0.7
			1.0				0
			0				1.0
			1.4				0.5
			0				0
			1.3				0
			0.6				0.5
			0				0
			0				0





TABLE VIII.  
TESTS ON A CERTAIN METER UNDER VARIOUS CONDITIONS OF PRESSURE AND DISCHARGE.

*Tests made June 16, 1908.  
Five Light Meter with a Capacity of 30 cubic feet per hour.*

Quantity of air passing through meter per hour. Cu. ft.	Pressure of air in holder, in. water.	Percentage error of meter.	Remarks.
30	.97	3.1 slow.	The test under 1 in. pressure prescribed by the Act. Quantity discharged is that specified in Act.
40	.97	3.8 slow.	Same pressure as foregoing test but greater quantity flowing. Percentage error increased.
31	.97	3.6 slow.	Top of meter tilted to the left and back about 10° to try the effect of the setting of the meter. Error nearer that of first trial.
47	1.95	5.0 slow.	Pressure and discharge both increased causing an increase in the error.
61	1.95	6.3 slow.	Pressure same as in last experiment but discharge increased to about double that specified in Act. Error increased above last experiment.
61	3.10	6.1 slow.	Pressure again increased while discharge was kept constant. Error about the same as in the last test.
23	3.10	2.9 slow.	Pressure same as in the last test but discharge very little less than required by Act. Error nearly same as in first test.
12	3.15	2.9 slow.	Pressure nearly same as in last test but discharge again decreased. No effect or error.

NOTE.—The results in this table are only approximate and are given to show that the quantity of air discharged and the pressure have a decided effect on the accuracy of the meter.

