

SECOND BIENNIAL REPORT

OF THE

STATE OIL INSPECTOR

TO THE

GOVERNOR OF IOWA.

JUNE 30, 1887.

PRINTED BY ORDER OF THE GENERAL ASSEMBLY.

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1887.

REPORT OF STATE OIL INSPECTOR.

To HON. WILLIAM LARRABEE, *Governor of Iowa:*

As required by law, I have the honor to submit herewith the report of the work, fees and expenditures and general results of this office during the fifteen months of my official term, beginning with April 1, 1886, and terminating June 30, 1887.

Any argument in favor of the State taking upon itself the duty of regulating the quality of kerosene oil would be superfluous at this time, and especially to those who remember the wretchedly inferior quality of the oil used in Iowa prior to the enactment of the present law, and the frequent explosions and the extensive damages to life and property resulting from the unregulated sale of this illuminating material throughout the State.

As to the general working of the law, it is gratifying to be able to report that there have been no deliberate and intended violations of it. There have been but few prosecutions and those of country merchants. In every instance the offenders have invariably pleaded ignorance of the law in extenuation of their misdemeanor; and though ignorance of the law is not a valid excuse for its violation, where there has been no reasonable doubt of the sincerity of the plea, I have requested the court trying the case to allow it to weigh in mitigation of the penalty. To secure this harmonious working of the law and to avoid the necessity of more frequent prosecutions has necessitated prompt action and a large amount of personal travel and correspondence on the part of the State Inspector. But it has been my chief object to secure the fullest compliance with the law by all persons interested either in the sale or use of illuminating oils, with as little litigation as possible. I was led to adopt this policy by early learning that in almost all cases of violation of the law the offenders were imposed upon by representatives of manufactories and jobbers who, so long as they sold their oil, cared nothing for the con-

sequences to the unsuspecting country merchant. The most common form of their deception was to assure the merchant that the oil sold to him would be "Iowa test oil." By this the dealer would understand that the oil would in every respect meet the requirements of the State law; and in most cases never having read the law, would proceed to sell it without hesitation, and in perfect good faith, when in fact the oil had never been inspected or branded by an Iowa Inspector, and was in no wise legal oil.

To illustrate: Last fall a representative of an obscure Oil Refining Company in Ohio, sold oil in lots of five and ten barrels each to retail dealers in a number of towns in Louisa, Washington and Mahaska counties. In every instance the dealer was assured that the oil would be "Iowa legal test," and he would have no trouble or expense for State inspection. It required some time to hunt all their oil out, but it was done. Upon inspection in our Iowa cup every barrel of it was found to be below the legal test, and was condemned and sent out of the State.

In another case I was summoned from Des Moines to Rockford, in Floyd county, to inspect three barrels of oil, consigned to farmers in that vicinity by a wholesale grocery house in Chicago. But for the secret information I received, the oil would have been delivered to the farmers and used by them without inspection. One of the barrels was approved on inspection, but the other two were of very low grade, and dangerous for use, and were condemned. The fees for inspection in this case amounted to thirty cents, and the expense of the trip \$12.40. At another time I was called to a small town in the northern part of Winnebago county, where two barrels of oil had been received from Albert Lea, Minnesota, and was being sold without inspection. The parties retailing the oil were prosecuted for violation of the law and fined. But the trip cost the inspector two days time and travel, and an expense of \$16.10. The fees amounted to twenty cents.

Instances of this kind might be cited indefinitely, increasing enormously the labor and expenses of the State Inspector and his deputies. They are of almost weekly occurrence, invariably involving expenditure largely in excess of the fees. A large amount of oil is shipped into the State in car lots. A car of oil contains about sixty barrels. The fee for inspection, at ten cents a barrel, will be six dollars; but in most cases a portion of the contents of the car will be gasoline, for which only five cents a barrel is charged. If a car-load

of oil is received at Waterloo, for example, an inspector must be sent to that point from Des Moines or Dubuque. So that the expenses of the inspector, in such cases, generally amount to more than the fees, particularly if a considerable portion of the contents of the car should be gasoline. In a general way it may be said that, taken as a whole, the oil shipped into the State in car lots is inspected at a loss to the Inspector. That is to say, the expenditures for travel and time consumed are in excess of the fees received for the inspection of this class of oil. This, however, constitutes something less than twenty-five per cent of the entire consumption of oil in this State, the great bulk of it being received in large tanks at stations at prominent points, such as Dubuque, Des Moines, Keokuk, Council Bluffs, Sioux City, Davenport, Cedar Rapids, Ft. Dodge, Marshalltown, Burlington, Ottumwa, Clinton, etc. At these points, or convenient to them, the Deputy Inspectors are located.

DEPUTY INSPECTORS.

The following were the names of the Deputy Inspectors, and their headquarters, at the close of the official year, June 30, 1887:

F. R. Laird, Des Moines.
 M. Stone, Des Moines.
 J. K. Mason, Keokuk.
 C. J. Blanchard, Council Bluffs.
 S. S. Harris, Cedar Rapids.
 John Behrens, Davenport.
 M. R. Rany, Fontanelle.

The Dubuque District—that city being my residence and official headquarters—I have kept under my personal charge, assisted by my clerk, Captain B. E. Agard, who, in my absence, also performs the duties of Deputy Inspector. I have also found it necessary to employ other assistants from time to time for special services during the fall and winter months, when the sale and consumption of oil are greatest. I have not sought to run the office merely for what there is in it. My first consideration has been the strictest enforcement of the law, and the fullest protection of the public interests under it. This, I think, will be borne out by the statement contained in this report of the amount of fees received, and the expenditures for actual services and material. That the methods adopted for the enforce-

ment of the law, and the security of life and property have been successful, is fairly shown by the fact that there was

NOT A SINGLE EXPLOSION OF OIL

in the State during the fifteen months embraced in this report. I have made it one of my special duties to inquire into the causes of fires and damages claimed to have been occasioned by coal oil, and am prepared to demonstrate that there has not been a genuine "explosion" nor a fire tracable to illuminating oil that was not due to inexcusable neglect in handling the oil, to faulty lamp burners or wicks, or the mixing of gasoline with oil for the purpose of making the latter burn more freely and yield a brighter light. It may be instructive to cite beneath some instances of this character.

THE GLENWOOD EXPLOSION.

In October of last year the dispatches in the daily papers of the State, announced under the above heading, a fire at Glenwood, in which a Mrs. Starbuck was severely burned. It was distinctly stated that the fire was the result of an explosion of oil in a lamp in the hands of the injured lady.

The Deputy Inspector at Council Bluffs was at once sent to Glenwood to ascertain the facts. I here submit his report in full, because it is a fair illustration of a certain class of accidents, and the ease with which they are charged to the account of defective oil

GLENWOOD, IOWA, October 15, 1886.

JOHN BLANCHARD, *State Oil Inspector, Dubuque, Iowa:*

DEAR SIR—Pursuant to your instructions from Des Moines, received last evening, I came down here to make an investigation. I met and interviewed Mr. E. Starbuck, the husband of the injured lady, and give you herewith the result. According to his statement, there were only two people in the house at the time the accident occurred. Mrs. Starbuck and her daughter, child of about 12 years. As near as can be ascertained, about 8 o'clock in the evening Mrs. S. started to go up stairs, ascending the child before her. The child when at the head of the stairs, looked back and saw the hallway enveloped in flame, and her mother nowhere to be seen. She fled up through one of the rooms and escaped by jumping from the roof of the summer kitchen. She alarmed the neighbors, and brought assistance as soon as possible. The lady was found near the hallway very badly burned, and the steps were badly scorched.

A careful looking over of the premises leads me to think that Mrs. S.

stumbled and fell, dropping the lamp in front of her, and falling upon her left side in the burning oil. There was evidently no explosion, for the lamp bowl was broken in but one place, seemingly just where it struck the banner (a small piece being broken out) when she fell. Again, the walls are not spattered with oil, as they surely would have been had the lamp exploded. Then Mrs. S. was burned almost entirely upon the left side, which could scarcely happen if the lamp had exploded in her hand, as she is right handed, and was carrying the lamp (a heavy one) in her right hand. This theory of no explosion is further proven by an examination of the steps which are burned just where the oil would naturally run. The damage to the house is but slight. No one heard a report or any noise whatever, which is all in accord with my theory. The injured lady could not be seen, but I do not deem it necessary to see her. It was clearly an accident caused by the dropping of the lamp. Mrs. S., it would seem, after her clothes were on fire, rushed through the flames in search of her child, the apparent danger of the little one making her forgetful of her own peril. Mr. Starbuck fully concurs with me in this theory, and to-day purchased oil at the same place as before. I regretted that I could not get some of the oil to inspect, but it was purchased nearly three weeks ago, so that it was all long ago disposed of. The oil was 118 W. W., purchased from the Bluffs, as near as I can judge by the barrels. Yours, truly.

About the time of the Glenwood "explosion" the Dubuque papers announced the explosion of a lamp in a building on the levee. Upon investigation it was found that the "explosion" had occurred in a room above a saloon. The chimney of the lamp was half broken away. The owner stepped out with the intention of purchasing a new one, but became absorbed in some game in the saloon, and oblivious to the condition of his lamp until some four hours afterward, when his wife sent a child to announce to him that the lamp had exploded, and that the room was on fire. The lamp only partially filled with oil was left on a table directly in a strong draught of air from the windows facing the river and a door communicating with the hall and two rear windows. Under such conditions it was natural and inevitable that a very volatile and explosive vapor should be generated in the nearly emptied lamp by the strong current of air forcing the flame down into the burner. When the explosion occurred there could have been but a small quantity of oil in the lamp, and as a result there was no serious damage from the fire. Inspection of a sample of oil from the same barrel from which the contents of the lamp was drawn, tested 108°.

Fires at Preston, Postville, and other places have been reported to

the public as resulting from explosions of lamps, but in every instance subsequent investigation has shown that the accident was the result of accidental breaking of the lamp—burned out or otherwise defective burners, or some other form of carelessness in handling oil. It may be well to say here that oil that will not give off inflammable vapors at a comparatively high temperature will not take fire itself until it is raised to a still higher temperature. For example, oil that will stand the Iowa test, over 105° Fahrenheit before it will emit an inflammable vapor, cannot be set on fire by throwing a lighted match or taper into an open vessel containing it. But in the case of a lamp being broken by a fall or other accident, and the burning wick coming in contact with the oil thinly spread over a floor or carpet, ignition would be very likely to ensue at once. A cloth or paper saturated with oil which will stand the Iowa test will not only burn at the point of contact with the flame, but the flame will run over the whole surface saturated with the oil and envelop everything that it comes in contact with. But mineral seal oil which is used for illuminating railroad passenger coaches, street cars, etc., and which stands an open fire test of over 200° Fahrenheit, will not burn when spread out over a floor or carpet or other surface, and brought into contact with flame. A lighted taper thrown into it will continue to burn itself out without igniting the oil. Upon the subject of the explosion of kerosene oil I will dwell at some length later on in this report.

INCREASE IN THE CONSUMPTION OF OIL.

Unfortunately I have no data from which to prepare a comparative statement of the consumption of oil for the years 1886 and 1887, as the only published report of my predecessor covers only the first fourteen months of his term, viz.: from May, 1884 (when the law first went into operation), to June, 1885, inclusive. My term of office began April 1, 1886, so that for the nine months from June, 1885, to April, 1886, there is no published official report of the inspection of oil in this State. But the following table presents the

Statement of Inspections by Months from May, 1884, to March, 1886, both inclusive.

MONTHS.		Oil rejected.	Oil approved.	MONTHS.		Oil rejected.	Oil approved.
1884.				1885.			
May		239	5,507	July		No report for these months.	
June			6,350	August			
July			6,993	September			
August			10,818	October			
September			11,601	November			
October			14,718	December			
November			18,025				
December			17,433				
		239	91,445				

MONTHS.		Oil rejected.	Oil approved.	MONTHS.		Oil rejected.	Oil approved.
1885.				1886.			
January			25,907	January		No report for these months.	
February			9,513	February			
March		10	15,882	March			
April			5,441				
May			4,986				
June			4,898				
		10	69,627				

Total inspection for the fourteen months reported:

Oil rejected	249 barrels.
Oil approved	161,072 barrels.

Statement of inspections by months from April, 1886, to June, 1887, both inclusive.

MONTHS.	1886.		
	Barrels oil rejected.	Barrels oil approved.	Barrels gasoline.
April	117	4,008	.....
May	217	5,455	.....
June .....	.....	6,035	.....
July	135	7,484	.....
August	10	7,437	.....
September	165	11,613	.....
October	231	15,499	.....
November	133	20,065	.....
December	23	27,883	.....
Total	1,031	105,169	.....

MONTHS.	1887.		
	Barrels oil rejected.	Barrels oil approved.	Barrels gasoline.
January	165	20,674	.....
February	165	13,945	.....
March	66	13,410	.....
April	286	10,949	.....
May	2	3,135	.....
June	61	4,309	.....
Total	685	65,522	.....

Total inspection for fifteen months:

Oil rejected.....	1,716 barrels.
Oil approved.....	170,691 barrels.

From the above table it will be seen the amount of oil consumed in the State for the fourteen months reported by my predecessor, viz.: from May, 1884, to June, 1887, was 161,072 barrels. The number of barrels rejected during the same period was 249.

During the fifteen months of my time embraced in this report the amount of oil consumed was 170,691 barrels. Deducting from this the 4,008 barrels inspected in April, 1886, leaves 166,683 barrels approved during fourteen months against 161,072 barrels approved by my predecessor during the corresponding fourteen months of his time, or an increase in consumption of 5,611 barrels. The number of barrels rejected during these fourteen months 1,716 against 249 barrels rejected during the corresponding fourteen months reported by my predecessor. Under a ruling by the Attorney General of the State, the brand "Rejected for Illuminating Purposes" has been affixed to all barrels containing gasoline. But as no inspection of this highly inflammable product of petroleum is made only the legal fee or five cents has been charged per barrel for branding. The rapid increase in the use of gasoline for lighting streets, and for fuel in gasoline stoves makes some supervision of this dangerous substance very necessary. I have learned of several cases in which reckless persons have mixed gasoline with ordinary kerosene in order to secure the more brilliant light which the latter yields. In one instance of alleged "lamp explosion" in Dubuque was found that the lamp had been entirely filled from the gasoline can. By reference to the tables which follow, it will be seen that the total consumption of gasoline in Iowa for the fifteen months embraced in this report was 42,435 barrels.

REPORTS OF INSPECTORS AND FEES FOR THE FIRST FIFTEEN MONTHS OF THE PRESENT OFFICIAL TERM.

Report of inspections for the month of April, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
C. T. Bush	15	46	.....	825	2,475	.....	\$ 6.00
F. H. Laird .....	.....	742	.....	.....	40,810	.....	74.20
J. K. Mason	22	299	360	1,210	16,445	8,800	49.10
C. J. Blanchard .....	.....	1,194	132	.....	65,670	7,260	126.00
S. S. Harris	80	940	187	4,400	51,700	10,285	111.35
John Behrens .....	.....	788	.....	.....	43,340	.....	78.80
Total	117	4,008	479	6,435	220,440	26,345	\$ 436.45

Report of inspections for the month of May, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
F. H. Laird .....	.....	703	1,014	.....	38,665	55,770	\$ 121.00
M. Stone .....	.....	91	243	.....	5,005	13,365	21.25
J. K. Mason .....	.....	1,201	300	.....	66,055	16,500	135.10
C. J. Blanchard	212	467	64	11,960	25,685	3,520	71.10
S. S. Harris .....	.....	1,217	671	.....	66,935	36,905	155.25
John Behrens	5	1,316	442	275	72,380	24,310	154.20
M. A. Rany .....	.....	150	90	.....	8,250	4,950	19.50
Total	217	5,145	2,824	11,935	282,975	155,320	\$ 677.40

Report of inspections for the month of June, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
F. R. Laird	930	960	.....	51,150	52,800	\$ 141.00
M. Stone	567	466	.....	31,185	25,630	80.00
J. K. Mason	1,121	416	.....	61,555	22,880	132.90
C. J. Blanchard	795	313	.....	43,725	17,215	95.15
S. S. Harris	1,763	1,628	.....	96,965	89,540	257.70
John Behrens	866	255	.....	47,190	14,025	98.55
M. A. Rany	1	120	.....	55	6,800	6.10
Total	6,035	4,158	.....	331,925	228,690	\$ 811.40

Report of inspections for the month of July, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
F. F. Laird	3	1,601	1,040	165	88,055	67,200	\$ 212.40
M. Stone .....	.....	718	1,049	.....	39,490	57,695	124.25
J. K. Mason	15	932	290	825	51,250	15,050	109.20
C. J. Blanchard	117	785	100	6,435	43,230	5,500	95.30
S. S. Harris .....	.....	2,265	926	.....	124,575	50,930	272.80
John Behrens .....	.....	1,652	401	.....	58,410	22,655	126.25
M. A. Rany .....	.....	120	60	.....	6,600	3,900	15.00
Total	135	7,484	3,966	7,425	411,620	212,630	\$ 955.20

Report of inspections for the month of August, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
F. R. Laird .....	.....	1,859	495	.....	74,745	27,225	\$ 160.65
M. Stone .....	.....	1,327	921	.....	72,885	50,555	178.75
J. K. Mason .....	.....	1,164	486	.....	64,020	28,730	140.70
C. J. Blanchard .....	.....	907	477	.....	49,885	26,235	114.55
S. S. Harris .....	.....	1,267	615	.....	69,685	33,825	167.45
John Behrens	10	1,343	430	550	73,865	23,650	156.80
M. A. Rany .....	.....	70	110	.....	3,850	6,000	12.50
Total	10	7,437	3,534	550	409,035	194,370	\$ 921.40

Report of inspections for the month of September, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard	504	27,720		27,720			\$ 50.40
F. R. Laird	1,040	57,200	645	57,200	35,475		136.25
M. Stone	2,498	137,390	861	137,390	47,355		292.85
J. K. Mason	2,550	140,250	368	140,250	20,240		273.40
C. J. Blanchard	85	99,000	509	4,675	27,995	213.93	111.35
S. S. Harris	80	940	187	4,400	51,700	106,700	25.465
John Behrens	1,940	463			18,765	4,400	38.10
M. A. Rany	841		80				
Total	165	11,613	3,113	9,075	633,715	171,215	\$ 1,333.45

Report of inspections for the month of October, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard	53	2,643	160	3,025	145,365	8,800	\$ 277.80
F. R. Laird	1,004	250		55,226	13,750		112.90
M. Stone	2,045	271	1,650	112,475	14,905		221.05
J. K. Mason	2,850	287		156,750	15,785		299.36
C. J. Blanchard	120	257	6,600	94,875	14,135		197.35
S. S. Harris	2,740	250		149,600	13,750		384.30
John Behrens	2,202	121		121,110	6,655		226.25
M. A. Rany	26	310	74	1,430	17,050	4,070	37.30
Total	231	15,499	1,670	12,705	852,445	91,850	\$ 1,656.00

Report of inspections for the month of November, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gaso-line re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard	60	3,890	434	3,300	213,950	23,870	\$ 416.70
F. R. Laird	2,405	190		132,275	10,450		250.00
M. Stone	2	1,968	16	110	108,130	9,340	205.20
J. K. Mason	3,074	30		169,070	1,650		308.90
C. J. Blanchard	71	2,772	221	3,905	152,400	12,155	295.35
S. S. Harris	3,148	485		173,140	26,675		339.05
John Behrens	2,679	130		147,345	7,150		274.40
M. A. Rany	151	50		7,205	2,750		15.60
Total	133	20,065	1,708	7,315	1,103,575	93,940	\$ 2,105.2

Report of inspections for the month of December, 1886.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard		3,738	120		205,590	6,600	\$ 379.80
F. R. Laird		3,661	405		201,355	22,275	386.35
M. Stone		1,828	123		100,540	6,705	188.05
J. K. Mason		5,479	171		341,345	9,405	536.45
C. J. Blanchard	23	2,669	191	1,265	146,765	10,505	278.75
S. S. Harris		5,974	678		338,870	37,290	631.80
John Behrens		3,994	193		219,670	10,615	469.05
M. A. Rany		540			29,700		54.00
Total	23	27,883	1,881	1,265	1,533,565	103,455	\$ 2,884.65

Report of inspections for the month of January, 1887.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard		3,286	213		180,730	11,715	\$ 339.25
F. R. Laird		2,351	160		129,305	8,800	243.10
M. Stone	14	3,603	90	770	198,165	4,930	366.20
J. K. Mason		2,894	111		199,170	6,105	234.95
C. J. Blanchard	10	2,338	175	550	128,690	9,625	243.55
S. S. Harris	81	3,187	425	4,455	175,285	23,375	348.05
John Behrens		2,855	129		157,025	7,695	291.95
M. A. Rany		160	20		8,800	1,100	17.00
Total	105	20,674	1,323	5,775	1,137,070	72,765	\$ 2,144.05

Report of inspections for the month of February, 1887.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gaso-line re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard	80	1,600	434	4,400	88,440	23,870	\$ 190.50
F. R. Laird	10	475	550	26,125	13,750		61.00
M. Stone	36	361	75	1,980	19,855	4,125	43.45
J. K. Mason		2,199	205		120,945	16,225	234.65
C. J. Blanchard	39	1,795	205	2,145	98,725	11,275	193.65
S. S. Harris		4,396	289		241,780	15,895	454.05
John Behrens		2,061	435		113,355	23,925	227.85
M. A. Rany		150	30		8,250	1,650	16.50
Total	165	13,045	2,013	9,075	717,475	110,715	\$ 1,421.65

Report of inspections for the month of March, 1887.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard.....	2	2,099	348	110	115,445	19,140	\$ 227.50
F. R. Laird.....	5	1,736	720	275	95,480	39,600	210.10
M. Stone.....	..	440	277	..	24,200	15,235	67.85
J. K. Mason.....	27	2,226	374	1,485	122,430	26,570	244.00
C. J. Blanchard.....	1	1,798	399	1,375	98,890	21,890	202.20
S. S. Harris.....	5	2,354	551	275	129,470	30,395	263.45
John Behrens.....	2	2,477	172	110	136,235	9,460	256.50
M. A. Rany.....	..	280	80	..	15,400	4,400	32.00
Total.....	66	13,410	2,920	3,630	737,550	160,600	\$ 1,493.00

Report of inspections for the month of April, 1887.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard.....	167	1,762	506	9,185	96,910	27,830	\$ 218.20
F. R. Laird.....	2	1,577	325	110	86,735	17,875	174.15
M. Stone.....	80	1,213	450	4,400	66,715	24,750	151.80
J. K. Mason.....	..	1,414	10	..	77,770	530	141.90
C. J. Blanchard.....	23	1,078	476	1,265	59,290	26,180	183.90
S. S. Harris.....	..	2,506	623	..	137,830	34,265	281.75
John Behrens.....	11	1,339	474	770	73,645	26,070	159.00
M. A. Rany.....	..	60	122	..	3,300	6,710	12.10
Total.....	286	10,949	2,986	15,730	602,195	164,230	\$ 1,272.80

Report of inspections for the month of May, 1887.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard.....	..	60	10	..	3,300	550	\$ 6.50
F. R. Laird.....	..	250	970	..	13,750	53,350	73.50
M. Stone.....	..	191	163	..	10,505	8,665	27.25
J. K. Mason.....	..	485	111	..	26,675	6,105	54.05
C. J. Blanchard.....	..	1,055	958	..	58,025	52,690	153.40
S. S. Harris.....	2	633	364	110	37,565	20,020	86.70
John Behrens.....	..	281	163	..	15,455	8,965	36.35
M. A. Rany.....	..	110	..	..	7,150	6,050	18.50
Total.....	2	3,135	2,849	110	172,425	156,695	\$ 456.15

Report of inspections for the month of June, 1887.

NAME OF INSPECTOR.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
John Blanchard.....	..	418	326	..	22,990	17,930	\$ 58.10
F. R. Laird.....	..	28	480	..	1,540	26,400	26.80
M. Stone.....	..	619	1,037	..	34,045	57,035	113.75
J. K. Mason.....	..	358	496	..	19,690	27,280	61.70
C. J. Blanchard.....	11	1,331	1,062	2,750	73,205	38,410	191.20
S. S. Harris.....	50	1,045	2,416	..	57,475	132,850	325.90
John Behrens.....	..	510	1,294	..	28,050	71,170	115.70
Total.....	61	4,309	7,111	3,355	236,995	391,105	\$ 792.55

Consolidation of inspections by Months from April 1, 1886, to June 30, 1887, both days inclusive.

MONTHS.	No. barrels of oil rejected.	No. barrels of oil approved.	No. barrels of gasoline re-jected for illu-minating pur-poses.	No. gallons of oil rejected.	No. gallons of oil approved.	No. gallons of gasoline re-jected for illu-minating pur-poses.	Total amount of fees.
1886.							
April.....	117	4,008	479	6,435	220,440	26,345	\$ 436.45
May.....	217	5,145	2,824	11,935	282,975	165,320	677.40
June.....	..	6,035	4,158	..	331,925	228,690	811.40
July.....	135	7,484	3,866	7,425	411,630	212,030	955.90
August.....	10	7,437	3,534	550	409,035	194,370	921.40
September.....	165	11,613	3,112	6,075	638,715	171,215	1,333.45
October.....	231	15,499	1,670	12,705	852,445	91,850	1,656.50
November.....	133	20,065	1,708	7,315	1,103,575	93,940	2,105.20
December.....	23	27,883	1,881	1,265	1,533,563	103,455	2,884.65
1887.							
January.....	105	20,674	1,323	5,775	1,137,070	73,765	2,144.05
February.....	165	13,945	2,019	9,075	717,475	110,715	1,421.65
March.....	68	13,410	2,920	3,850	737,550	160,600	1,493.90
April.....	286	10,949	2,986	15,730	602,195	164,230	1,272.80
May.....	2	3,135	2,849	110	172,425	156,695	456.15
June.....	61	4,309	7,111	3,355	236,995	391,105	792.55
Total.....	1,716	170,691	42,435	94,380	9,358,905	2,333,925	\$ 19,362.45

The following table is the statement of the traveling and other expenses of deputies during fifteen months. The expenses of the State Inspector are not given in the table, but will be shown elsewhere:

Statement of traveling and other expenses of Deputies.

MONTH.	John Blanchard.	F. R. Laird.	M. Stone.	J. K. Mason.	C. J. Blanchard.	S. S. Harris.	John Behrens.	M. A. Raney.	C. T. Bush.
1886.									
April	\$ 19.58	\$ 14.35	\$ 44.35	\$ 44.35	\$ 39.98	\$ 2.50	\$ 6.60	\$ 4.15	
May	17.90	24.65	42.59	39.08	97.68		4.40		
June	16.88	82.50	27.43	39.08	97.68		4.40		
July	14.80	72.00	49.39	40.99	58.86	5.00	4.40		
August	3.00	73.30	28.50	27.69	89.03	4.25	4.40		
September	3.00	58.75	53.53	72.48	86.49	3.00	13.20		
October	3.00	70.90	54.12	35.39	88.92		19.36		
November		67.95	66.51	85.38	114.96	9.00	6.60		
December	3.00	81.84	53.65	55.79	96.44	7.25	8.80		
1887.									
January		67.00	67.62	34.19	96.46	11.00	8.80		
February	3.00	46.75	51.06	56.83	87.52	4.50	4.40		
March	3.00	15.00	30.95	33.65	65.92	2.00	6.90		
April	5.75	28.74		45.00	42.56	8.20	13.62		
May	3.00	5.08	23.82	50.00	42.56	2.30			
June	1.30	8.00	19.69	60.00	49.44	1.50			
	\$ 97.21	\$ 677.82	\$ 565.17	\$ 723.41	\$ 1,056.82	\$ 60.50	\$ 101.68	\$ 4.16	

Total expenses of deputies, \$3,286-76.

Summary of receipts and expenses for fifteen months.

Amount received from all sources	\$ 19,362.45
Amount paid deputies, salaries and commissions	\$ 8,535.00
Amount paid expenses, deputies	3,286.76
Traveling and other expenses of State Inspector	1,315.00
Amount paid for instruments, Stewart's alcohol, etc.	220.00
Amount paid office rent, \$10 per month	150.00
Amount paid clerk here	500.00
Amount paid stationery, postage, telegraphing, etc.	375.00
	\$ 14,381.76
Balance for fifteen months	\$ 4,980.69

GENERAL REMARKS ON THE NATURE AND DANGERS OF KEROSENE OIL.

As already intimated, fatalities and lighter accidents justly attributable to explosions of kerosene lamps are now unknown in Iowa. The present law, by absolutely prohibiting the sale of low grades of this mysterious and inflammable illuminating substance, make accidents almost impossible, with ordinary care in handling.

The danger from explosion lies not in the oil itself, but in a vapor which is formed from it, which cannot be seen, and is, therefore, naturally enough, disregarded. The danger lurks in the upper or empty part of the can or lamp, not in the lower part where the oil is. The various liquids contained in crude petroleum are more or less volatile, and it so happens that the most volatile give the most brilliant light when burnt. It is well to remember also that the vapors of the more volatile portions of crude petroleum mix very readily with air, and produce combinations that explode with great violence when ignited. The crude petroleum cannot be burned in a lamp without refining, because of those easily ignited vapors, and also because of its odor. It is necessary, therefore, for the oil refiner to distil the crude oil in order to separate the more volatile liquids from the less volatile, and select those best suited to burn in an ordinary kerosene lamp. Of course it is to the interest of the refiners to leave in the oil called kerosene as much of the more volatile materials as is consistent with safety, since those add materially to the brilliancy of the light. It must be further noted that it is the kerosene oil that is the most valuable to refiners, since it brings a better price than the more volatile liquids, and the more of these latter he leaves in his kerosene, the greater his profits. Until within a few years it was left to the refiner to decide as to the amount of these more volatile liquids he should leave in his products, in face of the fact that it was to his interest to leave in as much of them as possible.

In view of these facts it is not surprising that previous to the enactment of our present law very little of the oil used in the State was such as would stand our present tests. Indeed very much of it was but little better than gasoline, and its use extremely dangerous to

life and property. More than thirty States now have laws regulating the use of oil similar to our own, though few require higher tests.

Kerosene oil of merchantable quality in Iowa is not explosive nor easily set on fire under ordinary conditions. Indeed the legal test of quality is that the oil shall not emit inflammable vapor at a temperature below one hundred and five degrees Fahrenheit. Hence, as it is daily used good kerosene is not dangerous. But any volatile liquid of this general nature—alcohol, benzine, burning-fluid, ether, chloroform, naphtha, show the peculiarity—when taken up into the air by evaporation, may form an explosive vapor, a sort of gas, which may be set afire more easily than the liquid itself. A great majority of accidents from the use of oil come from the attempts to start fires by pouring oil from cans. In ordinary kitchen management a little oil is poured from the can each day. A space filled with confined air steadily enlarges in which an explosive vapor forms from the liquid beneath. The same thing occurs in the upper part of the lamp as the quantity of oil is gradually reduced by the burning of the wick; and it is this vapor which sometimes explodes when the attempt is made to pour in a little more oil without extinguishing the blaze. Again, a similar vapor may be formed almost instantly if the oil is poured in a splattering way upon burning coals lying in a grate or stove already somewhat heated. It cannot therefore be too generally and thoroughly understood that the peril lies in the invisible atmosphere so easily formed over the oil, not in the oil itself, and that no care taken of the visible oil will avoid it.

A danger of the same general kind arises when ordinary gas escapes from a leak or burner left open, and mingles with the air confined in a room. The pure gas as it comes from the pipe is not explosive, but when it has mingled itself with the air the compound formed is easily explosive, and a match lighted to test for the leak, or a lamp brought into the room by one coming to turn the exposed burner, will, in all probability, ignite it. The Court of Appeals in New York a few years ago decided that this latest danger of an explosive atmosphere formed by a gas leak was so well established that householders were expected, as a matter of law to understand it, and that to go or send one's servants with a light into an apartment where gas was escaping was legal negligence. One unlucky suitor declared he had done so several times without harm. The judges said that made no difference: it was a reckless act. There is at least equal ground for

saying this of endeavors to kindle a fire by pouring kerosene from a can.

Quite analogous is the explanation of the mysterious explosions which have been reported in the press of the country during late years as occurring in various factories. It is now known that when the air in a confined room becomes densely filled with any fine dust of an organic nature, there is danger of explosion if a flame is introduced. Not long ago a candy store in an eastern city blew up, and ordinary observers could find no explanation but the carelessness of the engineer. Scientists declare that when any combustible substance, such as sugar, grain or wood, is ground to a powder or flour, fine enough to float in the air, the rapidity with which it may burn is greatly increased. Their somewhat obscure expression is that "the rate of combustion is inversely proportionate to the cube of the size of the particles." This signifies a rapidity of burning which is inconceivable. It is so rapid that the gases formed cannot escape fast enough by ordinary vents in a room, but they may drive out the windows or even tear strong walls to pieces in their exit. In this way the famous "Washburn Mills" of Minneapolis were destroyed several years ago. One of the processes consisted in separating coarse flour from fine, and driving the very fine through a flume into a chamber where it was held in suspension in the air until it had settled and could be gathered. When an accidental fire broke out and the flames reached this room of flour dust there was a most disastrous explosion. So with a New York brewery still more recently. The grinding of grain filled the air with an impalpable dust, and when a light was inadvertently brought in, the dust ignited and the building was shattered by the inconceivably rapid combustion. Yet grain is not explosive in the ordinary sense. Neither is kerosene of the standard Iowa legal test, if handled with ordinary prudence.

I have occupied what may seem unnecessary space in an official report in discussing this subject, but my observations during the past year have convinced me of the importance of more specific knowledge on the part of the public with respect to the perils that lie in those so easily formed explosive atmospheres.

JOHN BLANCHARD,
State Oil Inspector.

APPENDIX.

REVISED RULES AND REGULATIONS

FOR THE

INSPECTION OF ILLUMINATING OIL

IN THE STATE OF IOWA.

OIL INSPECTORS' RULES AND REGULATIONS.

THE INSTRUMENTS.

RULE 1. The instrument to be used in testing oil under the provisions of Chapter 185, Acts of the Twentieth General Assembly, as amended by Chapter 149, Laws of the Twenty-first General Assembly, shall be that made by EIMER & AMEND, New York, and shall have inscribed thereon the words: "Oil Tester, Iowa State Board of Health," and shall be constructed as shown in the following diagram:

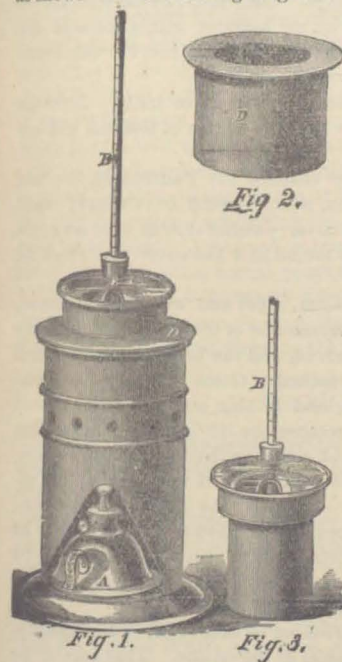


Fig. 1 represents the instrument entire. It consists of a sheet copper stand $6\frac{1}{2}$ inches high, exclusive of the base, and $4\frac{1}{2}$ inches in diameter. On one side is an aperture $3\frac{1}{2}$ inches high for introducing a small spirit lamp. **A**, or better a small gas-burner, instead of a lamp, when gas is available.

The water-bath, **Fig. 2**, is also of copper, $4\frac{1}{2}$ inches in height, and four inches in diameter inside, provided with a flanged cover. The opening in the cover $2\frac{3}{4}$ inches in diameter. The flange, which supports the bath in the cylindrical stand is one-fourth inch projection. The capacity of the bath is about 20 fluid ounces, which is indicated by a mark on the inside.

Fig. 3 represents the oil cup, which is also of copper. The section below the flange is $3\frac{3}{8}$ inches high and $2\frac{1}{2}$ inches in diameter. The section below the flange is 1 inch high and $3\frac{3}{8}$ inches in diameter, and serves as the vapor chamber. A small flange at the upper rim serves to hold the cover, which is of glass, in place.

Fig. 1.

Fig. 3.

To prevent reflection from the otherwise bright surface of the metal, the inside is blackened by forming a sulphide of ammonia. The capacity of the oil cup is about ten fluid ounces, when filled to within one-eighth of an inch of the flange, which joins the oil cup and the vapor chamber.

The cover of the oil cup, **C**, is of glass, $3\frac{1}{2}$ inches in diameter; is perforated on one side with a circular opening, which is filled with a cork, through which passes the thermometer, **B**. On the rim is another oval opening $\frac{1}{4}$ of an inch deep, and the same in width, through which is to be passed the flashing jet in testing. The glass cover is used instead of metal, that the operator may more readily note the exact point at which the flash occurs. A small gas jet $\frac{1}{4}$ inch in length is the best for igniting the vapor. Where gas cannot be had, a small waxed linen twine is the best, which can be easily prepared by dipping the twine in melted beeswax.

THE FLASH TEST.

RULE 2. The test shall be made as follows:

Remove the oil cup, and fill the water bath **D** with cold water to the mark on the inside. Place the oil cup in the water bath, and fill it with oil to within one-eighth of an inch of the flange. Care must be taken that oil does not flow over the flange. Remove all air bubbles with a piece of dry soft paper. Place the glass cover **C** on the oil cup and adjust the thermometer so that its bulb shall be entirely covered by the oil.

Fill the lamp with alcohol only, for heating the water bath. Trim the wick carefully, and so adjust the flame that the degree of heating will not exceed two degrees per minute.

When the temperature of the oil has reached 90° Fahrenheit, the test should commence by inserting the torch, which should have a very small flame, into the oval opening in the glass cover, passing it in at such an angle as to have the flame about half between the oil and the cover, and reaching near the center of the vapor chamber.

The motion should be steady and uniform, rapid and without any pause. This should be repeated at every two degrees rise of thermometer until 100° is reached, when the lamp must be removed, and the torch applied at each degree of temperature, until 105° is reached. Great care must be exercised to secure accuracy at this point, and to this end the torch should be applied just before the temperature reaches the 105° point. If no flash is shown at this point replace the lamp and continue the test at each two degrees rise, until the flashing point is reached, which is indicated by the appearance of a slight bluish flame on the surface of the oil. *The lowest point at which this vapor flame appears*, and a perceptible flash is produced, is to be designated as the flashing point. The temperature of the oil must be noted before the torch is applied. The flame of the torch must not touch the oil. Oil that flashes at 105° , or below that, must be rejected.

As cold oil will expand by heating, care must be taken that it does not rise so as to flow over or on the flange or shoulder of the oil cup. That part of the oil cup comprising the vapor chamber must be dry and entirely free from oil above the flange.

The water bath must be filled with cold water, for each separate test, and the oil cup carefully and thoroughly wiped dry of oil from the previous test.

FOR TESTING THREE HUNDRED DEGREES.

RULE 3. The instrument to be used for testing oils which come under the provisions of section ten of the law, shall consist of the cylinder, shown in **Fig. 1** of the diagram, the copper oil cup, shown in **Fig. 3**, the copper collar **D**, for suspending the oil cup in the cylinder, and an adjustable wire support for suspending the thermometer in the oil.

RULE 4. To ascertain the igniting and burning point, under section ten of the law, the test should be made as follows:

Fill the cup with the oil to be tested to within three eighths of an inch of the flange joining the cup and the vapor chamber above. Care must be taken that oil does not flow over the flange, by expansion from heating. Place the cup in the cylinder, covered with the collar, **D**. Adjust the wire support so that the thermometer bulb, when supported thereon, will be just covered by the oil, the bulb also being near the center of the cup. Place the lamp or gas jet under the cup. Adjust the flame so that the degree of heating will not exceed ten degrees each minute until 250° F. is reached, when the rate must not exceed 5° a minute above that point. The torch to be used must be the same as described in Rule 1, for obtaining the flash point. Apply the torch lightly over and above the surface of the oil at each 5° rise in the temperature, until the oil ignites and burns. The lowest point at which the oil will ignite and burn is to be taken as the burning point, and no oil which burns at a temperature of 300° F. must be approved for the purposes set forth in section ten of the law. When approved, the package, cask, barrel or vessel containing the oil from which the oil tested was taken, must be branded, "Approved, above 300° Fire Test," as provided in section one of the law. The actual point at which the oil burns must be branded on the barrel. If it burns at 300° or below that, it must be rejected. In this test the water bath cup and the glass cover are not used, the flame of the lamp being applied direct to the bottom of the oil cup.

GENERAL RULES.

RULE 5. All instruments, testers and thermometers must be submitted to the office of the State Board of Health, to be there approved by the Secretary of the Board.

RULE 6. Inspectors must remove all previous brands of test, such as "150 fire test, etc.," before affixing his brand on any cask, barrel, or package.

RULE 7. The brand to be used by inspectors must not be less than seven inches, outside measurement, with adjustable dates, and for the "Approved" brand, circular in form, with ample margin to protect the barrel or vessel from the stencil brush, and must contain the word "Iowa," in addition to date and signature.

RULE 8. The brand for rejected oil must be square in form, bearing the

name of the inspector, without date, and not less than seven inches, outside measurement; and also contain the word "Iowa"

RULE 9. The brand must be placed on the barrels, or packages, with bright colors, and must be affixed by the inspector in person, or by some person under his direction, who is not directly nor indirectly interested in the manufacture and sale of illuminating oil. The brand is an official signature, and must not be permitted to pass out of the custody of the inspector.

RULE 10. Thermometers used by inspectors must be sent to the Secretary of the State Board of Health for correction, at least once each year, express charges to be paid by the inspector.

RULE 11. Gasoline when sold, or offered for sale, for illuminating purposes, must be branded "rejected" by inspectors.

RULE 12. Upon the inspection of oil by an inspector, the inspector shall deliver to the owner of the oil, or the person for whom the inspection was made, a certificate of inspection, which shall be in the following form:

APPROVED TEST.

Brand of Oil.	Degrees.
.....
.....
.....
.....
.....
.....
.....

REJECTED TEST.

.....
.....

(STUB.)	
Total Fees, \$.....	100
No. barrels approved.....	
No. barrels rejected.....	
Total No. barrels @..... Inspected	
For whom Inspected	
Date of Inspection	..... 188
No. of Certificate	.....
..... Dep. Inspector.	

OIL INSPECTOR'S CERTIFICATE.

<p style="text-align: center;">APPROVED TEST.</p> <table border="1"> <thead> <tr> <th>Brand of Oil.</th> <th>Degrees.</th> </tr> </thead> <tbody> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> </tbody> </table> <p style="text-align: center;">REJECTED.</p> <table border="1"> <tbody> <tr><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td></tr> </tbody> </table> <p style="text-align: center;">Dep. Inspector.</p>	Brand of Oil.	Degrees.	<p>[FRONT]</p> <p>(PRESERVE THIS CERTIFICATE.)</p> <p>\$..... 100</p> <p>RECEIVED OF.....</p> <p>..... DOLLARS, 100</p> <p>as fees for the inspection of..... Barrels</p> <p>ILLUMINATING OIL, under Chapter 185, Laws 1884, State of Iowa, as amended by Chapter 149, Laws of 1886.</p> <p>No.</p> <p>..... Dep. Inspector.</p>
Brand of Oil.	Degrees.																				
.....																				
.....																				
.....																				
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.....																				
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[BACK.]

RULE 13. Where oil of different grades, or standards, is placed in receiving or storage tanks, an inspection must be made, and the actual standard obtained of oil from such tanks, after it is put into barrels for sale and use. There must be no average test, by taking an average of the different qualities or standards of oil before it is placed in such tanks. Where a number of barrels are filled consecutively from a tank, an inspection of one barrel would suffice for that particular lot of barrels, *provided*, no oil has been added to the tank during the process of filling the barrels. The barreling, testing and branding must constitute one transaction. There must be no lapse of time therein.

RULE 14. Oil received from jobbers is frequently of various standards, and the actual standard cannot be ascertained except by a separate test of each barrel. The statute plainly requires all oil to be inspected when in barrels, and that each barrel, cask, tank or vessel shall be inspected. There must be no average or cumulative tests. For instance: a sample of oil taken from five barrels of 102 degree oil and five barrels of 108 degree oil, would give a mixture that would, when tested, cause the whole ten barrels to be rejected, whereas five barrels, separately tested, would have to be approved.

RULE 15. The practice of jobbers in delivering oil to retail dealers without inspection is a direct violation of law. The delivery constitutes *prima facie* evidence of sale. A retail dealer receiving a lot of uninspected oil cannot justify himself for selling such oil on the ground that the jobber is responsible to the State for the violation of law. He should immediately notify the inspector that the oil is in his possession. Inspectors must exercise diligence to arraign offenders and stop the practice. They must, with strict impartiality, insist upon obedience to law in their respective districts.

RULE 16. Oil in transit must not be inspected outside of the district to which it is sent.

RULE 17. No deputy shall inspect oil that has been inspected by another deputy, unless so directed by the State Inspector.

RULE 18. In case of dispute between an inspector and a dealer as to a test of oil, the question, together with a sample of the oil in dispute, must be sent to the office of the State Board of Health for adjudication.

RULE 19. Inspectors must regard their duties as inspectors paramount to all other duties, and upon notification, must perform them without delay.

RULE 20. If accidents occur from the use of illuminating oil, the inspector of the district wherein they occur, should ascertain all the facts and circumstances, and report them to the State Inspector, or to the State Board of Health, and if possible, procure and send by express to the State Board of Health, a sample of the oil causing the accident.

DECISIONS OF THE ATTORNEY-GENERAL.

OFFICE OF THE STATE BOARD OF HEALTH, }
DES MOINES, IOWA, July 1, 1884. }

S. MCPHERSON, *Attorney-General*:

Notice is received at this office that deputy inspectors are disregarding entirely Rule 6 of the State Board of Health, requiring previous brands on barrels to be erased or canceled. This refers only to the words or figures "150° Fire test," or "175° Fire test"; or it may be the degree of test made by some inspector under the old law in this State.

The sole object of this rule is to protect the public against overbranding oil, that is, branding and selling oil at 175° to 150° first test, when in fact it is but 120° or 130°, according to the Iowa legal standard. Oil that flashes at 100° will burn at 115° to 120°. In all tests made in this office with oil branded by the refiners at 150° fire test, the highest flash test was 110°, and the fire test was 130°. The public do not understand the relative difference between 100° flash test and 150° fire test; hence the desire of refiners to retain the brand of 150° fire test, as it enables them to sell oil at a high grade price when in fact it is only 130° fire test.

You will remember the Standard Oil Co., when this subject was before the Legislature, prepared a bill in which it was provided that inspectors should brand all oil which flashed at above 100° "approved, for *illuminating purposes*." The object of this was so apparent to the Senate committee they rejected it at once, as it fixed no standard and gave refiners the opportunity to brand their oil at such standard as they saw fit; the only assurance given the public by the inspector's brand being that it was approved. It was to prevent this overbranding and fraud upon the public that the law was made requiring the degree of test to be put upon the barrel, and the State Board only more fully carried out that object in Rule 6.

The question, therefore, is, had the State Board authority to make the rule?

Your opinion is requested at as early a moment as possible.

Yours truly,

R. J. FARQUHARSON, *Secretary*.

OFFICE OF THE ATTORNEY-GENERAL, }
RED OAK, July 11, 1884. }

By section 2, chapter 135, Laws of Twentieth General Assembly, the State Board of Health is required to adopt rules and regulations as to the use of the oil tester. By section 14, the Board is to adopt the necessary rules for

the inspection of oils, which would include the brand affixed, etc. Under these provisions, Rule 6, complained of, was adopted. I have no reason to say that it is illegal; and do not believe it is. It should be enforced.

S. MCPHERSON,
Attorney-General.

OFFICE OF THE ATTORNEY-GENERAL, }
RED OAK, June 19, 1884. }

In my opinion it is not an inspection of *all oil* to mix that from a number of barrels and take the test of the mixture, for the very reason it only shows the average.

S. MCPHERSON,
Attorney-General.

OFFICE OF ATTORNEY-GENERAL, }
CENTERVILLE, IOWA, Feb. 23, 1885. }

BUREN R. SHERMAN, *Governor:*

I have the honor to acknowledge the receipt of your communication the 18th inst., in which you propound to me the following questions, and solicit my official opinion in response thereto, viz.:

1st. Whether or not the branding of oil by an Iowa inspector, at a uniform standard of 100° flash point, is in accordance with the object and intent of section 1, chapter 185, Laws of Twentieth General Assembly.

2d. Is it the intent and purpose of the statute, and the rules of the State Board of Health for the inspection of oils, that the inspector shall brand each barrel, cask or package with the number of degrees of *actual* flashing point which he finds the oil to be?

3d. Is it the purpose of the inspection to show the actual standard of all oil inspected, and not an average of that it is not below 100° F.?

Section 1, chapter 185, Laws of Twentieth General Assembly, directs the inspector to fix his brand or device, "*Approved flash test—degrees*" (inserting the number of degrees); or, * * * "*Rejected for illuminating purposes, flash test—degrees*" (inserting the number of degrees).

It would seem that the language is so plain that there could be no two constructions. If the only object had been to test the oils in order to see if they were above 100° flash test, then it would only have been necessary to require the inspector to brand, etc., with the word "approved".

It was clearly the intent and purpose of both the statute and the rules of the Board of Health to require the actual number of degrees of flash test to be plainly stamped on every barrel, cask or parcel inspected. If above 100° to mark it approved; if 100° or less, to mark it rejected for illuminating purposes.

The legislature evidently had two purposes in view in the enactment of the law:

1st. To protect consumers and the public against danger of fire, etc., from the use of inferior and unsafe oils.

2d. To protect consumers and dealers from imposition by selling to them inferior approved oils for superior approved oils.

If the oil emit a combustible vapor at a temperature of 100° standard Fahrenheit closed test, then under the law it is unfit for use. If it emit such combustible vapor at 101°, same test, then it is barely fit for use. Its relative safety, and consequently its relative value, will depend upon the degree above 100° at which it emits such combustible vapor, and it is to enable the purchaser to know just the quality of oil he is buying, and to thus encourage the manufacture of superior oils in point of safety, that the provision for making the actual test was made in law.

The neglect of an inspector to brand the true test on the casks inspected, is a misdemeanor, and subjects him to fine and imprisonment, provided in section 11 of the law, and under the provisions of section 12, would authorize his removal by the Governor.

I am, therefore, clearly of the opinion that it is the duty of the inspector to carefully note and correctly stamp, or brand, on each barrel, cask or package, the exact actual degree of the flash test, and that it is not a substantial compliance with the law to mark an *average* test, or that the oil is not below 100° F.

A. J. BAKER,

Attorney-General.

OFFICE OF ATTORNEY-GENERAL, }
DES MOINES, March 13, 1885. }

BUREN R. SHERMAN, *Governor:*

I have been somewhat tardy in answering your communication of the 2d inst., in relation to the inspection of coal oil, etc.

According to the best analysis I can make of the communication, I judge that the particular information you desire is, whether or not the State Inspector or his assistants are required to test oils in tanks, where several hundred barrels, for instance, are kept stored, and it is claimed to be for export out of the State.

If such oils are kept by the manufacturer, vendor or dealer, for the purpose of being offered for sale, whether to parties for export or otherwise, it is subject to inspection.

Section 1, chapter 185, Laws of 1884, provides as follows:

"It shall be the duty of such State Inspector, by himself or his deputies, * * * to examine and test the quality of all such oils *offered for sale*," etc. There is no distinction made, between that offered for sale for use within the State and that offered for sale for export. But this is to be construed in connection with the remainder of the section in such a way as to give effect and meaning to each and every part thereof.

Further on in said section it is provided that "it shall be lawful for the State Inspector, or his deputies, to enter into or upon the premises of any manufacturer, vendor or dealer of said oils, and if they shall find or discover any such oils *kept for illuminating purposes*, that has not been inspected and

branded according to the provisions of this act, they shall proceed to inspect and brand the same."

If, then, the oil is kept for sale for illuminating purposes, whether for use within or without the State, the inspector should see that the same is inspected and branded as required by the said chapter 185. He has the right to inspect such oil in tanks, but having done so it becomes his further duty "to see and know that the identical oil inspected in such tank is placed in packages, barrels or casks upon which the brand or device herein provided for shall have been placed."

So I am of opinion that when the inspector finds oil in such tanks, which he has good reason to believe is kept there for the purpose of sale for illuminating purposes, he has the right to demand its inspection, and to see that it goes into barrels, packages, or casks properly branded with the true test.

A. J. BAKER,

Attorney-General.

STATE OF IOWA.

CHAPTER 185—ACTS OF TWENTIETH GENERAL ASSEMBLY.*

AN ACT to provide for the inspection and to regulate the sale of petroleum and its products, and to repeal Chapter 172 of the Acts of the Seventeenth General Assembly, and Section 3901 of the Code, as amended by Chapter 149, Laws of the Twenty-first General Assembly.

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. That the Governor, by and with the advice and consent of the Senate, shall appoint a suitable person, resident of the State, who is not interested in manufacturing, dealing in, or vending any illuminating oils manufactured from petroleum, as State Inspector of Oils, whose term of office shall commence on the first day of April of each even-numbered year, and continue for the term of two years and until his successor is appointed and qualified. It shall be the duty of such State Inspector, by himself or his deputies, hereinafter provided for, to examine and test the quality of all such oils offered for sale by any manufacturer, vendor, or dealer; and if upon such testing or examination the oils shall meet the requirements hereafter specified, he shall fix his brand or device, "*Approved, flash test — degrees*" (inserting the number of degrees), with the date over his official signature, upon the package, barrel or cask containing the same. And it shall be lawful for the State Inspector, or his deputies, to enter into or upon the premises of any manufacturer, vendor or dealer of said oils, and if they shall find or discover any kerosene oil, or any other product of petroleum kept for illuminating purposes, that has not been inspected and branded according to the provisions of this act, they shall proceed to inspect and brand the same. It shall be lawful for any manufacturer, vendor or dealer, to sell the oil so tested and approved as an illuminator; but if the oil or other product of petroleum so tested shall not meet said requirements, he shall mark in plain letters on said package, barrel or cask, over his official signature, the words: "*Rejected for illuminating purposes, flash test — degrees*"

* This law is here given as amended by the Twenty-first General Assembly, and as it is in force at the present time.

(inserting the number of degrees). And it shall be unlawful for the owner thereof to sell such oil or other product of petroleum for illuminating purposes. And if any person shall sell or offer for sale any of such rejected oil or other product of petroleum for such purpose, he shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be subject to a penalty not exceeding three hundred dollars.

SEC. 2. The State Inspector provided for in this act is authorized to appoint a suitable number of deputies, which deputies are empowered to perform the duties of inspection, and shall be liable to the same penalties as the State Inspector; *provided*, that the State Inspector may remove any of said deputies for reasonable cause. It shall be the duty of the inspector and his deputies to provide themselves at their own expense with the necessary instruments and apparatus for testing the quality of said illuminating oils, and when called upon for that purpose to promptly inspect all oils heretofore mentioned, and to reject for illuminating purposes all oils which will emit a combustible vapor at a temperature of one hundred and five degrees standard Fahrenheit thermometer, closed test, provided the quantity of oil used in the flash test shall not be less than one pint. The oil tester adopted and recommended by the Iowa State Board of Health shall be used by the inspector and his deputies in all tests made by them. And said board shall prepare rules and regulations as to the manner of inspection, which rules and regulations shall be in effect and binding upon the inspector and deputies appointed under this act.

SEC. 3. The State Inspector before he enters upon the discharge of the duties of his office shall take the oath or affirmation provided by law, and file the same in the office of the Secretary of State, and execute a bond to the State of Iowa in a penal sum not less than twenty thousand dollars with sureties thereto, to be approved by the Secretary of State, who shall justify as provided by law, and in addition thereto state under oath that they are not interested, directly or indirectly, in manufacturing, dealing in, or vending any illuminating oils manufactured from petroleum; such bond to be conditioned for the faithful performance of the duties imposed upon him by this act, and which shall be for the use of all persons aggrieved by the acts of said Inspector, or his deputies, and the same shall be filed with the Secretary of State. Every deputy inspector shall take a like oath or affirmation prescribed herein for the State Inspector, and execute to the State a bond in the penal sum of five thousand dollars with like conditions and for like purposes, and with sureties thereto who shall justify and have like qualifications as herein provided for the sureties for State Inspector, and such sureties shall be approved by the clerk of the District Court of the county in which such deputy inspector resides, and said bond and oath shall be filed in the office of such clerk, and such deputy inspector shall before entering upon the discharge of his duties forward said clerk's certificate of such filing to the Secretary of State to be placed on file.

SEC. 4. All inspections herein provided for shall be made within the State of Iowa, and the inspector and deputy inspectors shall be entitled to demand and receive from the owner or party calling on him or for whom he

shall perform the inspection, the sum of ten cents per barrel, and for the purposes of this act, a barrel shall be deemed fifty five gallons.

SEC. 5. It shall be the duty of the State Inspector and every deputy inspector to keep a true and accurate record of all oils so inspected and branded by him, which record shall state the date of inspection, the number of gallons rejected, the number of gallons approved, the number of gallons inspected, the number and kind of barrels, casks or packages, the name of the person for whom inspected, and the amount of money received for such inspection, and such record shall be open to the inspection of all persons interested; and every deputy inspector shall return a true copy of such record at the beginning of each month to the State Inspector. It shall be the duty of the State Inspector to make and deliver to the State Auditor for the fiscal period ending the thirtieth day of June, 1885, and every two years thereafter a report of the inspections made by himself and deputies for such period, containing the information and items required in this act to be made of record, and the same shall be laid before the General Assembly.

SEC. 6. If any person, or persons, whether manufacturer, vendee[er] or dealer shall sell or attempt to sell to any person in this State any illuminating oil, the product of petroleum, whether manufactured in this State or not, which has not been inspected as provided in this act, he shall be deemed guilty of a misdemeanor and subject to penalty in any sum not exceeding three hundred dollars, and if any manufacturer, vender or dealer in either or any of said illuminating oils shall falsely brand the package, cask or barrel containing the same, as provided in this act, or shall refill packages, casks or barrels having the inspector's brand thereon, without erasing such brand, having the oil inspected, and such packages, casks or barrels re-branded, he shall be deemed guilty of a misdemeanor, and shall be subject to a penalty not exceeding three hundred dollars, or be imprisoned in the county jail not exceeding six months or both in the discretion of the court.

SEC. 7. Any person selling or dealing in illuminating oils produced from petroleum who shall purchase, sell or dispose of any empty kerosene barrel, cask or package, before thoroughly canceling, removing or effacing the inspection brand on the same, shall be guilty of a misdemeanor, and, on conviction thereof, shall pay a fine of one dollar for each barrel, cask or package thus sold or disposed of; and any person who shall knowingly use any illuminating oil, the product of petroleum, for illuminating purposes, before the same has been approved by the State Inspector of Oils, or his deputy, shall be guilty of a misdemeanor, and, on conviction thereof, shall pay a fine in any sum not exceeding ten dollars for each offense.

SEC. 8. No person shall adulterate with paraffine or other substance, for the purpose of sale or for use, any coal or kerosene oils, to be used for lights, in such a manner as to render them dangerous to use; nor shall any person knowingly sell or offer for sale, or knowingly use any coal or kerosene oil, or any product of petroleum, for illuminating purposes, which, by reason of being adulterated, or for any other reason, will emit a combustible vapor at a temperature less than 105 degrees of standard Fahrenheit's thermometer,

tested as provided in this act; *provided*, that the gas or vapor from said oils may be used for illuminating purposes when the oils from which said gas or vapor is generated are contained in closed reservoirs outside the building illuminated or lighted by said gas. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be punished by imprisonment in the county jail not more than one year, or by fine not exceeding \$500, or by both such fine and imprisonment, in the discretion of the court; *provided, further*, that nothing in this act shall be so construed as to prevent the sale for and use in street lamps of lighter products of petroleum, such as gasoline, benzine, benzole, naphtha, or to prevent the use of machines or generators constructed on the principle of the "Davy safety lamp."

SEC. 9. It shall be the duty of the State Inspector, and of any deputy inspector, who shall know of the violation of any of the provisions of this act, to prosecute before a court of competent jurisdiction any person so offending. And in case the State Inspector, or any deputy inspector, having knowledge of the violation of the provisions of this act, shall neglect to prosecute as required herein, he shall be deemed guilty of a misdemeanor and punished accordingly, and, upon conviction, shall be removed from office.

SEC. 10. No oil, nor fluid, whether composed wholly or in part of petroleum or its products, or of other substance or material, which will ignite and burn at a temperature of 300 degrees of the standard Fahrenheit thermometer, open test, shall be carried as freight, nor shall the same be burned in any lamp, or vessel, or stationary fixture of any kind, in any passenger, baggage, mail or express car on any railroad, nor on any passenger boat moved by steam power, nor in any street railway car, stage coach, omnibus or other public conveyance in which passengers are carried, within this State. Any violation of the provisions of this section shall be deemed a misdemeanor, and the offender shall, on conviction thereof, be fined not less than one hundred dollars, nor more than one thousand dollars, and shall be liable for all damages resulting therefrom.

SEC. 11. If any inspector or deputy shall falsely brand or mark any barrel, cask or package, or be guilty of any fraud, deceit, misconduct or culpable negligence in the discharge of his official duties, or shall deal in, or have any pecuniary interest, directly or indirectly, in any oils or fluids used or sold for illuminating purposes while holding such office, he shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not exceeding one hundred dollars, or imprisoned not exceeding thirty days, and be liable to the party injured for all damages resulting therefrom.

SEC. 12. It shall be the duty of the Governor to remove from office, and to appoint a competent person in the place of, any inspector who is unfaithful in the duty of his office.

SEC. 13. Any person who shall knowingly or negligently sell or cause to be sold any of the oils mentioned in this act for illuminating purposes, except for the purposes herein authorized, which are below the standard and test required in this act, shall be liable to any one purchasing said oil, or to

any person injured thereby for all damages resulting from any explosion of said oil.

SEC. 14. Within sixty days after the passage of this act the State Board of Health shall make and provide the necessary rules and regulations for the inspection of illuminating oil, and for the government of the inspector and deputy inspectors provided for in this act, and as contemplated by the provisions of this act, which shall be approved by the Governor of the State, and when so approved shall be furnished by said Board to the inspector and his deputies. When written complaint shall be presented to the Governor charging the inspector or any deputy with a failure or refusal to comply with or carry out said rules and regulations, or any provision of this act, he shall investigate such charge, and if well founded and sustained, the person against whom said charges were made shall be removed from office by the Governor without delay. Said rules and regulations may be changed or modified by said Board, subject to approval of the Governor, not oftener than once a year.

SEC. 15. Chapter 172 of the acts of the Seventeenth General Assembly, and section 3901 of the Code, are hereby repealed.