

# **Report of the Sheffield, Rotherham & District Smoke Abatement Committee : 5th (1934/35)**

## **Contributors**

Sheffield, Rotherham & District Smoke Abatement Committee.

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PUBLIC HEALTH ACT, 1875.  
PUBLIC HEALTH (SMOKE ABATEMENT) ACT, 1926.



# REPORT

of the

Sheffield, Rotherham & District  
Smoke Abatement Committee

for the year

1st APRIL, 1934—31st MARCH, 1935.



*FIFTH ANNUAL REPORT.*



TOWN HALL,  
SHEFFIELD.





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TOWN HALL,  
SHEFFIELD.

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## MEMBERS OF THE COMMITTEE.

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### *Representing the Sheffield City Council.*

Alderman H. W. JACKSON, LL.B., J.P.

Councillor W. ASBURY, J.P.

„ F. LLOYD, J.P.

„ J. A. LONGDEN.

„ W. G. ROBINSON.

### *Representing the Rotherham County Borough Council.*

Alderman F. HARPER.

Councillor G. C. BALL.

### *Representing the Rotherham Rural District Council.*

Councillor R. W. WALKER.

### *Representing the Stocksbridge Urban District Council.*

Councillor D. A. TRUMAN.

### *Representing the Rawmarsh Urban District Council.*

Councillor C. T. MARRIOTT.

### *Representing the Greasbrough Urban District Council.*

Councillor M. C. ELLIS.

## OFFICERS OF THE COMMITTEE.

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<i>Chairman</i>	..	..	Councillor W. ASBURY, J.P.
<i>Deputy-Chairman</i>	..	..	Alderman F. HARPER.
<i>Hon. Secretary</i>	..	..	TOWN CLERK, SHEFFIELD (Mr. E. B. Gibson).
<i>Hon. Treasurer</i>	..	..	CITY TREASURER, SHEFFIELD (Mr. A. B. Griffiths, F.I.M.T.A., F.S.A.A.).
<i>Hon. Medical Officer</i>	..	..	MEDICAL OFFICER OF HEALTH, SHEFFIELD (Mr. J. Rennie, M.D., D.P.H.).
<i>Hon. Auditor</i>	..	..	ACCOUNTANT AUDITOR, SHEFFIELD. (Mr. W. S. Blackhurst, A.S.A.A.).
<i>Chief Smoke Inspector</i>	..	..	Mr. J. LAW.
<i>Smoke Inspectors</i>	..	..	Mr. H. STENTON. Mr. W. H. LEVITT. Mr. J. H. HOARE. Mr. P. H. SAUNDERS.

# REPORT

of the

## Sheffield, Rotherham and District Smoke Abatement Committee

for the year 1st April, 1934—31st March, 1935.

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The Committee have pleasure in presenting their Fifth Annual Report.

### **Meetings.**

There have been twelve meetings of the Committee, all of which were held in the Town Hall, Sheffield.

### **Staff.**

The services of the Chief Smoke Inspector and three of the Inspectors are loaned by the Sheffield Corporation, along with the other Inspector loaned by the Rotherham Corporation, to the Committee who are responsible for the payment of salaries, etc.

### **Reports on Observations Made.**

The Chief Smoke Inspector submitted reports to each of the meetings, which were considered and dealt with in the following way ; in certain cases authority was given for statutory notices to be served ; in others authority was given for proceedings to be taken to obtain a magistrate's order ; in others, proceedings were authorised to enforce a magistrate's order, and in several cases the Secretary was instructed to write warning letters.

The Reports submitted included reports of emissions of smoke in excessive quantities from Combination and Furnace Chimneys ; in these cases particulars of the observations were forwarded to the Manufacturers' Committee for their consideration and attention.

Statistical Reports were submitted and the tabulated figures shown below are the totals for the year.

	Sheffield	Rotherham	Rotherham Rural Dist.	Rawmarsh	Greasbro'	Stocksbridge
No. of Chimneys observed ..	6057	904	362	211	140	340
No. of Minutes Smoke emitted	16072½	2749	1430	614	388	1039
Average Minutes Smoke per hour	2·6	3·0	3·9	2·9	2·7	3·0
No. of Notices served ..	66	11	10	5	5	2
No. of Intimations served ..	336	58	19	5	6	9
No. of Advisory visits ..	829	123	57	41	32	54
No. of Complaints answered ..	111	26	3	1	2	—
No. of Chimneys demolished ..	30	6	—	3	—	1
No. of Chimneys raised ..	11	4	2	—	—	—
No. of Chimneys erected ..	29	2	1	1	1	3

### Prosecutions.

During the year fourteen cases were reported to the Committee for their consideration.

In five cases the Committee decided that no action should be taken. In five other cases warning letters were sent to the firms concerned. In two cases (Steelworks) for non-compliance with Magistrates orders to abate the nuisances, fines of £9 and £6 were imposed.

Proceedings against a firm (Canning Works) were withdrawn after the installation of a new boiler of greater capacity and proceedings against another firm (brickworks) were also withdrawn after mechanical stokers had been fitted, smoke emissions being reduced to a minimum.

### Atmospheric Pollution.

There are five "fixed" deposit gauges in the area, used for the measurement of atmospheric pollution, three in Sheffield, and two in Rotherham.

Two additional gauges are also in operation and considered as "mobile" gauges.

The amount of pollution is examined by the City Analyst, and the reports are submitted to the Committee at each meeting.

The gauge at Surrey Street has been moved from the premises of the City Analyst and placed in a more suitable site on the roof of the new library.

The following table shows the monthly returns issued during the year:

### Monthly Record of Solid Matter.

Month	Sheffield				Rotherham		Stocksbridge
	Attercliffe	Nether Green	Surrey Street	Hillsbro'	Technical College	Oakwood Hall	Town Hall
<b>1934</b>							
April ..	24·88	7·70	36·40	18·20	29·71	11·33	16·94
May ..	18·01	8·69	24·34	16·49	22·50	12·00	14·04
June ..	20·96	10·98	40·11	20·25	28·18	16·53	23·25
July ..	25·32	9·75	28·60	20·15	23·71	16·66	19·47
August ..	22·83	4·28	28·91	13·31	21·47	13·85	11·64
September ..	20·85	6·80	28·91	14·92	22·96	16·83	9·95
October ..	20·49	7·30	20·22	11·40	27·08	18·24	19·64
November ..	18·54	5·38	23·53	10·86	21·65	14·72	29·89
December ..	31·18	7·33	25·47	17·96	19·80	16·60	16·80
<b>1935</b>							
January ..	81·14	6·11	32·62	12·84	20·16	19·18	23·48
February ..	29·74	7·60	—	14·31	37·48	15·62	22·84
March ..	24·07	5·64	27·98	14·28	19·16	11·10	16·84
Total Year ..	338·01	87·56	317·09	184·97	293·86	182·66	224·78
Average tons per sq. mile	28·16	7·29	28·82	15·41	24·49	15·22	18·73

In conjunction with the soot gauges at the five fixed stations, gauges are also installed for the measurement of ultra-violet rays by the Acetone Methylene Blue Test.

*N.B.*—According to the maker of the apparatus "a tube filled with Acetone Methylene Blue Solution exposed for one hour at a distance of one yard from an arc lamp (25 amperes) gives a reading of one unit."

On and after May 9th, 1934, glass tubes were used in conjunction with the quartz tubes in operation, and both results were recorded.

Daily readings were taken, and below are set out the averages of the units recorded at the various stations.

#### Average Units per Day.

Month.	SHEFFIELD.						ROTHERHAM.			
	Attercliffe		Nether Green		Surrey St.		Technical College		Oakwood Hall Sanatorium	
1934.	Quartz	Glass	Quartz	Glass	Quartz	Glass	Quartz	Glass	Quartz	Glass
April ..	0.70	—	0.47	—	0.67	—	0.52	—	0.62	—
May ..	1.48	0.76	1.35	0.76	1.48	0.83	0.97	0.63	0.90	—
June ..	1.83	1.11	2.35	1.00	1.53	0.70	1.08	0.28	1.26	0.45
July ..	2.38	1.35	3.62	1.50	2.55	1.18	1.05	0.40	1.00	0.30
August ..	1.93	1.06	3.30	1.51	1.51	0.68	0.75	0.27	0.92	0.31
September ..	1.93	1.10	2.60	0.80	0.70	0.23	0.65	0.37	0.58	0.30
October ..	0.87	0.74	1.42	0.45	1.00	0.64	0.56	0.20	0.71	0.24
November ..	0.13	0.18	0.23	0.10	0.20	0.18	0.18	0.10	0.28	0.13
December ..	0.13	0.09	0.08	0.03	0.14	0.09	0.13	nil.	0.29	0.09
1935.										
January ..	0.12	0.08	0.09	0.04	0.08	0.08	0.14	nil.	0.16	nil.
February ..	0.07	0.07	0.22	0.13	0.13	0.13	0.23	nil.	0.27	nil.
March ..	0.27	0.22	0.51	0.22	0.37	0.26	0.37	0.16	0.35	0.11

#### Sulphur Determinations.

Records for the determination of sulphur in the atmosphere are being taken by the volumetric and lead peroxide methods at Surrey Street, Sheffield, and by the lead peroxide method at the College of Technology, Rotherham and Handsworth and Dore Sheffield.

With the volumetric method which has been running continuously at Surrey Street for the past four years it has been found that the acidity of the atmosphere varies inversely with the wind velocity, abnormal deposits occurring during fog and heavy humid atmospheric periods.

Owing to mechanical defects and technical difficulties the apparatus at the College of Technology, Rotherham, has been taken away and may be installed at another station to be decided upon later.

Charts were submitted to the Committee each month and a graphical chart for the year is attached to this Report.

A chart showing the comparison between the volumetric and lead peroxide results taken at Surrey Street is also attached to this Report.

#### Handbook.

The Committee during the year published a Handbook setting out the Terms and Conditions relating to the appointment of the Committee, and containing explanatory notes.

### **Department of Scientific and Industrial Research.**

The Medical Officer of Health, Rotherham (Dr. W. Barr), was appointed to attend the meeting of the Standing Conference of Co-operating Bodies on the investigation of Atmospheric Pollution, held in London, on the 28th May, 1934, and his report was subsequently circulated to the Members of the Committee.

### **Grit Emission and Domestic Smoke.**

The Committee agreed to support the following Resolutions passed by the National Smoke Abatement Society at the Annual Conference in September, 1934, and so informed the Minister of Health :—

“ That this Conference of the National Smoke Abatement Society recommends that the Government set up a Committee to investigate and report upon measures to be employed to abate nuisances arising from the use of pulverised fuel, and that special consideration be given to the abatement of nuisances arising in connection with generating stations and other statutory undertakings.”

and

“ That this Conference views with grave concern the slow progress made towards the solution of the domestic smoke problem, and urges the Government, in any new housing legislation, to insist, as a condition of subsidy, that the heating arrangements in all houses to be erected under such legislation, shall be of such design as will obviate atmospheric pollution.”

### **Extension of Region.**

A further invitation was extended to the Wortley Rural District Council to become Members of the Committee, who however, decided not to accept the same.

### **Sulphur Determination. Lead Per-oxide Method.**

It was reported that the Department of Scientific and Industrial Research were discontinuing the supply of prepared cylinders as the lead per-oxide method of sulphur determination had been accepted as “ Standard.” The Committee approved of such method being adopted for the investigations to be carried out by the City Analyst.

### **Instruction Classes for Stokers and Furnacemen.**

In continuation of the arrangements referred to in the last Annual Report, Classes were held at the Rotherham College of Technology and Art, and Classes were commenced at the Sheffield University by the Sheffield Trades' Technical Societies, the attendances recorded being very satisfactory.

The City and Guilds of London Institute are prepared to examine students who had attended a two-years' course and to issue Certificates for Boiler Attendants. Having regard to the desire expressed by some

of the students that a Certificate of Progress should be issued to them at the end of the First Year, the Committee decided that such Certificates should be issued on the report of the Lecturer.

### Research Work.

Research work has been continued by the Joint Advisory Committee, under the Chairmanship of Professor R. V. Wheeler, D.Sc., F.I.C., of the Department of Fuel Technology of the Sheffield University, up to September, 1934, on the lines indicated in the last report, *i.e.*, the appointment of someone by the University to hold a watching brief on behalf of the Committee, who would visit works, inspect plant, and carry out certain limited experimental work, but with no definite programme.

At the meeting of the Joint Advisory Committee, held in September, 1934, Professor Wheeler stated that research work had been carried out in regard to domestic smoke, and that it was possible for blast furnace coke, suitably sized, to be burned in the ordinary domestic open grate. Information on this subject had been conveyed to the coke producers and as a result they were producing sized domestic fuel from such coke.

With regard to industrial smoke, he reported that occasional examinations of furnaces had been made. He did not think, however, that further experimental work could usefully be done by the Committee in regard to smoke from furnaces, the matter being in the hands of individual manufacturers.

The programme of research for the year ending 1st September, 1935, was considered by the Joint Committee and referred to a Special Sub-Committee, who decided that, in view of the fact that other organisations proposed to undertake research on cognate problems (*e.g.*, the British Iron and Steel Federation, on the burning properties of coals for marine boilers; and the Fuel Research Board, on the burning properties of house coals), an attempt should be made to obtain fundamental data regarding the properties of coals that influence their mode of burning.

To this end it was agreed that the Programme should include :—

1. Analytical data regarding representative boiler and furnace coals in use in Sheffield and Rotherham, in particular ash and moisture contents, calorific value and fusibility of ash. In addition, laboratory studies should be made of the behaviour of the coals during heating (*e.g.*, as regards their tendency to melt); and of their "re-activity."
2. Small-scale furnace tests of the burning properties of representative coals.
3. Full-scale trials, at hand-fired boilers, of a limited number of coals chosen from those examined under (1) and (2), to correlate their performance with the analytical and test data obtained.

Progress Reports have been submitted from time to time, and copies have been sent to the British Iron and Steel Federation for submission to the Iron and Steel Industrial Research Council.

The cost for the year ending 1st September, 1935, is estimated at £300, such amount being guaranteed by the Sheffield, Rotherham and District Smoke Abatement Committee, but it is anticipated that the Department of Scientific and Industrial Research, through the British Iron and Steel Federation, and the Local Manufacturers' Committee, will each contribute towards such expenditure.

#### **Standards as to Smoke Emission.**

The Standards which the Committee's Inspectors work to are as follows :—

Where there is 1 boiler attached to a chimney, 2 minutes per hour.

Where there are 2 boilers attached to a chimney, 3 minutes per hour.

Where there are 3 boilers attached to a chimney, 4 minutes per hour.

Where there are 4 or more boilers attached to a chimney, 6 minutes per hour.

Where there are 1 or more boilers and 1 or more furnaces attached to one chimney, 6 minutes per hour.

#### **Visits.**

At the invitation of the United Steel Companies Ltd., the Committee witnessed the various processes in connection with the making and rolling of steel at their Works at The Ickles, Rotherham. The new pipe line from Orgreave Coke Ovens, and the application of crude coke oven gas for use in reheating and melting processes was explained.

#### **National Smoke Abatement Society.**

The Chairman (Councillor W. Asbury) and the Chief Smoke Inspector were appointed delegates to the Annual Conference of the Society held in Glasgow, on the 27th—29th September, 1934, and their report was subsequently submitted to the Committee.

#### **Miscellaneous.**

The Committee considered other matters including the questions of Smoke from Watchman's fires, and fumes from Coke Oven Plants.

**Membership and Contributions to other Bodies.**

The Committee are Members of the Standing Conference of Co-operating Bodies of the Department of Industrial and Scientific Research and contribute an annual amount of £55 to the Department.

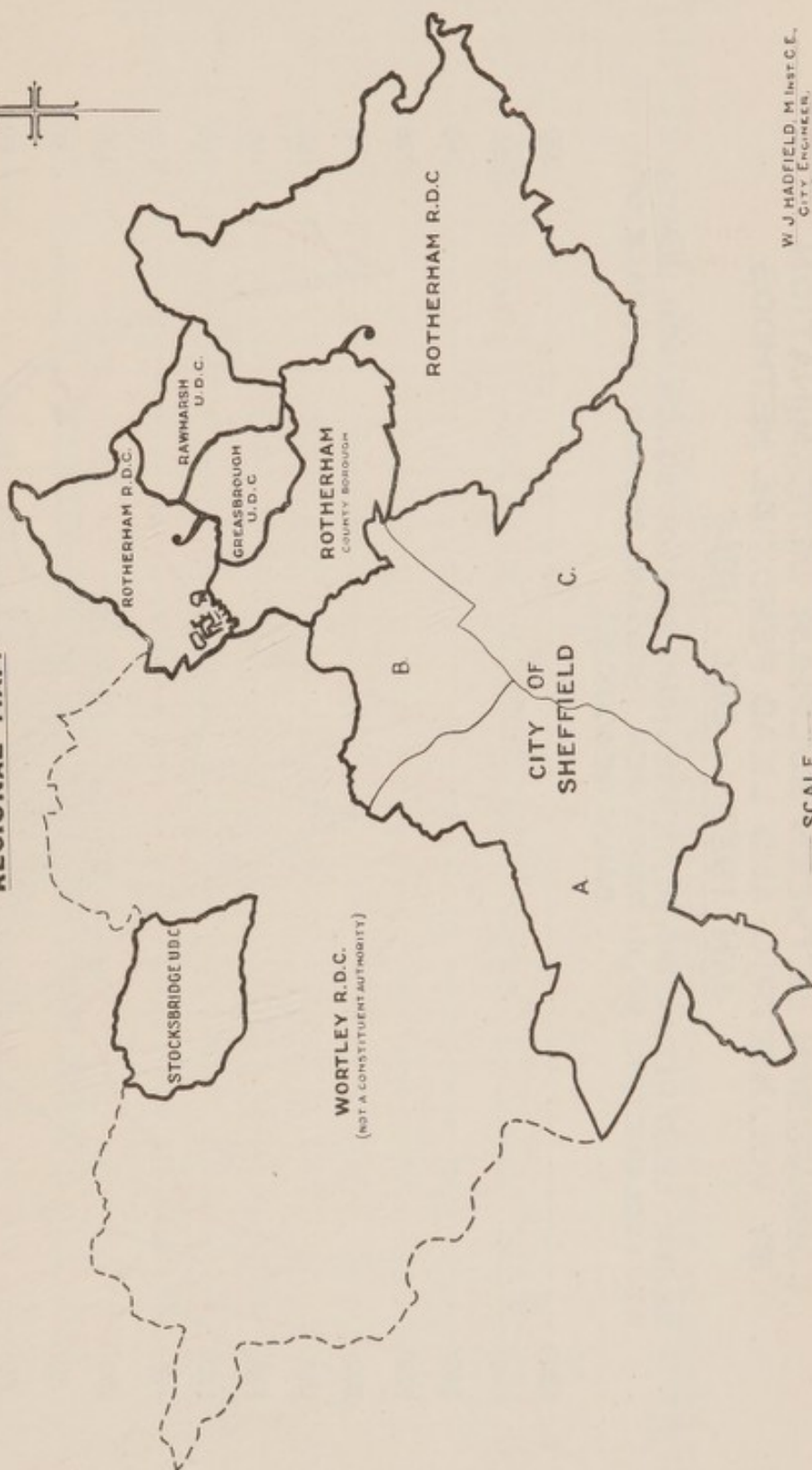
They are also affiliated to the National Smoke Abatement Society to whom they make an annual contribution of £25.

Annexed hereto is a copy of a Report of the Chief Smoke Inspector a Statement of Accounts, a map of the Area, and eight graphs.

W. ASBURY,  
Chairman.

Town Hall,  
Sheffield.

**SHEFFIELD - ROTHERHAM AND DISTRICT  
SMOKE ABATEMENT COMMITTEE.  
REGIONAL MAP.**

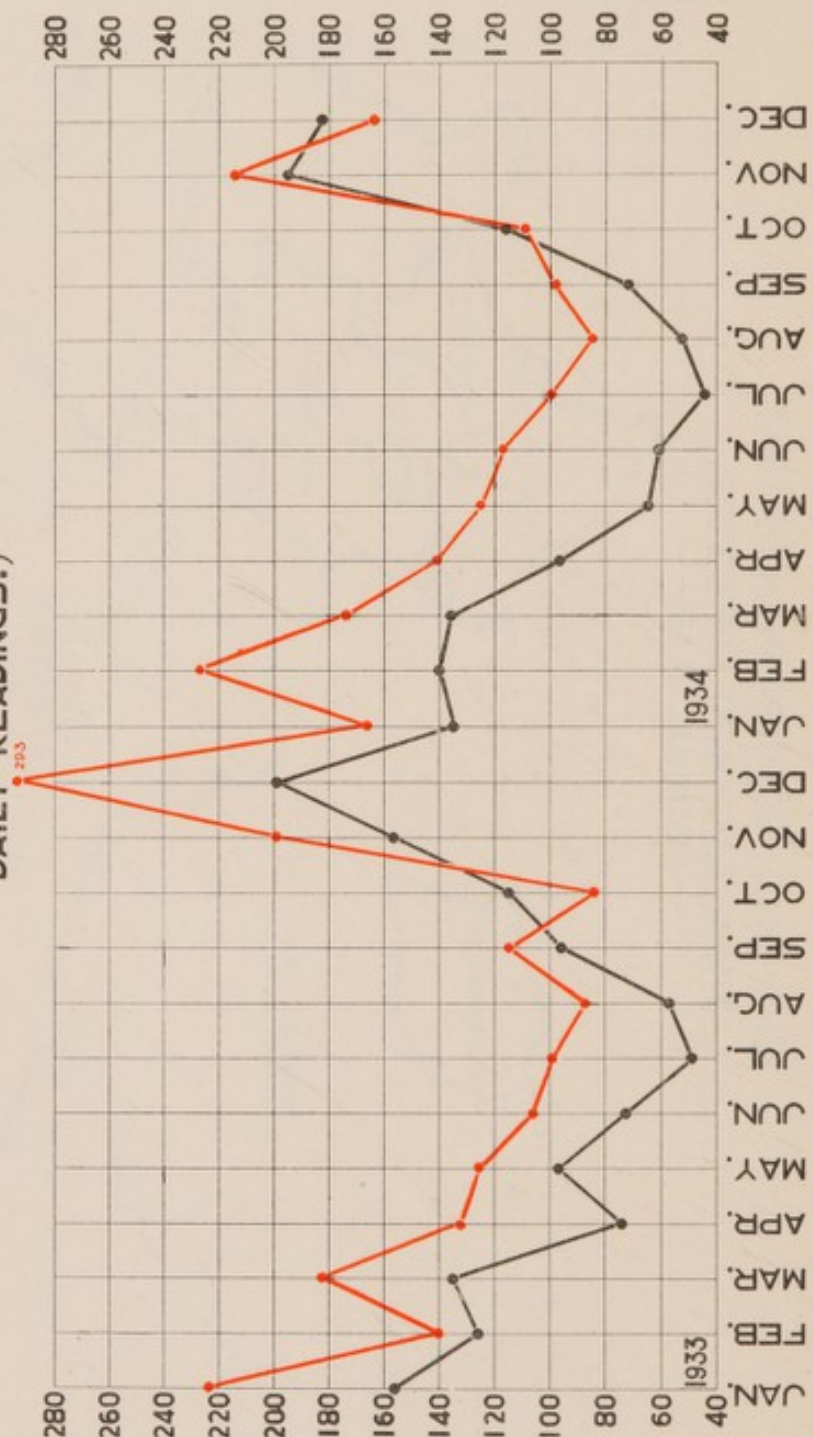


W. J. HADFIELD, M. INST. C.E.,  
CITY ENGINEER,  
SHEFFIELD

# COMPARISON BETWEEN SULPHUR DETERMINATION BY VOLUMETRIC AND LEAD PEROXIDE METHODS

JAN. 1933 TO DEC. 1934

BLACK = LEAD PEROXIDE:  $\text{SO}_3$  IN MILLIGMS. PER 100 SQ. CM. PER MONTH  
RED = VOLUMETRIC:  $\text{SO}_2$  IN PARTS PER THOUSAND MILLION (AVERAGE OF  
DAILY READINGS.)



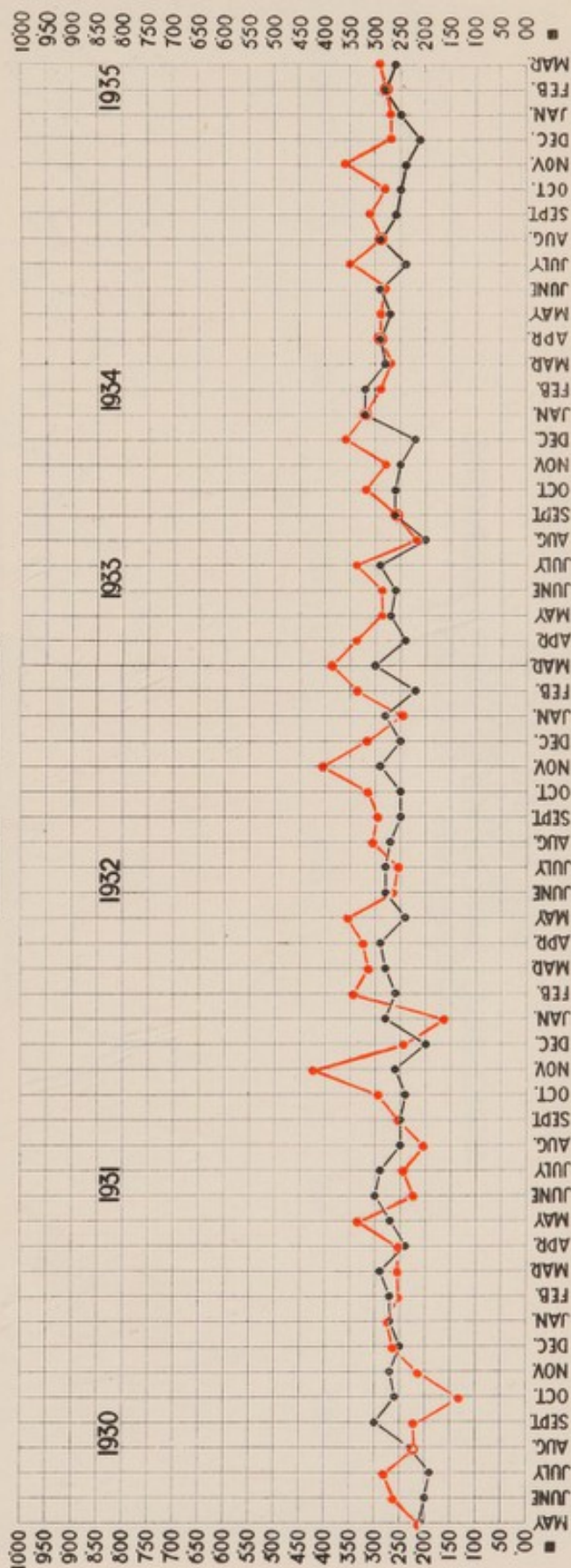
# SHEFFIELD · ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR

MAY 1930 TO MAR. 1935

AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.

•—•—• SHEFFIELD — ROTHERHAM —•—•



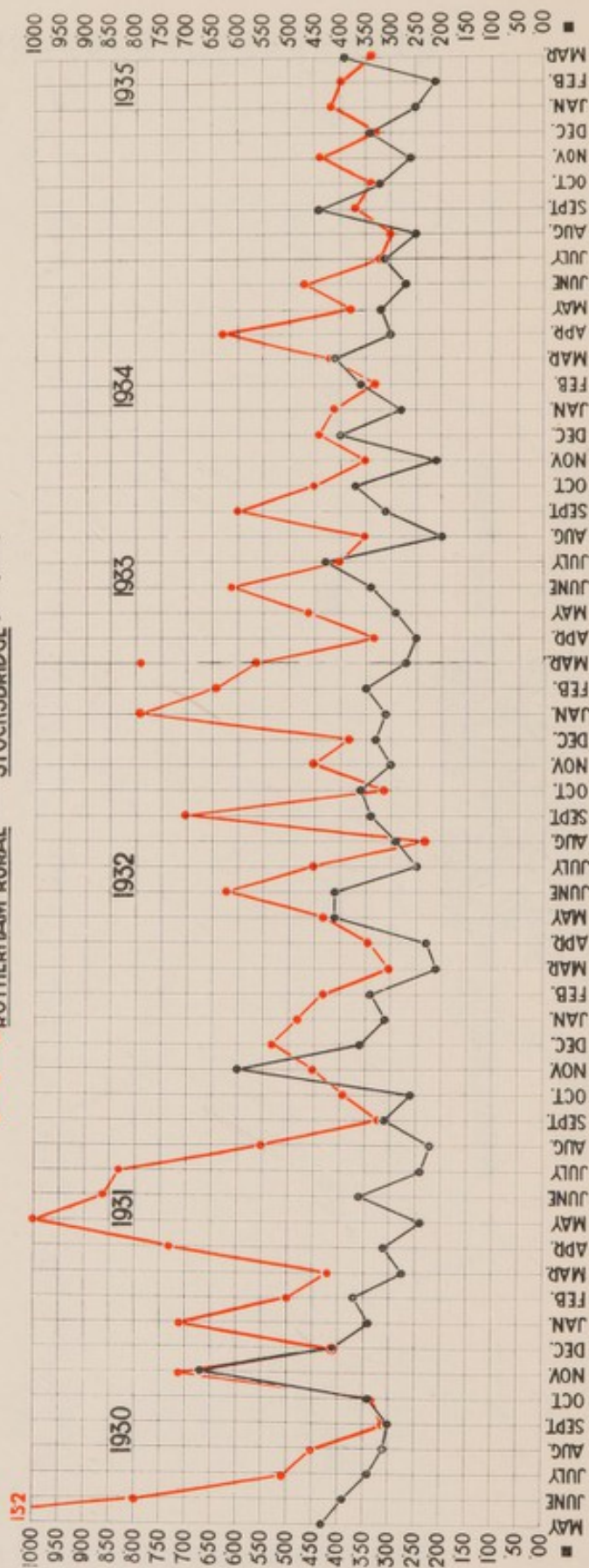
# SHEFFIELD • ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR

MAY 1930 TO MAR 1935

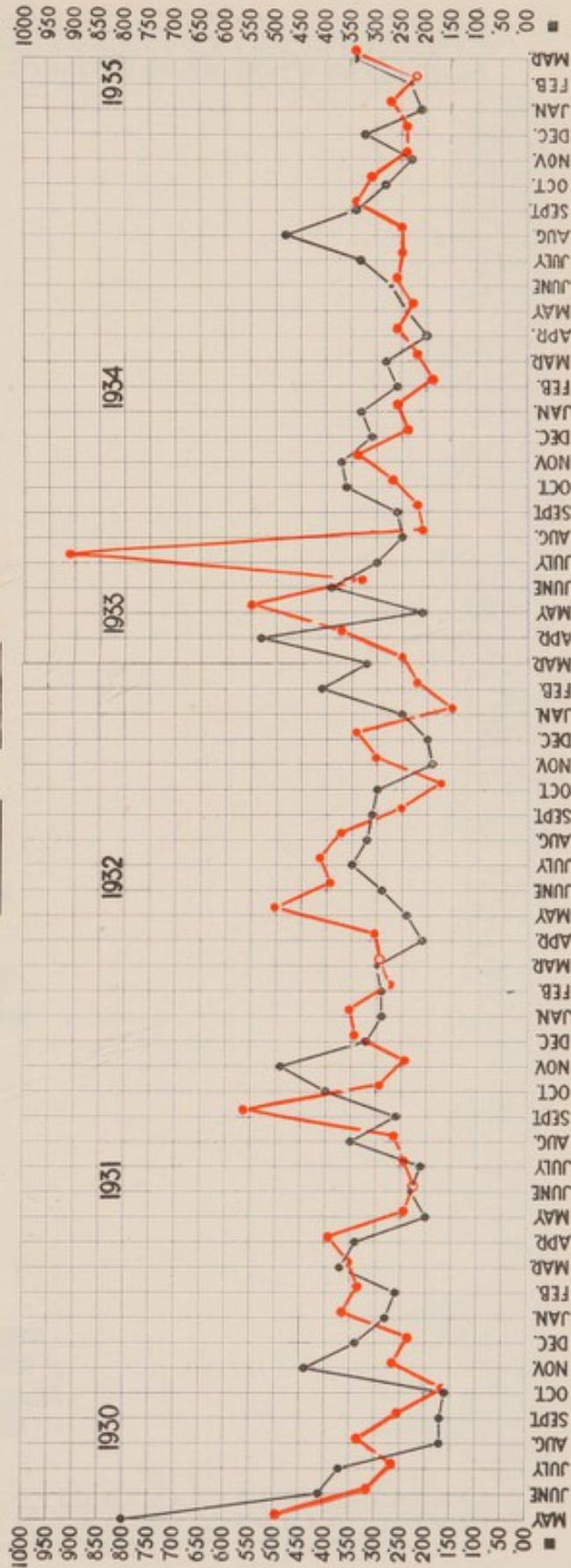
AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.

● — ROTHERHAM RURAL — ● — STOCKSBRIDGE ● — ● —



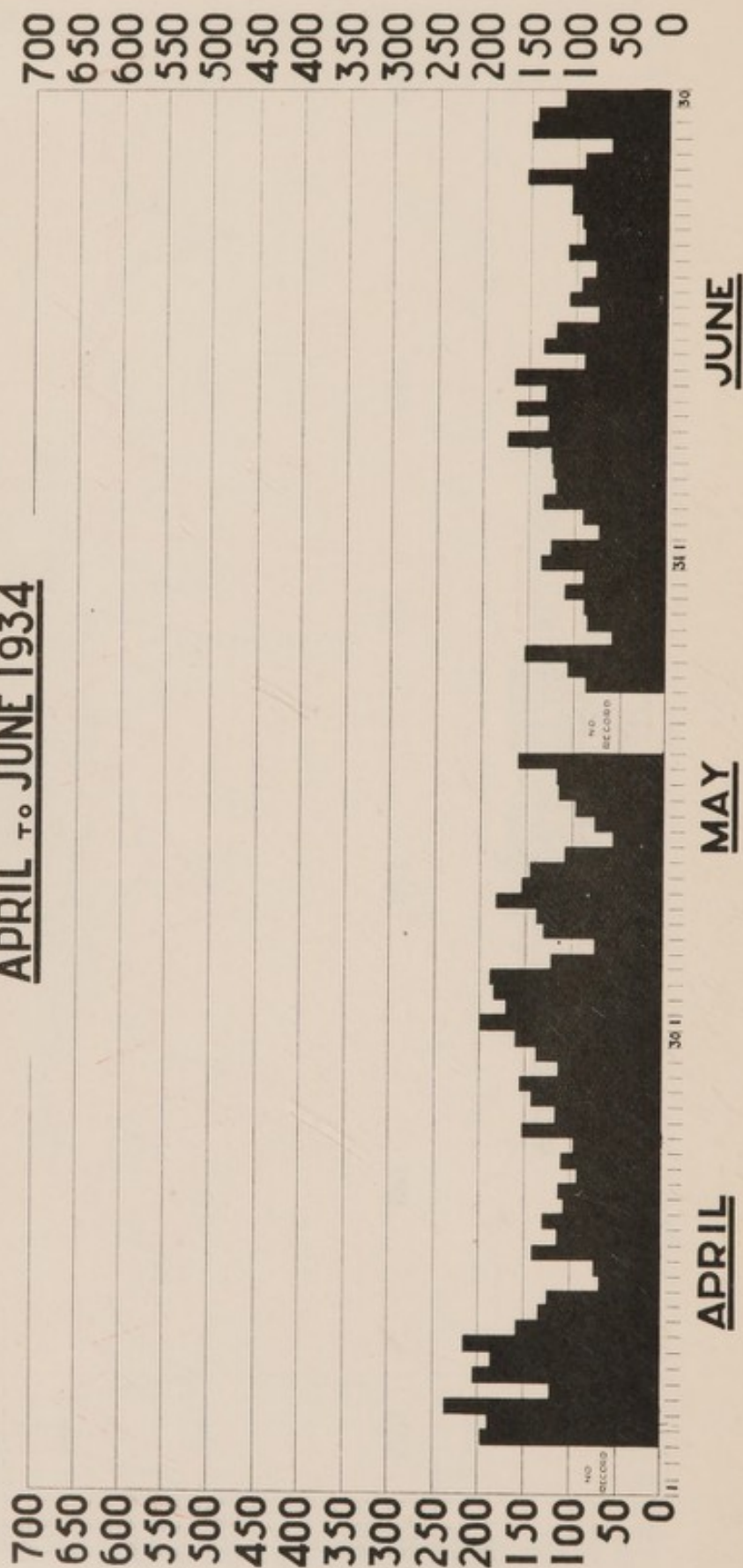
# SHEFFIELD • ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR  
MAY 1930 TO MAR 1935  
AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.  
● — ● RAWMARSH — GREASBROOK



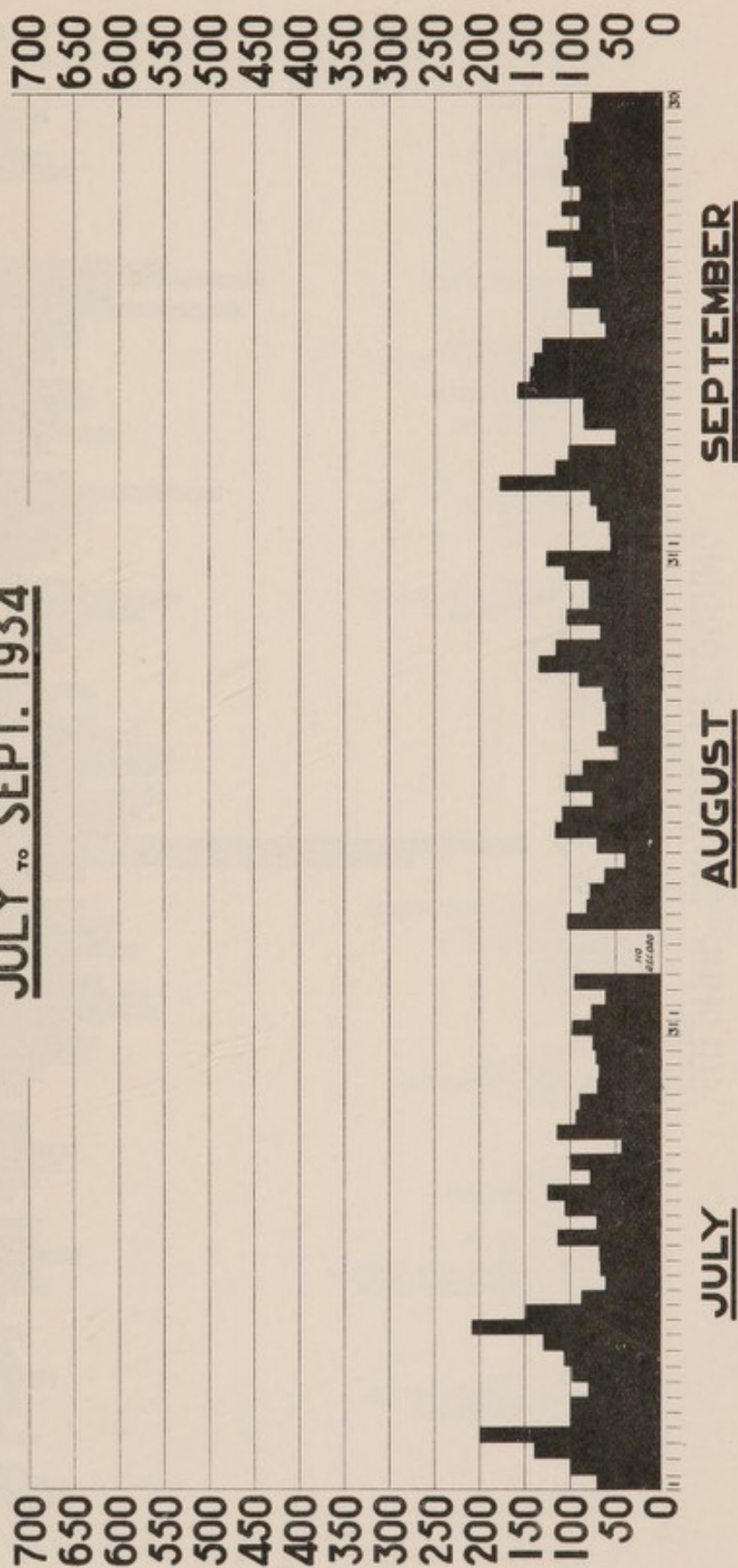
SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION

APRIL TO JUNE 1934



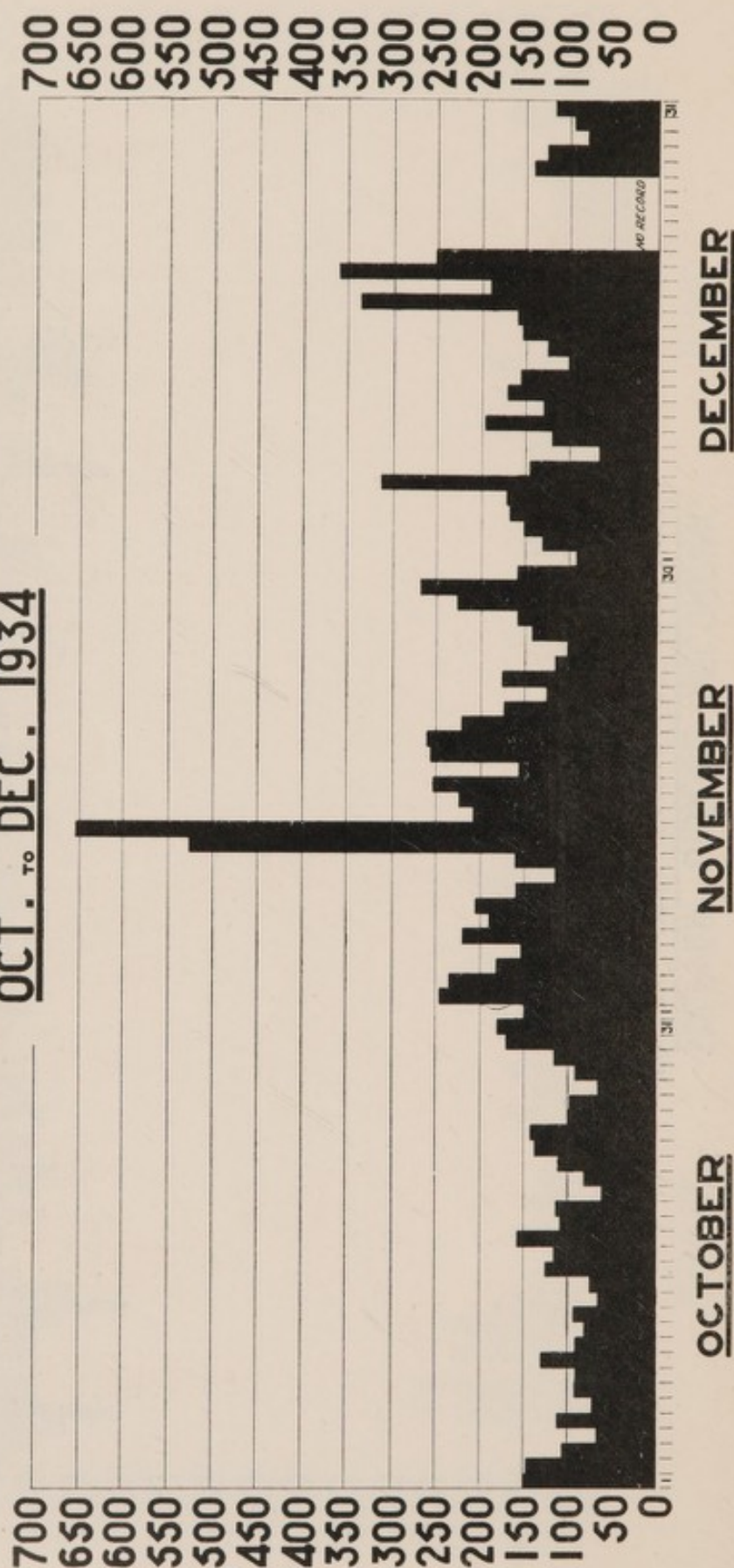
SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION

JULY TO SEPT. 1934



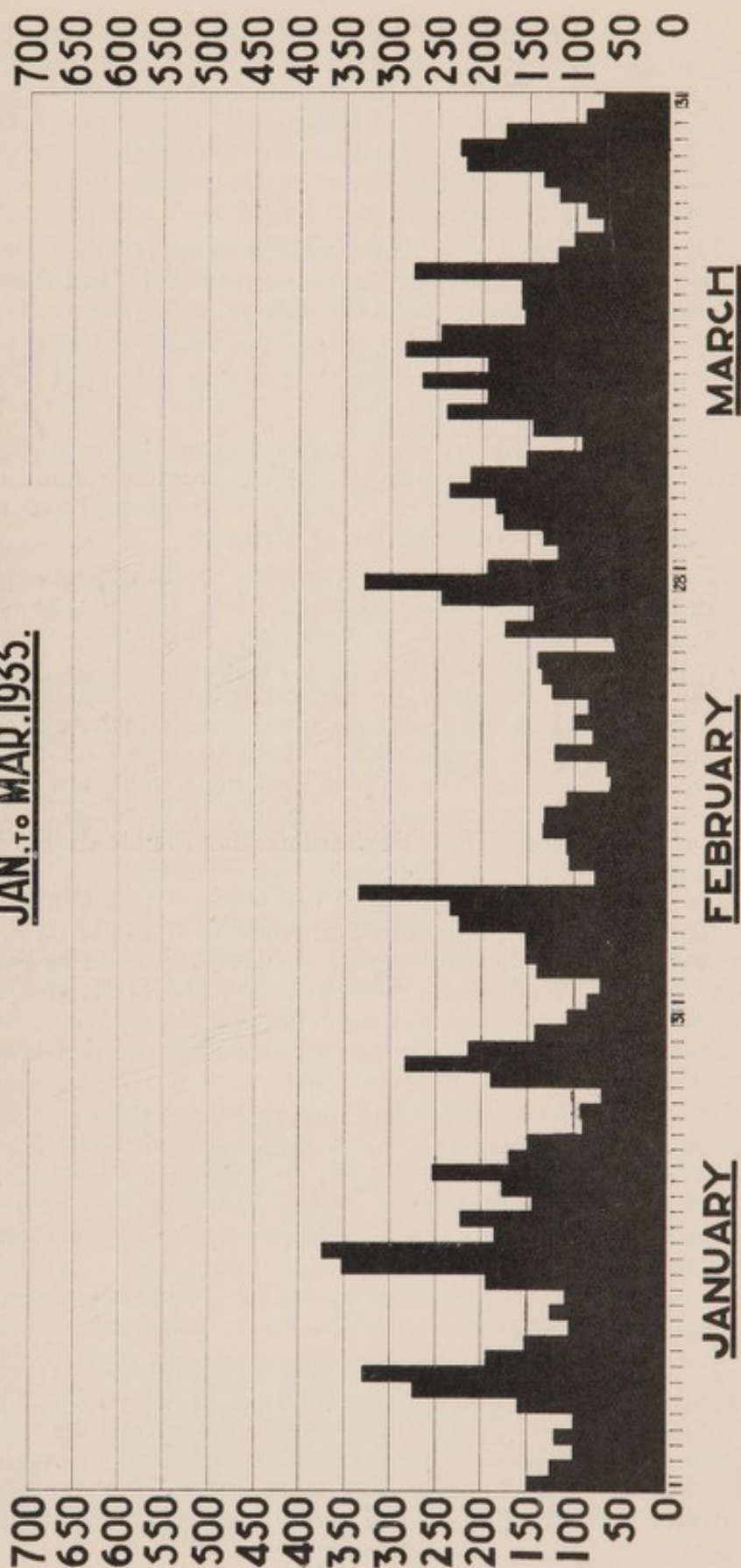
SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION

OCT. TO DEC. 1934



SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION

JAN. TO MAR. 1935.



## REPORT OF THE CHIEF SMOKE INSPECTOR.

GENTLEMEN,

At the conclusion of the five years working it will be of advantage to review the work carried out, the progress made, and the advantages resulting from the work of the Committee.

Five years ago it was stated that the character of the industries, viz., Coal, Iron and Steel were such that they could not be carried out without creating smoke nuisance.

Research and practice have proved that all these processes can be carried out with a minimum of smoke, providing suitable furnaces and plants are installed. A number of factories have made good progress with the reconstruction of furnaces.

The feature of this reconstruction work appears to be that smokelessness can be obtained when using almost any type of fuel from furnaces which work at reasonably high temperatures. Coal, coke, pulverised fuel, producer gas, town's gas, crude coke oven gas and oil fuel, are all in use throughout the area, smokelessness being more difficult when using coal and producer gas, where proper control has not been effected. Low temperature furnaces are found only to be successful when using gaseous fuel and unless some new developments take place it will be necessary to convert all furnaces of this class to the burning of gaseous fuel. It is interesting to note the average smoke emission charts for the five years. Sheffield has kept fairly steady with a uniform rise during the past two years. Rotherham has shown a tendency to increase, but will show a decline at a later date, because in proportion to the number of working chimneys, gas-firing has advanced very quickly. Rotherham Rural District shows the greatest change. Commencing at 13.2 minutes per hour, fluctuations have been varied, but now that reconstruction work is well advanced a lower average can be anticipated.

Financially, the scheme has surprised even the most optimistic of the constituent members of the Committee, for it has not exceeded an expenditure of £2,000 per annum, the smaller authorities receiving their quota of inspection at a very low cost. Stocksbridge costs average £18/3/- per annum, or 7/2 per week, which averages about 15.1 pence per observation.

### **Instructional Work.**

Under the direction of the Trades Technical Society, lectures were organised for Firemen and Stokers which have met with a good response. The first series from October to December showed an average attendance of about 70 students. There was some difficulty to overcome owing to a number of men being on "shift" work, but the second series showed a total number on roll of 120 members. A Furnacemen and

Stokers Technical Society has been established, working in conjunction with the Sheffield Trades Technical Societies. Meetings will be held and lectures given throughout the winter, with works visits during the summer. A library section with suitable books will also be available. The lectures will enable members to qualify for the City and Guilds of London Institute Examination, and Certificates will be issued to successful candidates. It is hoped that the ready response shown by the firemen will be increased during the coming session.

The classes at Rotherham were continued from the previous year. An examination was given at the conclusion of the session and it is proposed to issue certificates to the candidates who have satisfied the examiner with their attendance and work. Though Rotherham have a much smaller number of firemen to draw from, their example in commencing these classes is to be commended. Credit should also be given to the manufacturers who have offered the men efficiency money if they are successful with their classes.

### **Boiler Chimneys.**

Observations show that where mechanical stokers have been fitted, pollution of the atmosphere is considerably reduced, and in most cases continual visits to works and the service of notices have not been necessary. Difficulty has been experienced in one or two cases with "Grit" emission nuisance, due to the use of unsuitable fuel and the improper use of forced draught. To some extent the manufacturers of the apparatus are responsible because they inform the users that any low grade of fuel can be successfully burnt.

Where Sprinkler type stokers are in use with forced draught, fuels containing a heavy percentage of "fines" are unsuitable. The lowest priced fuel is not always the cheapest fuel for boiler work. Manufacturers are often induced to purchase fuel of a fair calorific value, irrespective of the ash content. A fuel with heavy ash content will cause more inconvenience and trouble than most other boiler difficulties.

There remains a considerable amount of reconstruction work to be done with boilers in the area, and boiler users would assist in this work by investigating the efficiency of their boiler plants in order to find out the amount of waste that can be prevented. Simple instruments giving the measurement of feed water and draught will help in this respect, but it is surprising to find how few are the instruments in use for estimating evaporation and the cost of the same.

Collieries are now finding methods of utilising their low-grade fuels for steam generation work with a minimum of nuisance, but they continue to use Lancashire type boilers for this work. The fuels now being produced from the cleaning plants, *i.e.*, "dry fines," are most difficult for Lancashire boiler work and it appears that water-tube boilers with chain grate stokers, or pulverised fuel plant must be the solution for this work, if these dry fines are to be successfully used at the collieries. There may be feed water and other difficulties, but these can be overcome.

An interesting conversion is being carried out at one colliery in the district. A new type of chain grate stoker for Lancashire boilers is being installed. It is hoped that this type of stoker will be successful, because it would help to solve a number of difficulties with Lancashire boiler users. This matter will probably be reported on at a later date.

### **Metallurgical Processes.**

With improved conditions of trade the reconstruction of furnaces has increased, but the work is only going forward slowly and at the present rate of reconstruction it will be some years before any marked improvement in atmospheric pollution will be noted. Conversion of reheating furnaces to Town's Gas from coal has been carried out at a number of the works and reports on the same are very encouraging. Though fuel costs show an increase, the output of the furnaces is greater, accuracy of working is increased and cleanliness is the greatest factor of all. The prices of gas are yet an impediment to the small users and will continue to be so until some arrangement for a "flat" rate of gas for industrial purposes is put forward by the Sheffield Gas Company.

With regard to reconstruction work, the spirit of co-operation and the will to assist Smoke Abatement might be stressed to a greater extent. It has been noted that continuous renewals of furnaces are being carried out at the various works as the brickwork and refractory material require it. It was hoped when these opportunities occurred that the owners would consider other methods for increased efficiency and reduction of smoke. In many cases the furnaces are renewed in the old method and the waste and pollution continue. While the spirit of coercion in these matters is not one that appeals to the Department, it is thought that unless a better outlook is shown, application will have to be made for pressure to be brought to bear on persistent offenders.

### **Combination Chimneys.**

Considerable improvement has been noted with these chimneys, and it has been shown that the fitting of mechanical stokers to the boilers has undoubtedly reduced smoke emissions, proving the contention of the Department that a proportion of the smoke is from the boilers. There remain a fair number of chimneys with hand-fired Lancashire boilers attached, and in some cases reconstruction work would help to a considerable extent.

**Coke Oven Plants** continue to emit a vast amount of pollution to the atmosphere, and upon enquiries being made it has been found that although nuisance is complained of in other districts no definite action has been taken in order to try and reduce the amount of pollution. During the year attention was drawn to one large works where the quenching tower was low and in close proximity to residential dwellings. It is hoped that this tower will be raised or another tower erected in order to reduce this nuisance. Complaints of fumes from recovery plant were also investigated during the year.

### **Refuse Burning.**

Complaints are received in greater numbers of nuisance caused by the indiscriminate burning of domestic and trade refuse. In most cases it is found that people continue to dispose of refuse without any facilities for doing so, and an utter disregard for their immediate neighbours. Refuse should be burnt, but if there are no facilities for burning, arrangements can be made with the Cleansing Department to carry the material away and dispose of it in a proper manner. It is hoped that people who have offended in this manner will help, and so assist in keeping the atmosphere of the city as clear as possible.

The year under review has been a busy one with trade extending throughout and reconstruction slowly going forward. The day of excessive smoke and pollution from furnace chimneys is now past, and though smoke and pollution continue there are signs that in a few years time, with the assistance of the manufacturers, a cleaner and brighter city will be the result of the work.

I am, Gentlemen,

Your obedient servant,

JAMES LAW,

Chief Smoke Inspector.

SHEFFIELD, ROTHERHAM AND DISTRICT  
Income and Expenditure Account for the

EXPENDITURE.										
1934.							1935.			
£	s.	d.					£	s.	d.	
1,276	19	8	Salaries of Inspectors	..	..	..	1,310	11	2	
			Employers' Contribution—Health, Pensions							
9	14	4	and Unemployment Insurance	..	..	..	7	1	7	
63	17	9	Superannuation—5% Contribution	..	..	..	65	10	7	
			Workmen's Compensation and Third Party							
3	11	4	Insurance	..	..	..	2	13	8	
49	16	2	Travelling Expenses of Inspectors	..	..	..	61	1	4	
9	5	1	Motor Car Hire	..	..	..	1	15	8	
11	11	6	Deputation Expenses	..	..	..	18	7	9	
145	1	0	Fees of City Analyst	..	..	..	158	19	6	
0	2	6	Costs and Summonses	..	..	..	1	2	9	
			Subscription to the Department of Scientific							
55	0	0	and Industrial Research..	..	..	..	55	0	0	
			Subscription to the National Smoke Abate-							
25	0	0	ment Society	..	..	..	25	0	0	
42	12	6	Printing, Stationery and Advertising	..	..	..	38	1	4	
133	6	8	Research Work	..	..	..	147	13	0	
29	12	11	Postages and Disbursements	..	..	..	21	17	1	
11	16	4	Apparatus	..	..	..	24	13	5	
			BALANCE—Being Income in excess of							
32	10	1	Expenditure	..	..	..	86	8	2	
<hr/> £1,899 17 10				<hr/> £2,025 17 0						

BALANCE SHEET,

LIABILITIES.									
							£	s.	d.
Sundry Creditors	..	..	..	..	..	..	767	9	6
Income in excess of Expenditure to 31st									
March, 1934	..	..	..	..	£48	5	4		
Income in excess of Expenditure to 31st									
March, 1935	..	..	..	..	86	8	2		
							134	13	6
							<u>£902</u>	<u>3</u>	<u>0</u>

City Treasurer's Office,  
Town Hall, Sheffield.  
30th May, 1935.

Year Ended 31st March, 1935.

AS AT 31<sup>ST</sup> MARCH, 1935.

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THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

REPORT OF THE

COMMISSIONERS OF THE

BOARD OF TRUSTEES

FOR THE YEAR 1896

CHICAGO, ILL., 1897

PRINTED BY THE UNIVERSITY PRESS

OF CHICAGO

1897

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

