

# **Report of the Sheffield, Rotherham & District Smoke Abatement Committee : 4th (1933/34)**

## **Contributors**

Sheffield, Rotherham & District Smoke Abatement Committee.

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CI.  
AS. 4462

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



# REPORT

of the

Sheffield, Rotherham & District  
Smoke Abatement Committee

for the year

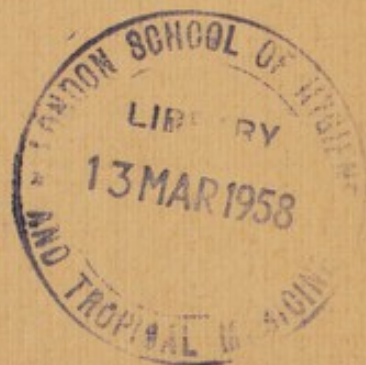
1st APRIL, 1933—31st MARCH, 1934.



*FOURTH ANNUAL REPORT.*



TOWN HALL,  
SHEFFIELD.





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*FOURTH ANNUAL REPORT.*



TOWN HALL,  
SHEFFIELD.

Ann Rep
WA28
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S54
1933/34

## 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.

„ E. GRAHAM.

„ F. A. LLOYD, J.P.

„ J. A. LONGDEN.

### *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 H. R. DAWSON.

## 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.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. C. A. Belbin, F.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, 1933—31st March, 1934.

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The Committee have pleasure in presenting their Fourth 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. During the year there has been one change, Mr. P. H. Saunders having been appointed an Inspector in place of Mr. G. W. Farquharson who obtained an appointment under another Local Authority.

### **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 each month, and the tabulated figures shewn below are the totals for the year :—

	Sheffield	Rotherham	Rotherham Rural Dist.	Rawmarsh	Greasbro'	Stocksbridge
No. of Chimneys observed ..	5310	772	262	197	112	303
No. of Minutes Smoke emitted	14427	2324	1148½	627	385	976
Average Minutes smoke per hour	2·7	3·0	4·3	3·1	3·4	3·2
No. of Notices served .. ..	51	18	6	6	2	5
No. of Intimations served .. ..	317	59	15	8	5	14
No. of Advisory visits .. ..	649	108	54	43	24	65
No. of Complaints answered ..	88	33	3	2	0	0
No. of Chimneys demolished ..	14	5	0	0	0	1
No. of Chimneys raised .. ..	5	5	0	0	0	0
No. of Chimneys erected .. ..	11	2	0	0	0	1

#### Prosecutions.

During the year 16 cases were reported to the Committee for their consideration.

In 12 cases the Committee decided that no proceedings be instituted, but a warning letter sent to the firms concerned. A Magistrates' Order with costs was granted against a brickworks. Cases against 2 collieries were adjourned and later withdrawn, the necessary re-construction work having been carried out and the nuisance abated. Further adjournments have been granted to a Canning Works who had arranged for the installation of a new boiler.

#### 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 are 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 following table shews 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>1933</b>							
April ..	28·30	1·81	27·96	—	19·48	10·76	11·57
May ..	19·05	8·33	32·35	—	20·94	13·68	27·36
June ..	23·44	6·77	25·54	—	23·74	14·62	22·77
July ..	25·68	9·25	31·94	—	19·73	14·18	16·26
August ..	15·16	3·58	14·88	2·89	17·96	13·34	3·58
September ..	24·07	7·33	33·13	11·75	22·43	15·26	19·03
October ..	24·31	10·82	40·04	9·94	29·63	19·51	18·69
November ..	14·89	5·64	26·90	5·74	20·51	12·74	23·79
December ..	22·33	13·01	30·65	15·54	27·11	10·86	22·74
<b>1934</b>							
January ..	27·76	8·30	36·98	12·69	28·14	13·45	8·33
February ..	18·98	7·57	31·22	—	24·52	10·06	15·18
March ..	23·37	7·43	37·97	—	18·88	11·50	14·85
Total Year ..	267·34	92·84	369·56	58·55	273·07	159·96	204·15
Average tons per sq. mile	22·27	7·73	30·79	9·76	22·75	13·33	17·01

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 1 hour at a distance of one yard from an Arc Lamp (25 amperes), gives a reading of ‘ one unit ’.”



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

#### Average Units per Day.

Month	Sheffield			Rotherham	
	Attercliffe	Nether Green	Surrey Street	Technical College	Oakwood Hall Sanatorium
April .. ..	0·58	0·76	0·70	0·55	0·62
May .. ..	1·30	1·40	0·80	0·90	0·93
June .. ..	1·95	1·96	1·97	2·07	2·14
July .. ..	1·90	1·50	1·81	1·66	1·81
August .. ..	1·32	1·40	1·48	1·68	1·71
September .. ..	1·06	1·10	0·93	1·15	1·30
October .. ..	0·31	0·20	0·26	0·39	0·43
November .. ..	0·20	0·10	nil	0·37	0·42
December .. ..	0·03	0·10	nil	0·19	0·22
1934.					
January .. ..	0·20	0·17	nil	0·225	0·26
February .. ..	0·13	0·20	0·18	0·28	0·34
March .. ..	0·17	0·20	0·29	0·42	0·47

#### Sulphur Determination.

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

The Building Research Station report on the methods is as follows:—

“It is too early yet to discuss the correlation which exists between the estimates made by these two methods ; this will be done when sufficient data has been accumulated. Meanwhile, it may be said that the lead peroxide method has proved itself reliable and convenient.”

With the volumetric method, which has been running continuously at Surrey Street for the past three 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.

The machine which was installed at the College of Technology has not been working smoothly owing to certain mechanical defects. It is hoped that comparative records with those shown at Surrey Street will be available later.

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

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

At the invitation of the Committee, the Annual Meeting of the above Society was held in Sheffield September 22nd to 24th, 1933, and at the request of the Society that a Sheffield Speaker should give a Paper on "The termination of the 5 years exemption Clause in the 1926 Act, and questions arising therefrom," the Chairman (Councillor Asbury) was requested to give the Paper. The Chairman and the Chief Smoke Inspector were appointed as delegates to attend the Conference.

The Chairman and the Chief Smoke Inspector were authorised to attend Committee meetings of the Society.

### **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 on investigation of Atmospheric Pollution, held in London, on the 29th May, 1933.

He was also appointed to attend the Conference of Co-operating Bodies which was held in London on the 27th November, 1933.

### **Sanitary Inspectors' Association.**

The Committee authorised the Chief Smoke Inspector to attend the Annual Conference of the Association held at Clacton-on-Sea on the 7th September, 1933, when a paper on "Air Pollution" was given.

### **Smoke Measurement.**

A Report of the Chief Smoke Inspector on the meeting held in London, at the request of the Department of Scientific and Industrial Research at which were present representatives of the Ministry of Health, regarding the experiments which were being carried out by representatives of the Department with the Smoke Measuring apparatus, was submitted.

Reports of the tests made by the Chief Smoke Inspector on the Smoke Measuring Meter designed by Dr. J. S. Owens, Superintendent of Scientific and Industrial Research, were also submitted.

### **Inspections.**

#### **(a) POLLUTION GAUGES.**

Dr. J. S. Owens, Superintendent of the Department of Scientific and Industrial Research, inspected all the pollution gauges in the Area of the Committee on the 8th November, 1933, and expressed his appreciation of the manner in which the same were kept.

#### **(b) METALLURGICAL PROCESSES.**

Mr. W. A. Damon of the Ministry of Health visited Sheffield on the 17th November, 1933, and inspected furnaces which had been converted in order to prevent excessive emission of smoke and expressed his satisfaction at the progress which is being made in Sheffield in regard to smoke problems.



### **Examinations in Boiler House Practice.**

In view of the representations made to the City and Guilds of London Institute, Department of Technology, regarding the holding of examinations in Boiler House practice including smoke abatement, it had been decided that a Committee should be appointed to consider and report as to whether examinations by the Institute would be desirable and feasible in Boiler-house practice, and for such purpose representatives of the National Smoke Abatement Society, the Board of Education, Principals of Technical Institutions, and Association of Teachers in Technical Institutions, and the Institution of Engineers-in-charge had been invited to serve on such Committee. The Institute asked that a representative of the Committee should be appointed to serve on such Committee, and the Chairman (Councillor W. Asbury) was appointed.

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

Arrangements were made with the Rotherham College of Technology and Art, for a series of Lectures to be given, and classes held, at Rotherham. Six lectures were held, satisfactory attendances being recorded. The Classes are to commence in September, 1934, the proposed curriculum being as follows :—

Fundamental principles Primary, secondary, and tertiary air supplies. Types of boilers. Hand firing, mechanical stoking, feed water, scale water softeners. Boiler House instruments for recording. Varying atmospheres and temperatures, and fundamental principles in order to control same. Reverberatory furnace. Re-heating furnaces—coal fired, producer gas fired, and town gas fired. Continuous re-heating furnaces. Muffle furnaces. Sheet Mill furnaces. Annealing and heat treatment. Difficulty of control. Modern development of same. Pyrometry and recording apparatus.

The Sheffield University have also arranged with the Sheffield Trades Technical Societies for similar classes to be held in the Applied Science Department of the University, commencing in October, 1934.

### **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.

## 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, 1933, 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 June last, Professor Wheeler stated that so far as metallurgical processes were concerned, he was satisfied that such processes could be carried out, with suitable plant, without excessive smoke. He did not think, however, that it could be expected that Manufacturers would agree to scrap existing plant which had cost thousands of pounds, and instal new plant.

Since such date, the work has taken the form of—

- (a) A study of the relative combustibility of cokes by a method similar to that of the Northern Coke Research Committee.
- (b) Measurements of the radiating power of cokes, when burnt under standard conditions in a standard grate, for correlation with the data obtained under (a).

The investigator has also been instructed to test the value, when opportunity affords, of certain smoke-emission measuring instruments.

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

The cost for the year ending 1st September, 1934, is £310, which amount has been 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.

## 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.

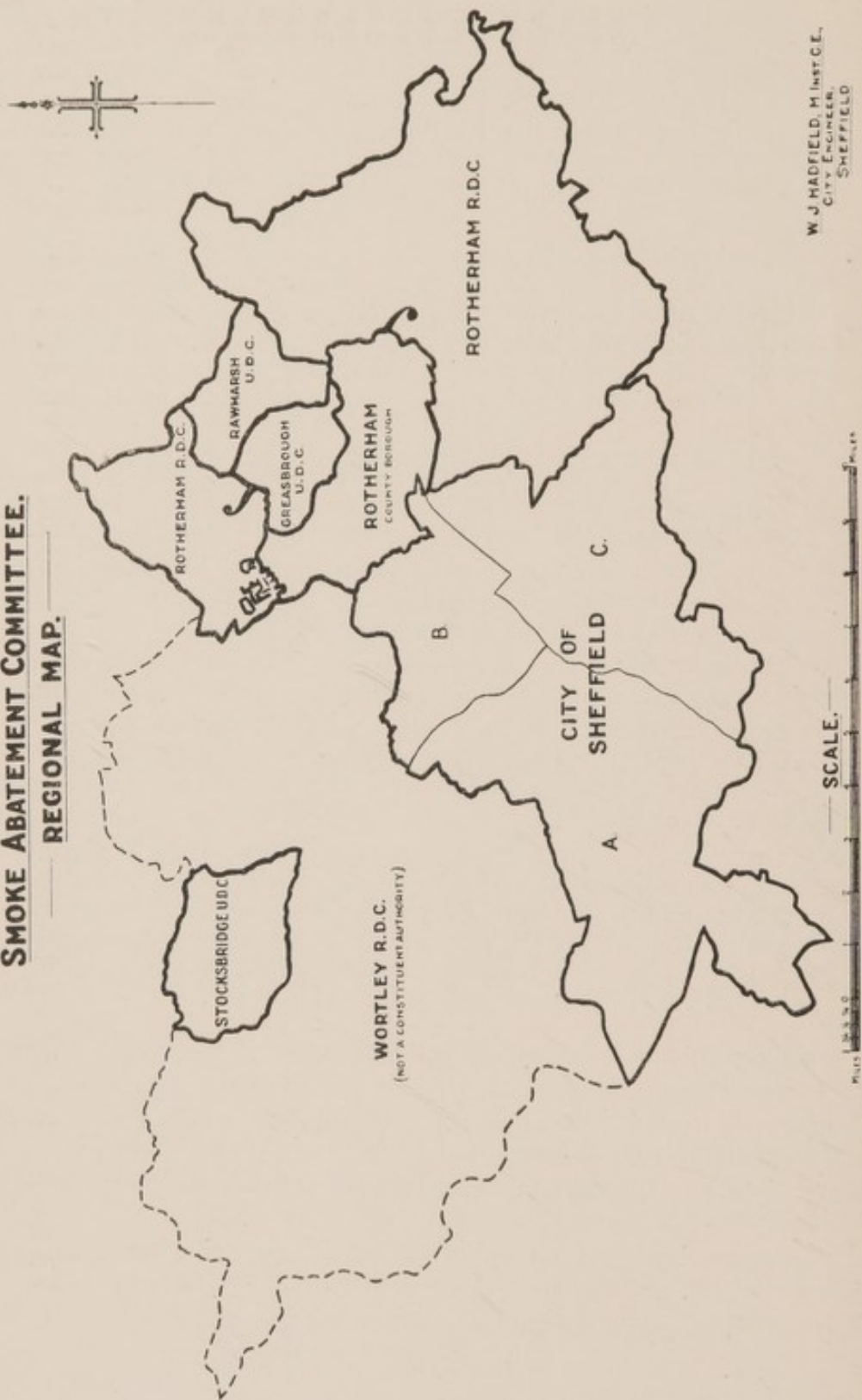
Annexed hereto is a copy of a Report of the Chief Smoke Inspector, a Statement of Accounts, a Map of the Area, and seven graphs.

W. ASBURY,  
Chairman.

Town Hall, Sheffield.



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







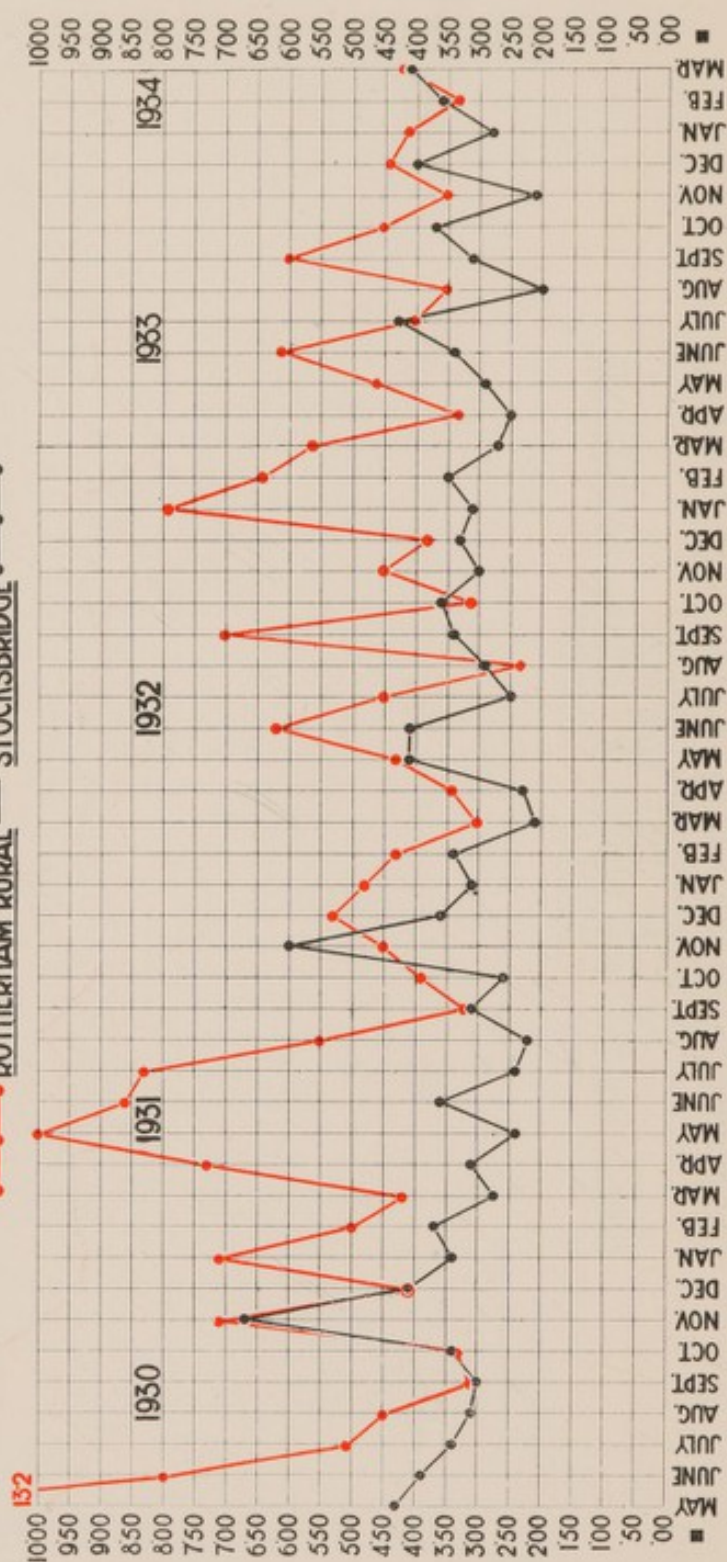
# SHEFFIELD · ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR

MAY 1930 TO MAR. 1934.

AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.

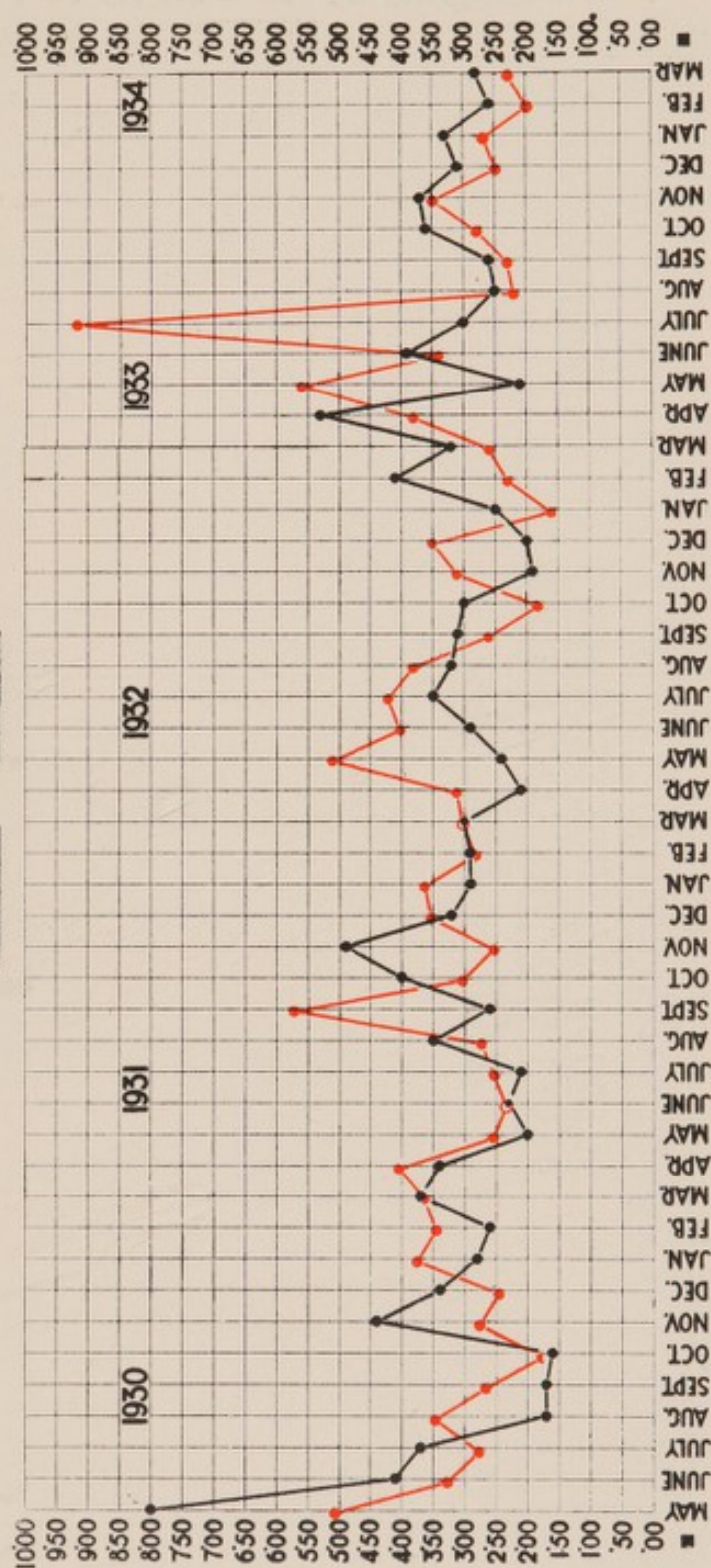
● — ROTHERHAM RURAL — STOCKSBRIDGE ● —



### SMOKE EMISSION CHART FOR

MAY 1930 TO MAR. 1934.

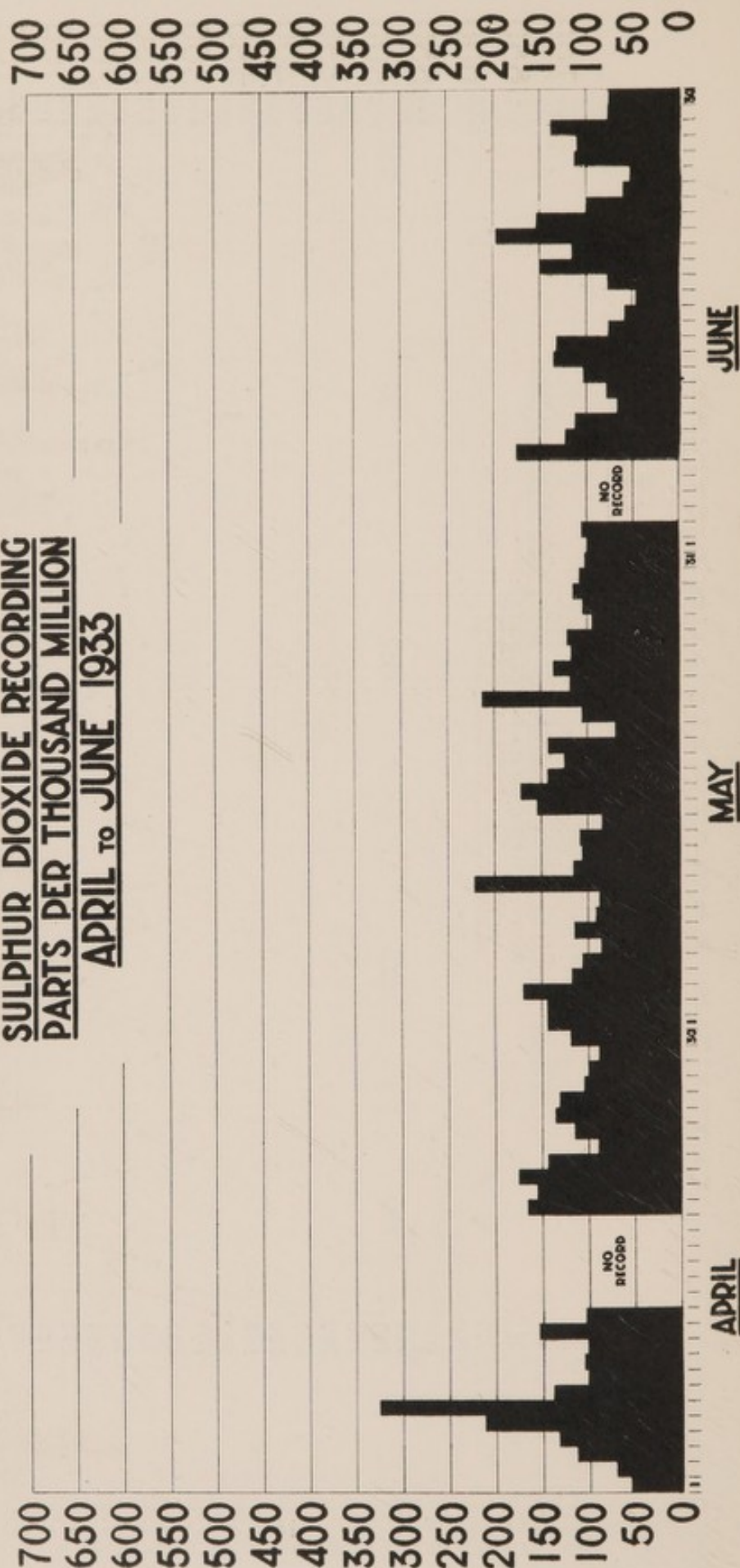
**AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.**





# SHEFFIELD, ROTHERHAM AND DISTRICT SMOKE ABATEMENT COMMITTEE.

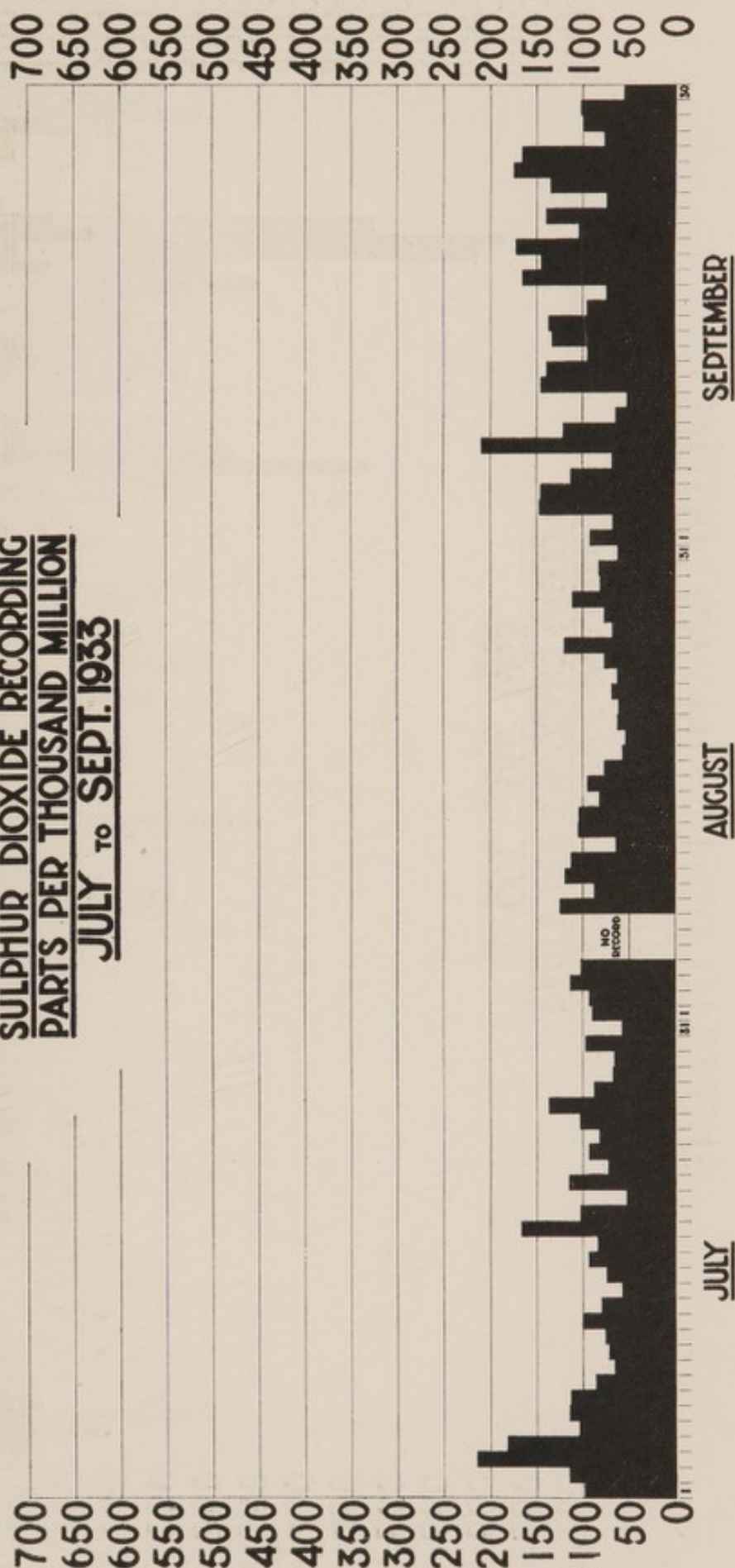
SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION  
APRIL TO JUNE 1933



# SHEFFIELD ROTHERHAM AND DISTRICT SMOKE ABATEMENT COMMITTEE.

SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION

JULY TO SEPT. 1933

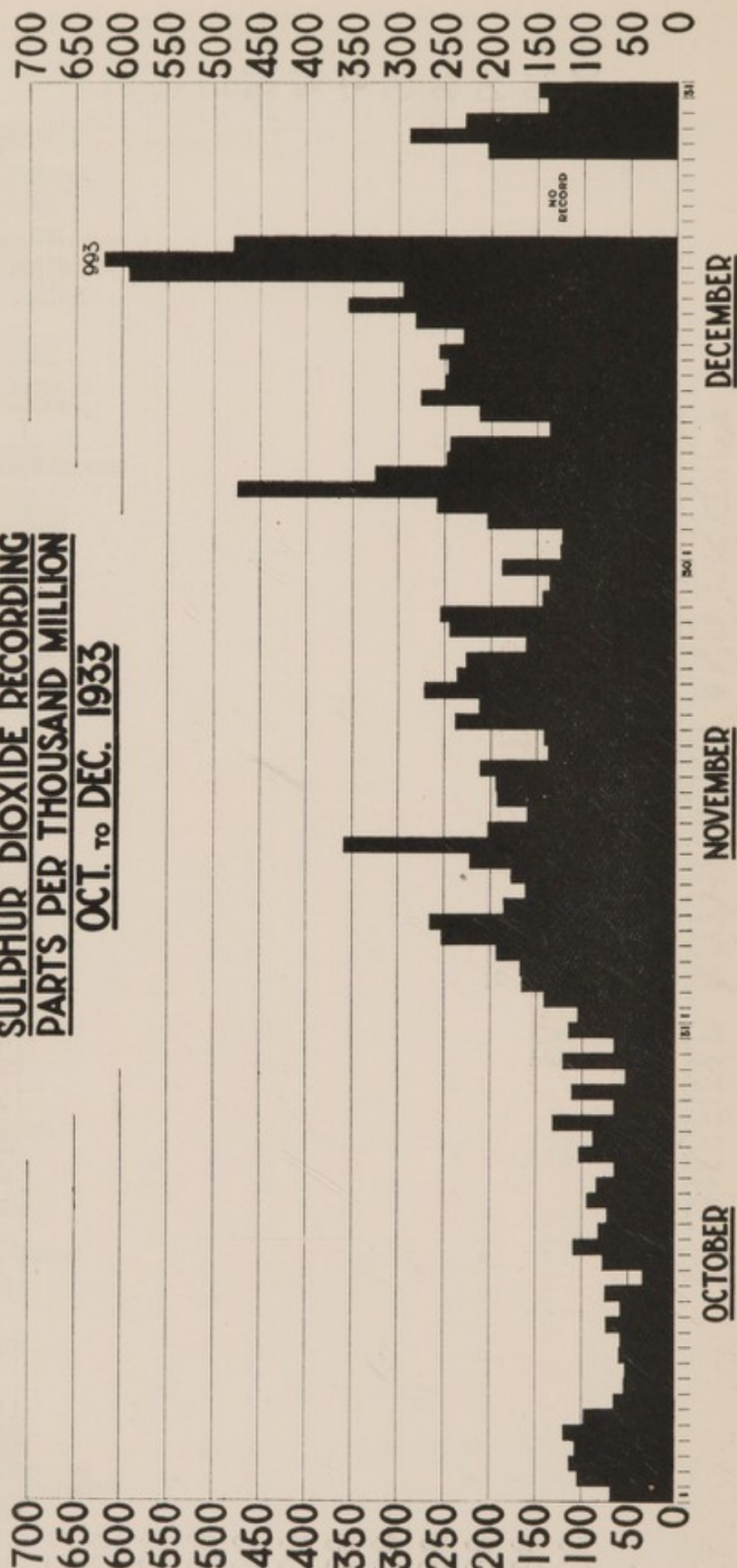




# SHEFFIELD, ROTHERHAM AND DISTRICT SMOKE ABATEMENT COMMITTEE.

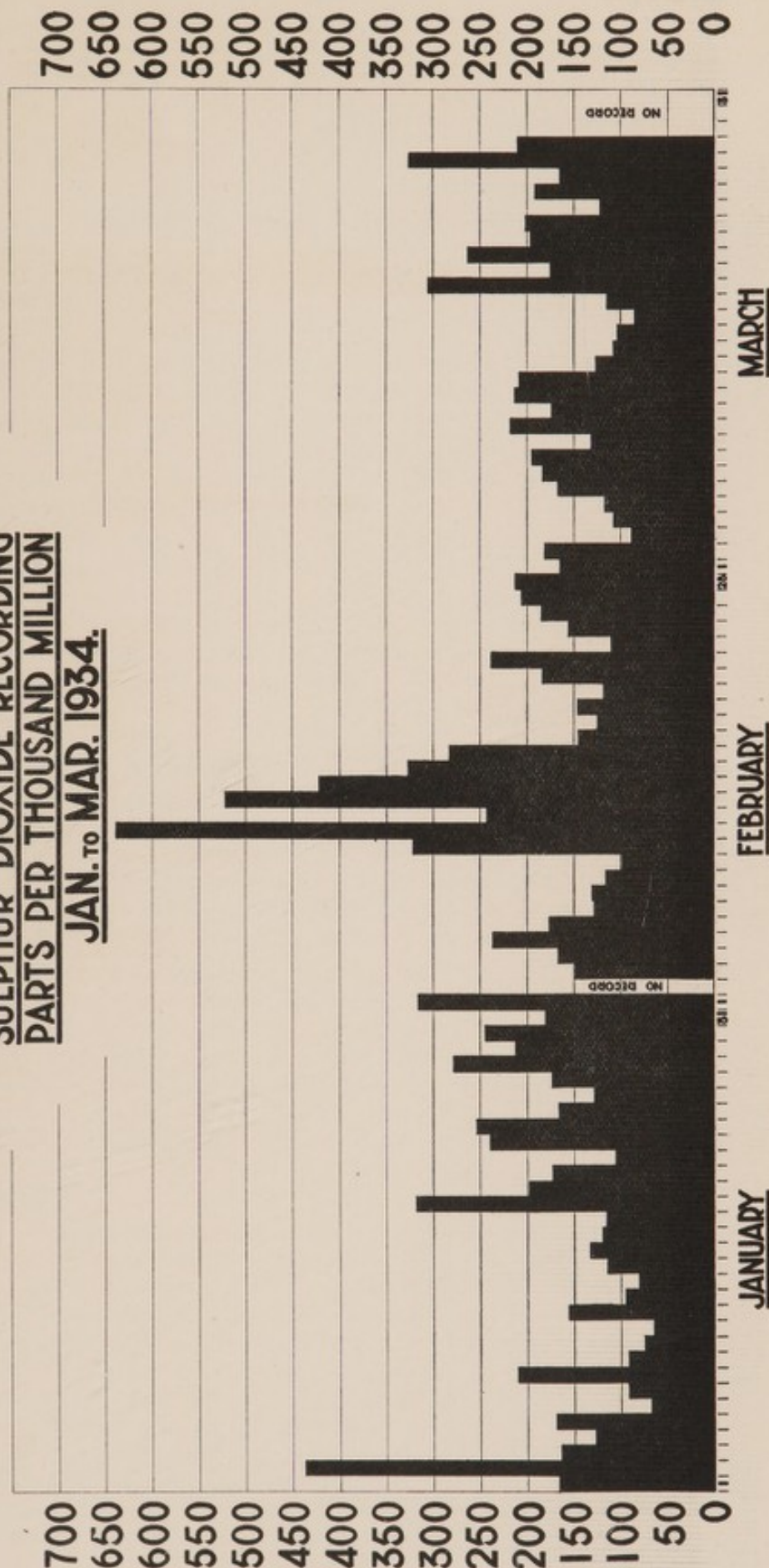
SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION

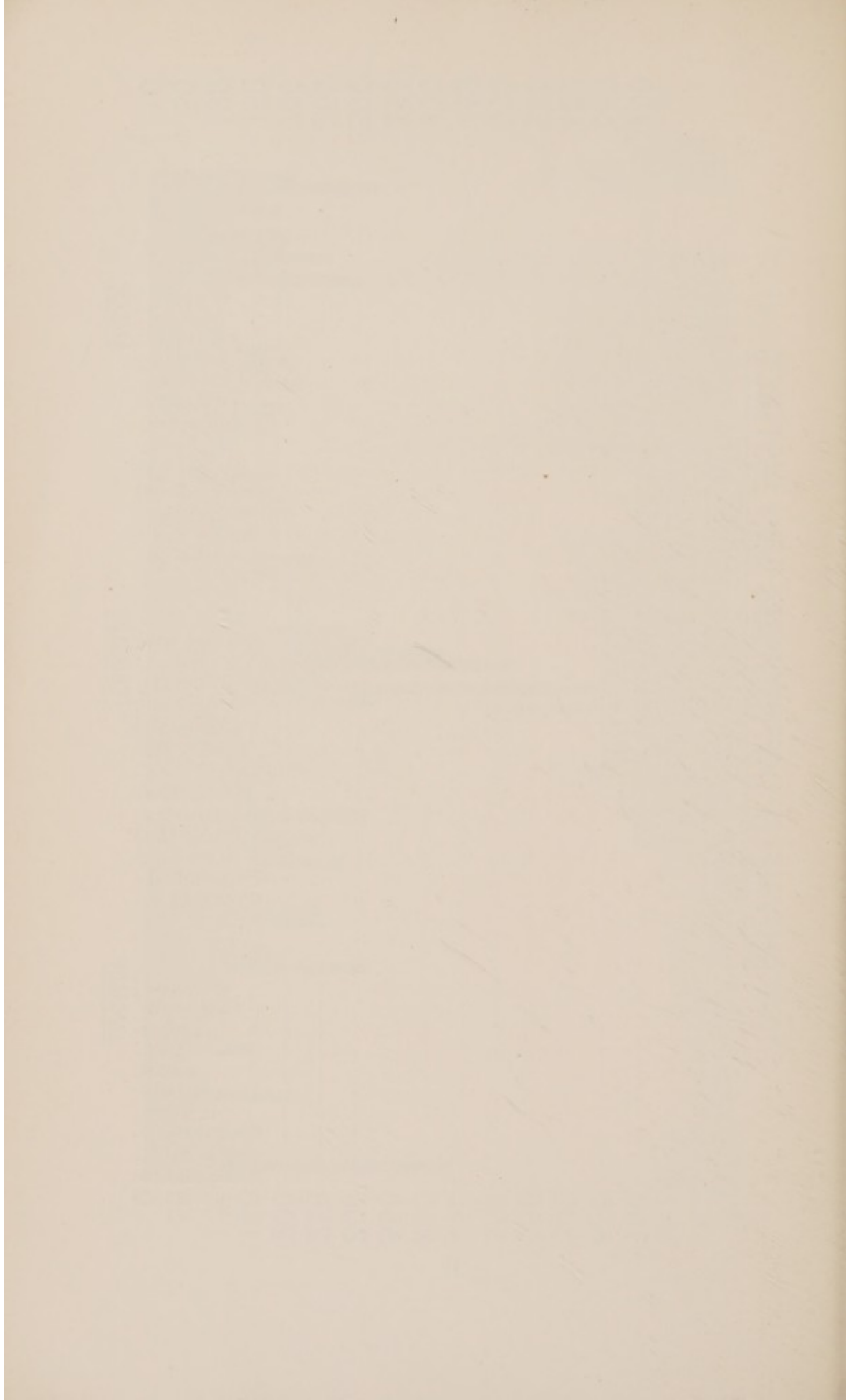
OCT. TO DEC. 1933



# SHEFFIELD, ROTHERHAM AND DISTRICT SMOKE ABATEMENT COMMITTEE.

SULPHUR DIOXIDE RECORDING  
PARTS PER THOUSAND MILLION  
JAN. TO MAR. 1934.







## REPORT OF THE CHIEF SMOKE INSPECTOR.

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GENTLEMEN,

The year under review has been the most important one, since the Regional Committee commenced to function four years ago. Previously the Committee had been trying to improve the condition of the atmosphere under adverse trade conditions but the past twelve months have shown a steady trade improvement throughout the Area with a more optimistic view of conditions for the future.

This, naturally, has its effect, and manufacturers, finding that their existing plant is not capable of dealing with the necessary demand for output, have carried out or are considering schemes of reconstruction. It is hoped that improved trade conditions will continue, for there is a vast amount of reconstruction work to be done in order that any definite reduction in pollution figures can be shown.

### **Instructional Work.**

With regard to Instructional Work, the results in Sheffield have been decidedly disappointing. Arrangements were made for a series of classes to be held at the Applied Science Department of the University, but the response was so poor that the scheme had to be abandoned. The Trades Technical Society however, have taken up the scheme, and will commence a series of lectures and classes during the coming winter, which, it is hoped, will meet with a better response.

A similar scheme, commenced in Rotherham, has proved more successful, as the average attendance of over 50 workmen at each lecture is most encouraging. There is a definite need for this instructional work, and workmen should help in this respect by showing an incentive to improve their knowledge of combustion, even though it entails the sacrifice of one evening each week. The return for the effort may not be immediate, but it will receive recognition eventually.

### **Boiler Chimneys.**

As stated in the last Annual Report, the amount of smoke emitted from boiler chimneys can compare uniformly with most other towns. Though pollution is caused by smoke from boiler chimneys, the proportion is much less than that caused by metallurgical processes. A fair amount of reconstruction work has been carried out to improve combustion at various boiler houses, several of the works are going forward with reconstruction schemes, which, owing to increased trade conditions, can only be carried out at week ends and holidays, and is slow in progress. Reduction of load has been carried out by means of installing electric motors, using Corporation current for "power" work, and the fitting of mechanical supplementary air supplies, has overcome some of the difficulty by increasing the evaporation.



The most important work carried out during the year has been the converting of hand fired boilers for mechanical stoking. In Sheffield eight boiler plants have been altered in this manner, and six further plants are in course of re-construction. In this manner the human element is reduced to a minimum, fuel and air are supplied to the boilers uniformly and continuously, and a maximum efficiency is obtained. From the Smoke Abatement point of view, the vital point is, that pollution is reduced to a minimum.

In the outer districts, the work of reconstruction at Colliery boiler houses has continued, though the types of fuel in use are not generally suitable for mechanical stoking work. One colliery company with a battery of fourteen Lancashire boilers has completed a scheme of mechanical air supply with moving firebars. This conversion has reduced smoke emission from 40 minutes per hour to considerably below the minimum "Time Standard." The officials at the colliery state that the scheme was considerably expedited by the activities of the Smoke Abatement Committee, and it has enabled them to burn successfully a lower grade fuel, which should give them a saving of about £7,000 per year. The fuel in use previous to the alterations was "washed slack," but they are now able to burn "slurry" without inconvenience. They are quite satisfied with the results, which will amply repay the expenditure.

Vertical boilers still continue to cause an amount of trouble and continuous observations are necessary to insist that the proper fuel is being used.

### **Metallurgical Processes.**

The major amount of pollution of the atmosphere is caused by smoke emitted from metallurgical processes, and it is to this class of chimney that most attention must be given. The year under review can be looked upon as "the year of achievement," for at a Joint Advisory Meeting held in June last it was stated by the Chairman, Dr. R. V. Wheeler, that "providing suitable plant is used, metallurgical processes can be carried out without excessive smoke." It has always been put forward in the defence of "process" work, that the satisfactory results necessary could not be carried out, without the emission of "black" smoke, but it is now agreed that providing suitable plant is in operation, pollution can be obviated. Reconstruction work has been going forward slowly for some years, but owing to adverse trade conditions this work has not gone forward with the expedition that was hoped for. A number of town's gas-fired furnaces have been put in operation during the year, and the increase in gas consumption for industrial purposes has almost been "doubled."

One large steelworks has constructed a pipe line from their adjacent coke oven works and has re-constructed its re-heating furnaces for the use of crude coke oven gas, using about 200,000 cubic feet per hour. The effect on the atmosphere, both inside the works and in close proximity, is very remarkable. Previously at one mill, the pall of smoke used to completely obscure the thoroughfare at certain periods



of the day, now there is an entire absence of smoke. Another steelworks in Rotherham is worked entirely by gas ; solid fuel has been completely excluded.

For re-heating furnaces a mechanical stoker has been placed on the market, suitable for fitting to any existing type of reverberatory furnace, and fitted with controlled draft below and above the bars. The steel works that fitted this type of stoker experimentally, have been so satisfied with its efficiency, that six further furnaces have been converted. The Works Manager estimates that though the output has not increased to any appreciable extent, there is a nett saving of 33½% in the fuel bill. This is a definitely controlled method of applying to re-heating furnaces and should make further progress. Particular observations have been taken for smoke emission from this type of furnace for a period of two years, and there has been no cause for complaint.

### **Heat Treatment.**

Perhaps the worst type of nuisance with regard to smoke is from heat treatment furnaces. The difficulty arises from the fact that often the maximum temperature carried must not exceed 550°C., so that when using solid fuel a proper ignition temperature is not attained, and unconsumed carbon is emitted as smoke. After considerable investigation it has been found that heat treatment cannot be carried out successfully without nuisance, where coal is used as fuel. It can however, be carried out with a minimum of nuisance with producer gas, and is most successful where town's gas is used. The price of town's gas however, is not competitive with that of coal, in some cases increased cost being 200% greater. There is a type of heat treatment furnace in use—a semi-producer type—which can be worked fairly successfully, but it is not fool-proof nor entirely smokeless. At the present time heat treatment is perhaps the most difficult of all the metallurgical problems that have to be dealt with.

During the National Smoke Abatement Society's Conference which was held at Sheffield in September last, a paper was given by the Chairman, Councillor W. Asbury, dealing with the "Five Years' Clause" and other matters arising from the Public Health (Smoke Abatement) Act, 1926. That paper put forward the position and attitude of the Committee with regard to the question of metallurgical processes, and it was to be regretted that very few representatives of the Manufacturers were present who might have put forward the Manufacturers' point of view, and the progress that is being made. In visiting the various factories progress is noted and a record kept of various improved methods, but it would be of greater value if the manufacturers could inform people interested of the various tried methods and the success obtained.

The majority of the larger steelworks are carrying out extensive schemes, but many of the smaller works are continuing to use the same coal-fired methods of re-heating furnaces, which will never be anything but " smoke makers." A certain number of furnaces have been



re-conditioned during the past twelve months, and some new furnaces installed, but no attempt has been made to give a controlled air or fuel supply to the same.

### **Coke Oven Plants.**

With improved trade conditions these plants have considerably increased their output, and in proportion have also increased the amount of pollution to the atmosphere. Both "green gas" from the cells, vapour and fumes from "quenching" and deposits of grit from the chimneys are particularly noticeable. However, the manufacturers are realising that a number of the existing batteries are obsolete and are contemplating the installation of new batteries, which it is hoped will include special features for the prevention of atmospheric pollution. Some of the older types quench their coke at ground level, and even the more modern types which are fitted with quenching towers should dissipate the vapour and fumes at a much greater altitude.

### **Refuse Burning.**

Complaints continue to be made with regard to nuisance caused by the indiscriminate burning of trade and domestic refuse. A number of notices have been served during the year asking tradesmen to provide facilities for the disposal of refuse, which have been at once attended to. The persons concerned in some cases erected an incinerator and in others ceased to burn and sent their refuse to the Corporation Destructor to be disposed of. The disposal of domestic refuse is rather more difficult to deal with, particularly where residents have an amount of garden refuse to dispose of, for the burning of green and wet garden refuse undoubtedly causes discomfort and annoyance to the immediate neighbours where burning is being carried out.

### **Smoke Measurement.**

Further tests have been carried out during the year with a Smoke Meter which was sent by Dr. J. S. Owens, the inventor, for test purposes. The instrument is much simpler than any on which previous tests were made, and can be made a useful method of "Standardising" smoke emission. It is not strictly accurate, nor does it eliminate the human element to any extent, but it will show an approximate "figure of merit" for purposes of evidence. Unlike other instruments tested, the variation of sky readings does not have such a marked effect on smoke emissions. It can be read with fair success on dull heavy days.

### **Domestic Smoke.**

There is no legislation to deal with this form of nuisance, but undoubtedly a considerable proportion of the pollution in the Area is caused in this manner. One of the difficulties is that the pollution is of a greasy soft nature which adheres to any surfaces where it is deposited, and another difficulty is that it is deposited at such a low altitude that it causes a definite pall in the valleys. The research department at the Sheffield University are carrying out experimental work with regard to the suitability of fuels and the various types of ranges in order to solve those difficulties. The more universal use of



gas and electricity is undoubtedly going to help this solution more than any other means. I should like to quote a report of the Manager of the Rotherham Corporation Gas Supplies with regard to what is being done ; it is as follows :—

“ The experimental application of a Two Part Tariff for domestic consumers which enables householders to obtain gas at 10d. per 1,000 cubic feet (2d. per therm) has proved so successful that the Corporation has made it available to all domestic consumers. The use of gas for all domestic purposes—water heating, fires, cooking, etc —is increasing at such a rate as to have an improving effect on the smoke nuisance of the town. Already more than 50 houses are relying entirely on gas instead of raw coal, and the number is increasing almost daily. The latest figure is over 400 (1st June, 1934).

If these commodities could be brought down in price to something almost competitive with the cost of coal, much greater use would be made of it. Sheffield has approximately 125,000 fireplaces with a weekly coal consumption during the winter months of about 12,500 tons. To convert all these fireplaces for gas or electric use would cost a huge capital expenditure. If a smokeless domestic fuel could be placed on the market in adequate quantities at a price almost competitive with coal the problem would solve itself. Until such a fuel is placed on the market, coal will be almost universally used in domestic fireplaces with the pollution continuing.

In concluding I would add that the year has been a most interesting and successful one. The optimistic spirit is again apparent throughout the area, and with it the will to try and improve conditions of manufacture. I would like to express my appreciation to the Manufacturers who when trade was poor, persisted in trying various methods of improving combustion, and have done valuable service in this respect. The spirit of co-operation is growing, and with it the confidence to help to prevent the pollution of the atmosphere and to reduce fuel costs to a minimum.

Yours obediently,

JAMES LAW,

Chief Smoke Inspector.

SHEFFIELD, ROTHERHAM AND DISTRICT  
Income and Expenditure Account for the

		EXPENDITURE.					
1933.						1934.	
£	s. d.					£	s. d.
1,227	12 11	Salaries of Inspectors	..	..	..	1,276	19 8
		Employer's Contribution—Health, Pensions					
13	10 10	and Unemployment Insurance	..	..	..	9	14 4
62	9 10	Superannuation—5% Contribution	..	..	..	63	17 9
		Workmen's Compensation and Third Party					
2	10 7	Insurance	..	..	..	3	11 4
53	1 5	Travelling Expenses of Inspectors	..	..	..	49	16 2
3	12 11	Motor Car Hire	..	..	..	9	5 1
17	4 9	Deputation Expenses	..	..	..	11	11 6
145	1 0	Fees of City Analyst	..	..	..	145	1 0
1	9 6	Costs and Summonses	..	..	..	0	2 6
		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
23	17 7	Printing, Stationery and Advertising	..	..	..	42	12 6
200	0 0	Research Work	..	..	..	133	6 8
17	7 4	Postages and Disbursements	..	..	..	29	12 11
8	0 0	Audit Stamp Duty	..	..	..	—	
40	2 2	Apparatus	..	..	..	11	16 4
		BALANCE—Being Income in excess of					
—		Expenditure	..	..	..	32	10 1
<u>£1,896 0 10</u>						<u>£1,899 17 10</u>	

		BALANCE SHEET,	
		LIABILITIES.	
		£	s. d.
Sundry Creditors	.. .. .	720	18 1
Income in excess of Expenditure to 31st	.. .. .		
March, 1933	.. .. .	£15	15 3
Income in excess of Expenditure to 31st	.. .. .		
March, 1934	.. .. .	32	10 1
		48	5 4
		<u>£769</u>	<u>3 5</u>

City Treasurer's Office,  
Town Hall, Sheffield.  
31st May, 1934.

# SMOKE ABATEMENT COMMITTEE.

Year Ended 31st March, 1934.

INCOME.			
1933.		1934.	
£	s. d.	£	s. d.
Contributions from Constituent Authorities :—			
Sheffield County Borough			
1,361	10 5	Council .. ..	1,549 8 9
Rotherham County Borough			
161	5 8	Council .. ..	181 12 5
Rotherham Rural District			
71	1 3	Council .. ..	81 3 7
Rawmarsh Urban District			
32	7 0	Council .. ..	36 0 6
Stocksbridge Urban District			
17	2 6	Council .. ..	19 6 1
Greasbrough Urban District			
6	14 10	Council .. ..	7 13 5
			<hr/> 1,875 4 9
5	16 1	Bank Interest .. ..	16 13 1
Provision for Audit Stamp Duty for year ended 31st March, 1933, not now required .. ..			
—			8 0 0
BALANCE—Being Expenditure in excess of Income .. ..			
240	3 1		<hr/>
<hr/> £1,896 0 10		<hr/> £1,899 17 10	

AS AT 31st MARCH, 1934.

ASSETS.			
		£	s. d.
Cash Balance—31st March, 1934—			
In hands of Bankers .. ..		769	3 5
		<hr/> £769 3 5	



