

Report of the Sheffield, Rotherham & District Smoke Abatement Committee : 7th (1936/37)

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, 1936—31st MARCH, 1937.



SEVENTH ANNUAL REPORT.



TOWN HALL,
SHEFFIELD.



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SEVENTH ANNUAL REPORT.



TOWN HALL,
SHEFFIELD.

MEMBERS OF THE COMMITTEE.

Representing the Sheffield City Council.

Alderman J. A. LONGDEN, J.P.
Councillor W. ASBURY, J.P. (Chairman).
„ J. GREEN.
„ F. LLOYD, J.P.
„ H. SLACK.

Representing the Rotherham County Borough Council.

Alderman F. HARPER, J.P. (Mayor of Rotherham) (Deputy-Chairman).
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 W. McNALLY.

OFFICERS OF THE COMMITTEE.

Hon. Secretary .. TOWN CLERK, SHEFFIELD (E. B. Gibson).
Hon. Treasurer .. CITY TREASURER, SHEFFIELD (A. B. Griffiths,
F.I.M.T.A., F.S.A.A.).
Hon. Medical Officer .. MEDICAL OFFICER OF HEALTH, SHEFFIELD.
(J. Rennie, M.D., D.P.H.).
Hon. Auditor .. ACCOUNTANT AUDITOR, SHEFFIELD.
(W. S. Blackhurst, A.S.A.A.).
Chief Smoke Inspector J. LAW.
Smoke Inspectors .. H. STENTON.
W. H. LEVITT.
J. H. HOARE.
G. WILKINSON.

REPORT

of the

Sheffield, Rotherham and District Smoke Abatement Committee

for the year 1st April, 1936—31st March, 1937.

The Committee have pleasure in presenting their Seventh Annual Report.

Meetings.

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

Membership.

Greasbrough U.D.C. ceased to be members of the Committee owing to their area being included in the Area of the Rotherham County Borough on the 1st April, 1936.

Staff.

Of the staff of five, previously referred to, the Sheffield Corporation who employ the Chief Smoke Inspector and three of the Inspectors, and the Rotherham Corporation who employ the other Inspector, agreed that the services of such Inspectors be loaned to the Committee who accepted responsibility for the consequent financial commitments.

In the event of a vacancy occurring, the appointment of a successor is made by the Corporation concerned.

Reports on Observations Made.

Reports of the Chief Smoke Inspector on the observations taken in respect of various Boiler Chimneys, were submitted at each meeting of the Committee. In the majority of cases authority was given for the service of Statutory Notices; in one or two cases no action was taken, and in the remainder warning letters were sent to the firms concerned.

In regard to Combination and Furnace Chimneys, reports were submitted where emissions of smoke from the chimneys concerned were excessive and, in accordance with the arrangement made with the Local Manufacturers Committee, information as to these cases was supplied to the Secretary of such Committee, with a view to that Committee taking action thereon. In addition, where in such cases flagrant breaches of the "Standard" laid down were made, the Smoke Committee requested their Secretary to send special letters to the offenders; a copy of the letter in each case being sent to the Secretary of the Manufacturers Committee.

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

	Sheffield	Rotherham	Rotherham Rural Dist.	Rawmarsh	Stocksbridge
No. of chimneys observed	5,484	1,062	316	280	408
No. of minutes smoke emitted	11,881	2,990	999	115	1,347
Average minutes smoke per hour	2·2	2·8	3·1	2·9	3·3
Number of notices served ..	51	11	5	6	2
No. of intimations served ..	274	82	7	7	26
No. of complaints answered	89	27	2	—	1
No. of Advisory visits ..	505	144	50	40	63
No. of chimneys raised ..	20	3	—	—	1
No. of chimneys erected ..	12	1	1	1	2
No. of chimneys demolished	19	2	1	1	—

Prosecutions.

During the year twelve cases were reported to the Committee. In three cases the firms concerned put forward schemes of reconstruction which have since been carried out ; in four other cases no action was taken and in the remaining five cases warning letters were sent to the firms concerned. There were no Police Court proceedings during the year.

Atmospheric Pollution.

There are eight deposit gauges in the area, showing the records of atmospheric pollution, five in Sheffield, two in Rotherham and one at Stocksbridge. Six of these are considered as " fixed " gauges, whilst the other two, at present situated at Dore and Stocksbridge, are used as " mobile " gauges for the purpose of ascertaining the variation of deposits. In comparing the amount of solid matter deposited there is little doubt about the position of the gauges in relation to industrial areas, the amount of pollution shown being about three times as heavy as that recorded in residential areas. A general increase is shown throughout the area with the exception of Nether Green (Sheffield) and

this can be attributed to the increased trade activity. It was hoped that the utilisation of gas and electricity for industrial purposes would show a general decrease in the amount of pollution recorded but this has not been the case, though the increased pollution is only slightly greater than that of previous records.

The following tables show the monthly returns issued during the year :—

Monthly Record of Solid Matter, in Tons per Square Mile.

Month	Sheffield				Ewden	Rotherham		Stocks-bridge
	Attercliffe	Nether Green	Surrey Street	Dore		Technical College	Oakwood	
1936								
April	25·35	7·30	20·60	7·54	5·66	23·67	13·51	20·14
May	19·65	7·43	17·99	13·41	10·44	24·63	7·38	14·54
June	32·99	12·91	22·81	8·38	12·13	31·66	26·25	17·41
July	22·77	12·94	18·72	10·66	7·85	44·54	15·32	15·82
August	20·22	5·38	9·47	7·04	9·77	28·85	19·88	13·39
September	31·95	6·54	27·70	7·74	13·88	35·21	18·88	29·02
October	20·76	14·00	24·52	12·30	12·57	33·40	20·45	26·86
November	61·69	9·85	35·70	8·48	11·89	41·81	19·38	24·12
December	25·88	9·09	39·68	8·51	6·54	26·33	11·97	15·55
1937								
January	38·42	12·51	43·94	10·06	—	32·37	13·31	20·92
February	25·32	9·69	27·80	9·89	10·28	26·69	18·61	—
March	42·31	8·63	53·27	10·99	8·29	25·38	15·05	30·97
Total for year	367·31	116·27	342·20	115·00	109·30	374·54	199·99	228·74
Average	30·61	9·69	28·52	9·58	9·93	31·21	16·67	20·79

In conjunction with the pollution deposit gauges at the 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 quartz tube filled with Acetone Methylene Blue Solution exposed for one hour at a distance of one yard from a carbon arc lamp (25 amperes) gives a reading of one unit. Glass "check" tubes were used in conjunction with the quartz tubes and the results were recorded.

The results of this method of ultra-violet ray recording have not been entirely satisfactory, there being a number of factors to be taken into consideration where inaccurate results were shown. In January a further method—the Ashworth Ultra-Violet Ray Meter—was installed at Surrey Street, Sheffield, for experimental purposes, and it is hoped that more sensitive and accurate results will be obtained. The method of recording is the exposure of photographic paper through a glass of known intensity with an adjustable wedge piece intervening. This will be reported on when further records have been made.

Daily readings were taken and below are shown the various 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	
1936	Quartz	Glass	Quartz	Glass	Quartz	Glass	Quartz	Glass	Quartz	Glass
April ..	0·61	0·45	0·86	0·61	0·80	0·61	0·90	0·38	0·98	0·43
May ..	0·85	0·51	1·17	0·66	1·03	0·77	0·93	0·48	0·93	0·51
June ..	1·58	0·86	2·36	1·31	1·87	1·08	1·46	0·43	1·50	0·40
July ..	1·32	0·71	1·71	1·06	1·93	1·13	1·19	0·55	1·09	0·52
August ..	1·37	0·64	1·58	0·81	1·89	1·08	1·13	0·39	1·35	0·51
September ..	0·80	0·50	0·76	0·40	0·90	0·50	0·63	0·23	0·90	0·43
October ..	0·35	0·29	0·58	0·32	0·51	0·35	0·39	0·06	0·54	0·16
November ..	0·16	0·13	0·23	0·10	0·23	0·15	0·16	0·10	0·23	0·06
December ..	0·13	0·08	0·13	0·09	0·08	0·08	0·10	0·10	0·13	0·10
1937										
January ..	0·09	0·06	0·10	0·08	0·09	0·09	0·09	0·09	0·12	0·09
February ..	0·21	0·18	0·27	0·16	0·21	0·14	0·28	0·16	0·21	0·10
March ..	0·39	0·27	0·48	0·39	0·42	0·29	0·55	0·35	0·39	0·24

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 by the latter method at the College of Technology, Rotherham, Ewden Waterworks, Handsworth, and Dore, Sheffield. With the volumetric method which has been running continuously for over six years at Surrey Street, it was found that the acidity of the atmosphere varied inversely with the wind velocity, abnormal deposits occurring during fog and heavy humid atmospheric conditions. During a prolonged fog period in November the acidity increased from a third of a part per million to over one and a half parts per million which constitutes a new high record for sulphur in the atmosphere in this area.

The lead peroxide method, having proved itself reliable and convenient, was adopted by the Department of Scientific and Industrial Research as a standard of measurement. In comparing these records the industrial areas were again outstanding against the residential ones for sulphur content as with solid matter deposited.

Air Filtration.

In conjunction with the volumetric method of sulphur determination a duplicate set was put into operation at Surrey Street, Sheffield, the air being filtered before passing into the "Hyperol" solution, but the amount of dust collected on the filter varies very considerably and the results are of considerable interest. During prolonged fog the solid

matter increased very considerably and in order to illustrate this the filter papers are here reproduced. The first three days of fog shewed about twice the normal amount of stain and the following six days the deposit was increased about six times. The stain for a normal day's working will be noted as the last one of the fourteen stains which are shewn. The Department of Scientific and Industrial Research are exploring methods of determining the weight of deposited matter on these filter papers by a microbalance of special design.

Faraday Society.

The City Analyst and the Chief Smoke Inspector were appointed representatives to attend meetings of the Society, held in Leeds, April 20th-22nd, 1936, on the Problems of Dust, Smoke and Fog, and subsequently submitted a report.

National Smoke Abatement Society.

The Chairman (Councillor W. Asbury) and the Chief Smoke Inspector were appointed representatives of the Committee on the Council of the above Society.

They submitted a Report on their attendance at the meeting of the above Society held in Birmingham, on the 2nd April, 1936, and on their visit to the Nechells and Hams Hall Electricity Power Stations.

They were also appointed delegates to the Annual Conference and Smoke Abatement Exhibition, held in London, October 14th-17th, 1936, and their Report was subsequently submitted to the Committee.

Department of Scientific and Industrial Research.

The Medical Officer of Health, Rotherham (Dr. W. Barr), was appointed to attend the meetings of the Standing Conference of Co-operating Bodies on the investigation of Atmospheric Pollution, held in London on the 25th May, 1936, and the 30th November, 1936, and his Reports on such meetings were subsequently circulated to the members of the Committee.

Conference of Inspectors.

The Chief Smoke Inspector was appointed to attend the Annual Meeting held in London, on the 28th October, 1936, of the Inspectors appointed by the Ministry of Health under the Alkali etc, Works Regulation Act, 1906, which took the form of a Joint Conference of Alkali Inspectors and representatives of Regional Smoke Abatement Committees. The Conference was opened by Sir Kingsley Wood, Minister of Health, with Mr. H. W. S. Francis, Permanent Assistant Secretary of the Ministry of Health in the Chair. The Conference served a very useful purpose and the difficulties which had arisen were discussed.

Gritty Particles.

A member reported that one of the Ironworks near Sheffield had installed apparatus for dealing with gritty particles, which, whilst somewhat costly, had proved very effective, and the Chairman and Chief Smoke Inspector were invited to inspect such apparatus.

Railway Smoke.

The Committee were informed that the National Smoke Abatement Society had requested its Executive Committee to take up with the Companies concerned the question of the abatement of smoke from railways in towns, and that such Committee had requested that before they took the matter up, information should be obtained from the principal towns likely to be concerned with nuisances from railway smoke on the extent and nature of such nuisances and the views of the authorities concerned regarding their abatement.

The Committee received the Report of the Chief Smoke Inspector and decided that a copy of the same be sent to the Society.

Ultra Violet Ray Meter.

The Committee authorised the purchase of a Dr. Ashworth's Ultra Violet Ray Meter, complete with sets of screening layers and sensitized charts.

Classes for Furnacemen, Boiler Firemen and Stokers.

It was reported that in connection with the classes which had been held during the past 2 years at the College of Technology, Rotherham, four of the firemen attending such classes, took the City and Guilds of London Institute examination, and all passed.

At the Applied Science Department of the Sheffield University, 1st and 2nd year Courses, and a special Course in connection with Heating Furnaces, were held during the Winter. These Classes are held under the auspices of the Sheffield Trades Technical Societies.

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, on the lines indicated in the last Annual Report.

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.

The Committee agreed that research for the year ending 1st September, 1937, should continue on the lines indicated.

Progress reports were submitted, copies of which had been forwarded to the British Iron and Steel Federation for submission to the Iron and Steel Industrial Research Council. Professor Wheeler also submitted photographs illustrating the "swelling tests" of the 42 samples of coal referred to in the Reports and pointed out that, in general, non-swelling coals were the best for steam raising. He also stated that the Investigator had found with regard to coals used for steam raising in the Sheffield district, that there were, in general, two attitudes of mind of the users, the one being that, provided the coal was cheap, its character did not matter, and the other, that the prevention of smoke being of prime importance it might be necessary to pay a high price for "non-smoking" coals. In this connection the Investigator had been able to give advice to the users as to suitable fuels to use, in some cases proving that a cheap fuel was not really economical, and in others that, in a desire to reduce smoke, an unnecessarily expensive fuel was being used.

Parts 1 and 2 of the programme have been completed and the full scale trials at hand fired boilers in part 3 are about to be carried out. There was some difficulty in obtaining a suitable boiler plant, but this has been solved by utilising a boiler house at one of the Sheffield City Hospitals.

The cost of Research Work for the year ending 1st September, 1937, is estimated at £326, 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.

Membership and Contributions to Other Bodies.

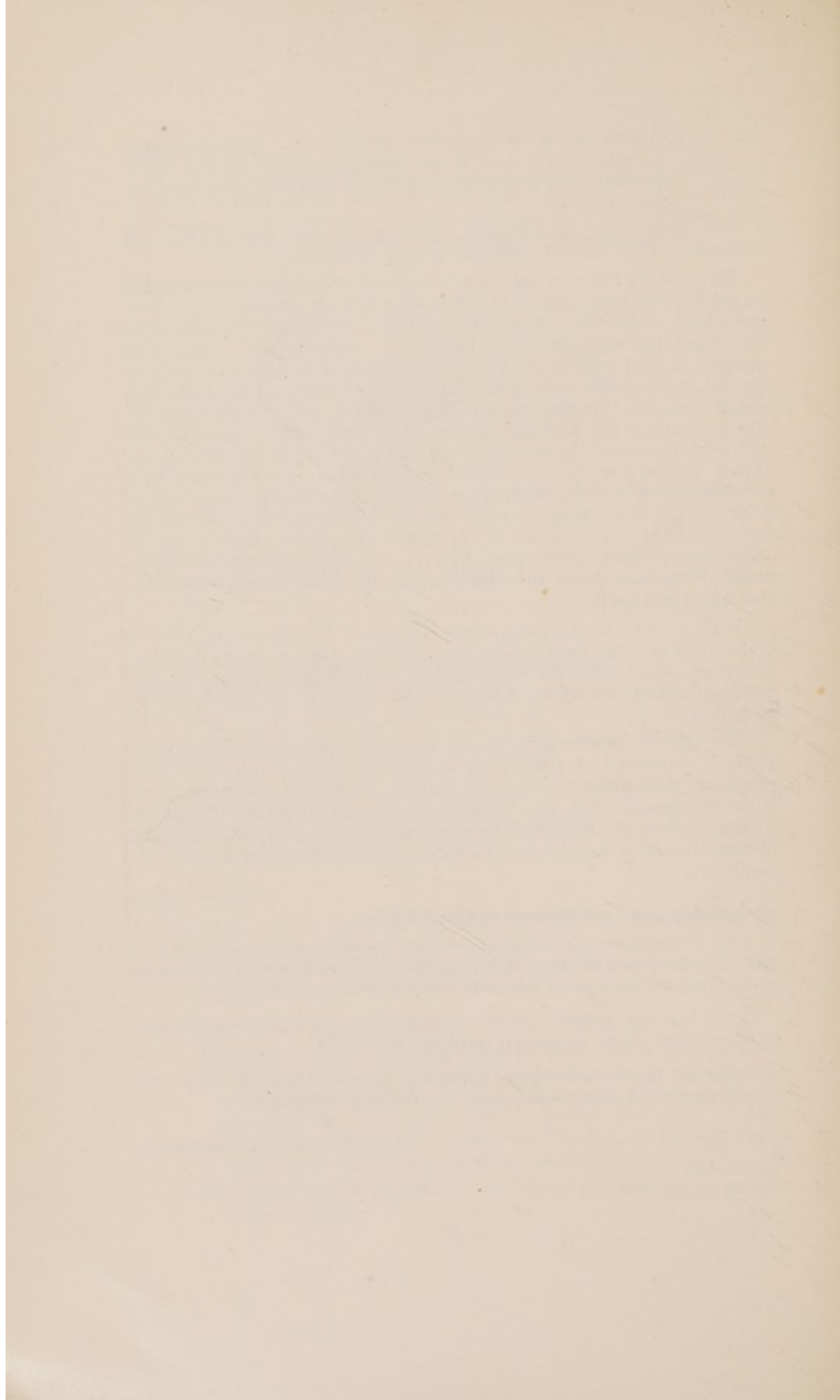
The Committee are Members of the Standing Conference of Co-operating Bodies of the Department of Industrial and Scientific Research and contribute an annual amount of £55 to the Department.

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

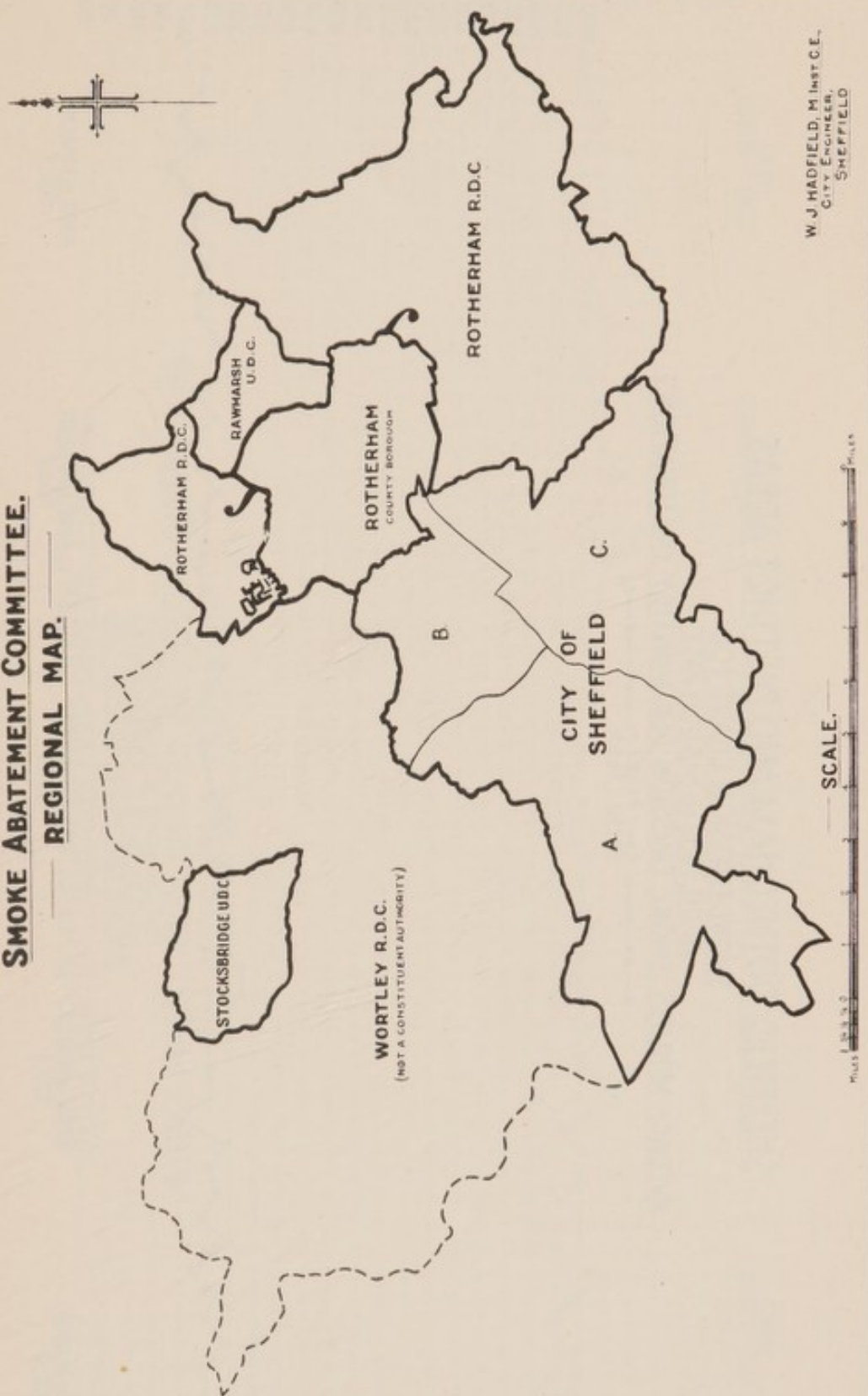
Annexed hereto is a copy of a Report of the Chief Smoke Inspector, a Statement of Accounts, a map of the Area, and 8 graphs.

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

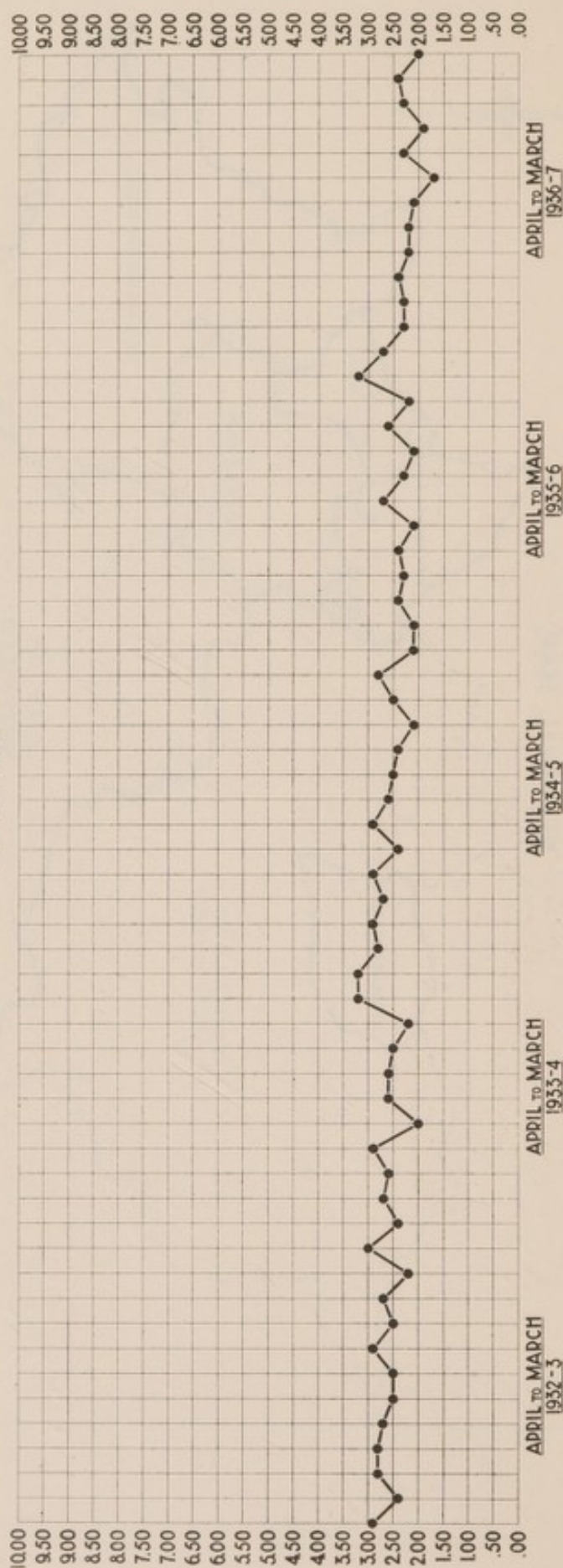
SHEFFIELD · ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR

APRIL 1932 TO MARCH 1937.

AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.

•-•-•-•-• SHEFFIELD •-•-•-•-•



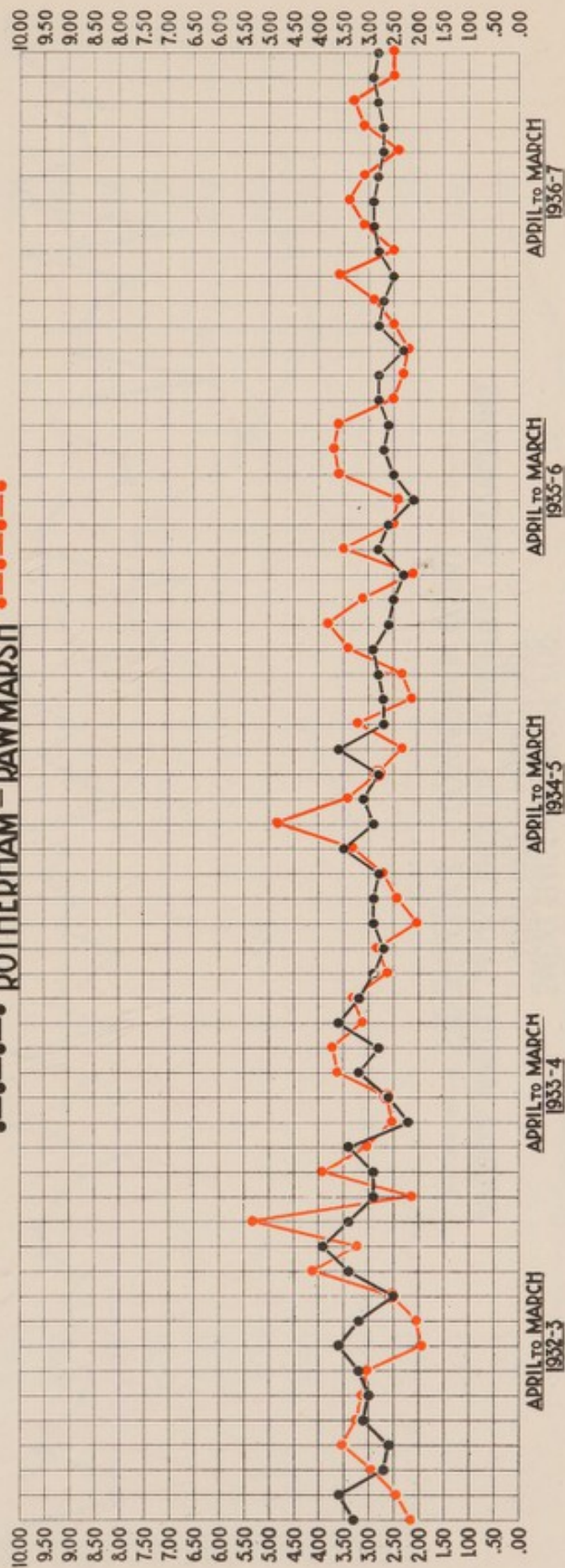
SHEFFIELD · ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR

APRIL 1932 TO MARCH 1937.

AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.

●—●—●—● ROTHERHAM — RAWMARSH ●—●—●—●



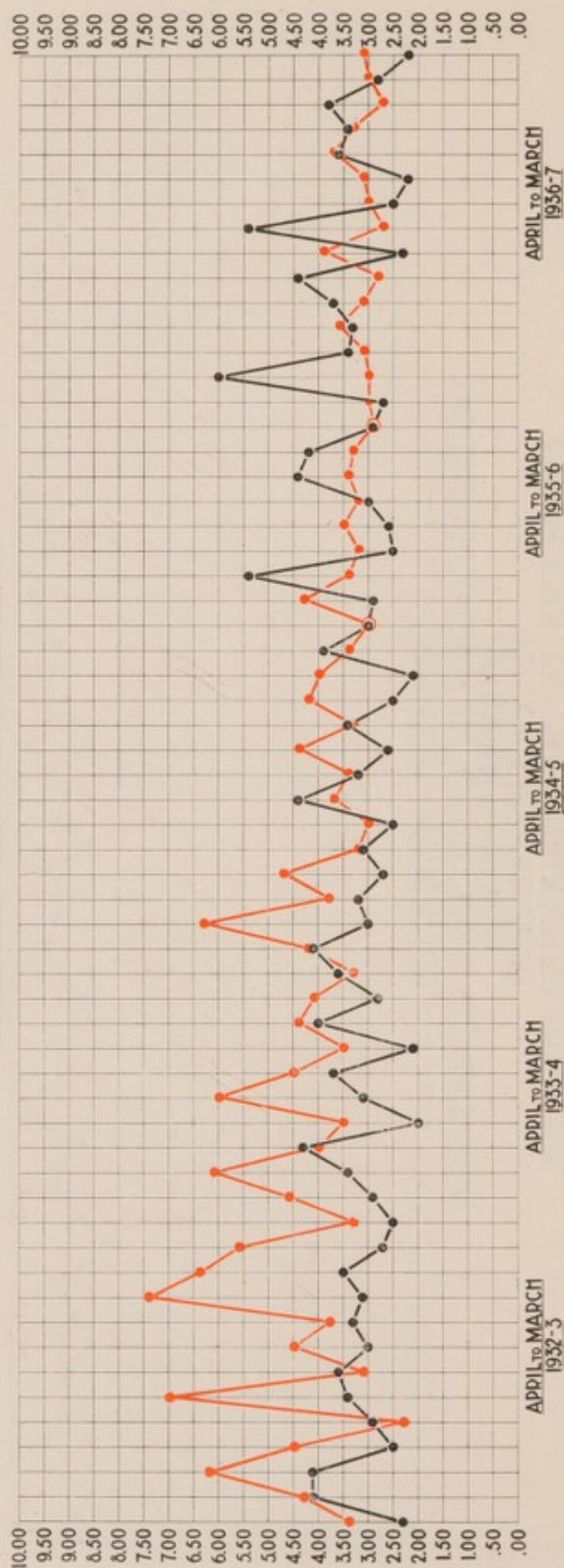
SHEFFIELD·ROTHERHAM AND DISTRICT AREAS.

SMOKE EMISSION CHART FOR

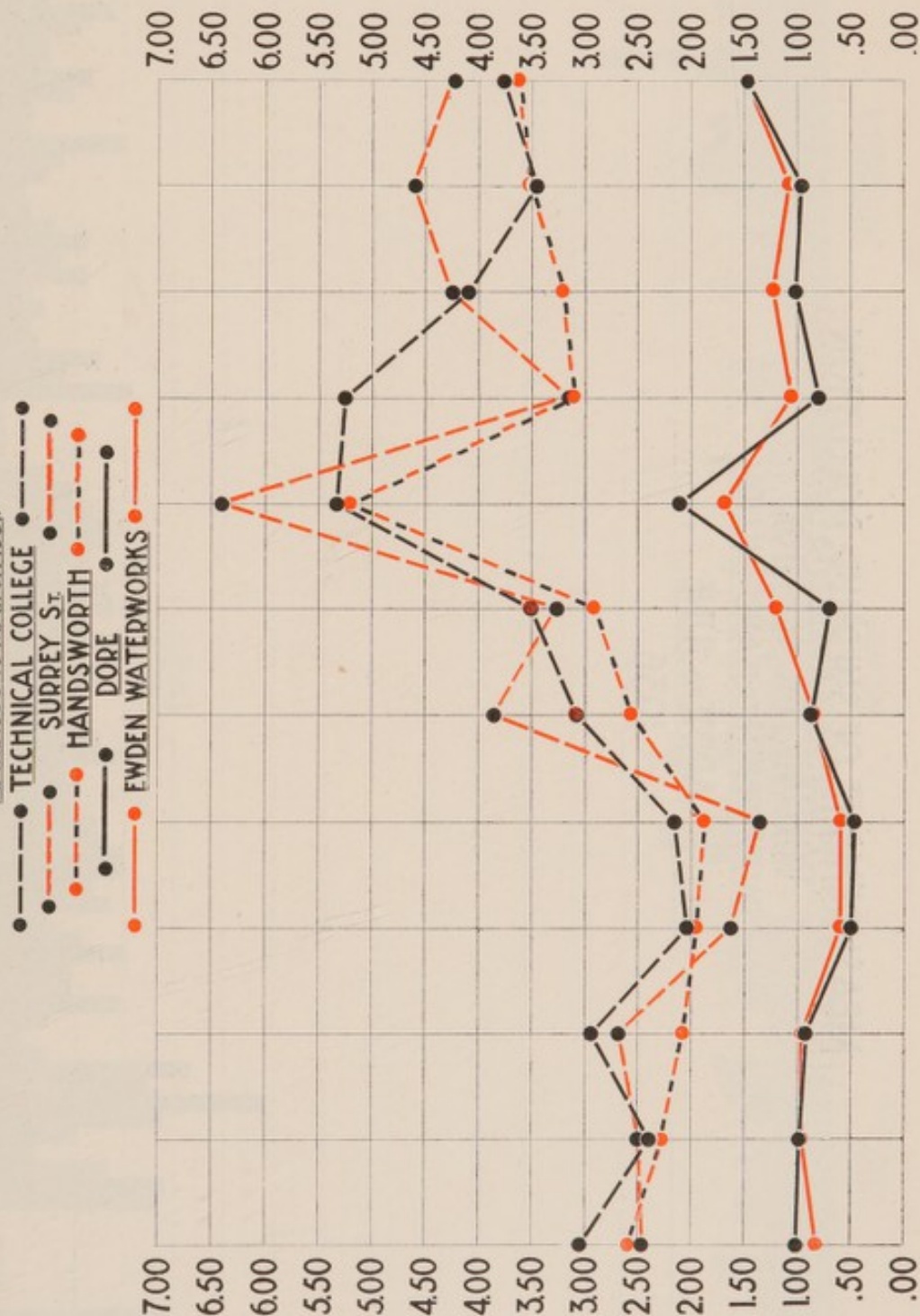
APRIL 1932 TO MARCH 1937.

AVERAGE MINUTES SMOKE EMISSION PER MONTHLY OBSERVATIONS.

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



SULPHUR DETERMINATION • LEAD PEROXIDE METHOD.
 MILLIGRAMS OF SO_3 PER 100 SQUARE CENTIMETRES • DAILY AVERAGE.
 APRIL 1936 TO MARCH 1937.



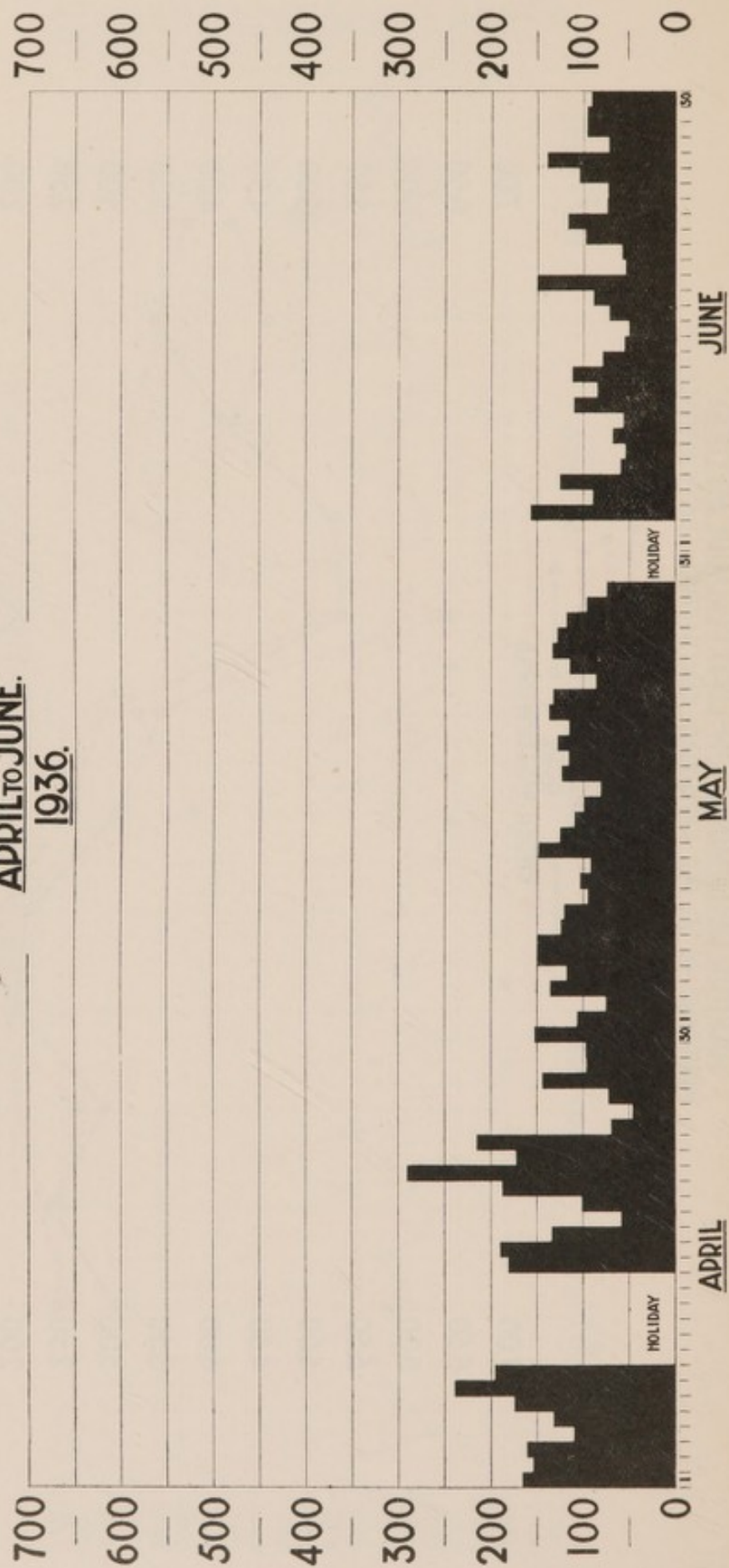
MEASUREMENT OF SULPHUR POLLUTION.

VOLUMETRIC METHOD.

PARTS PER THOUSAND MILLION.

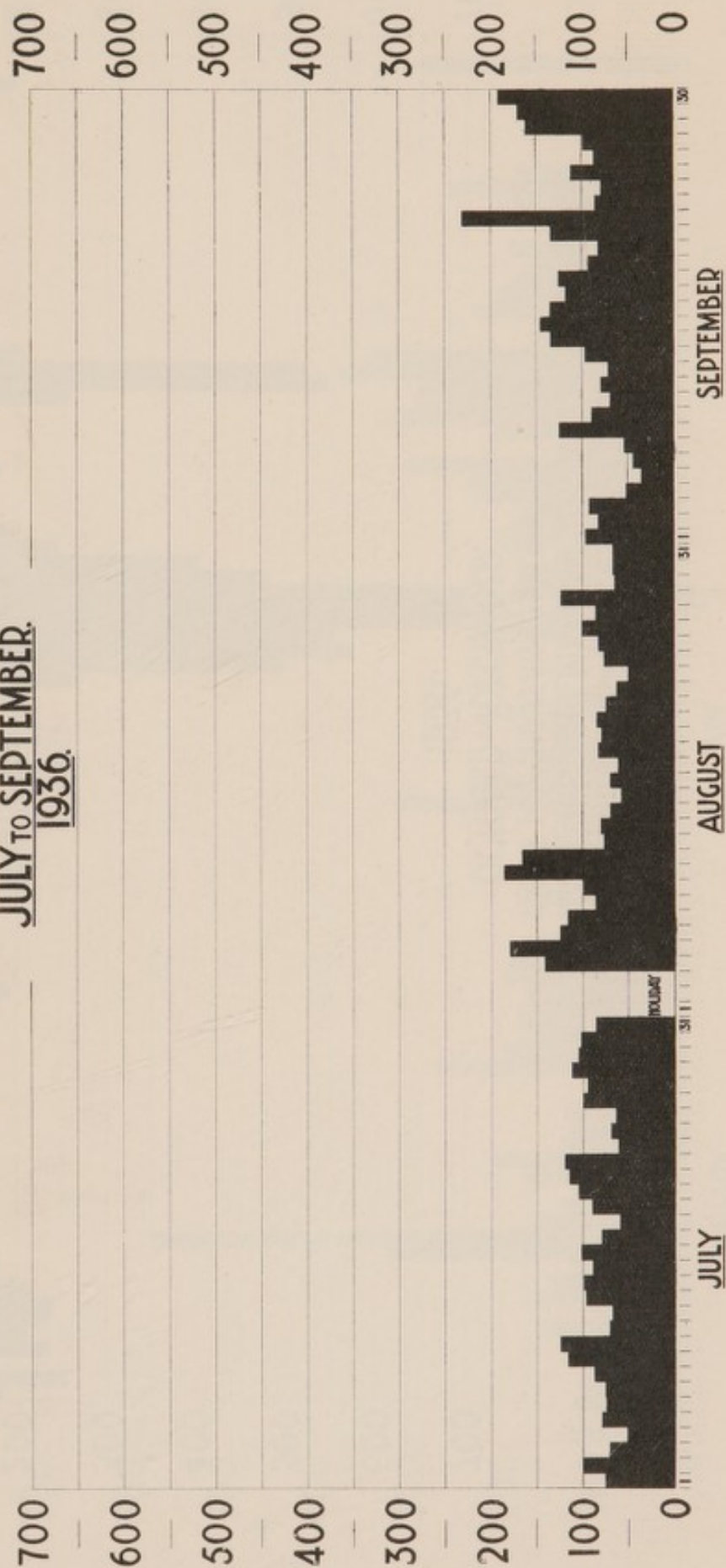
APRIL TO JUNE.

1936.



MEASUREMENT OF SULPHUR POLLUTION.
VOLUMETRIC METHOD.
PARTS PER THOUSAND MILLION.

JULY TO SEPTEMBER.
1936.

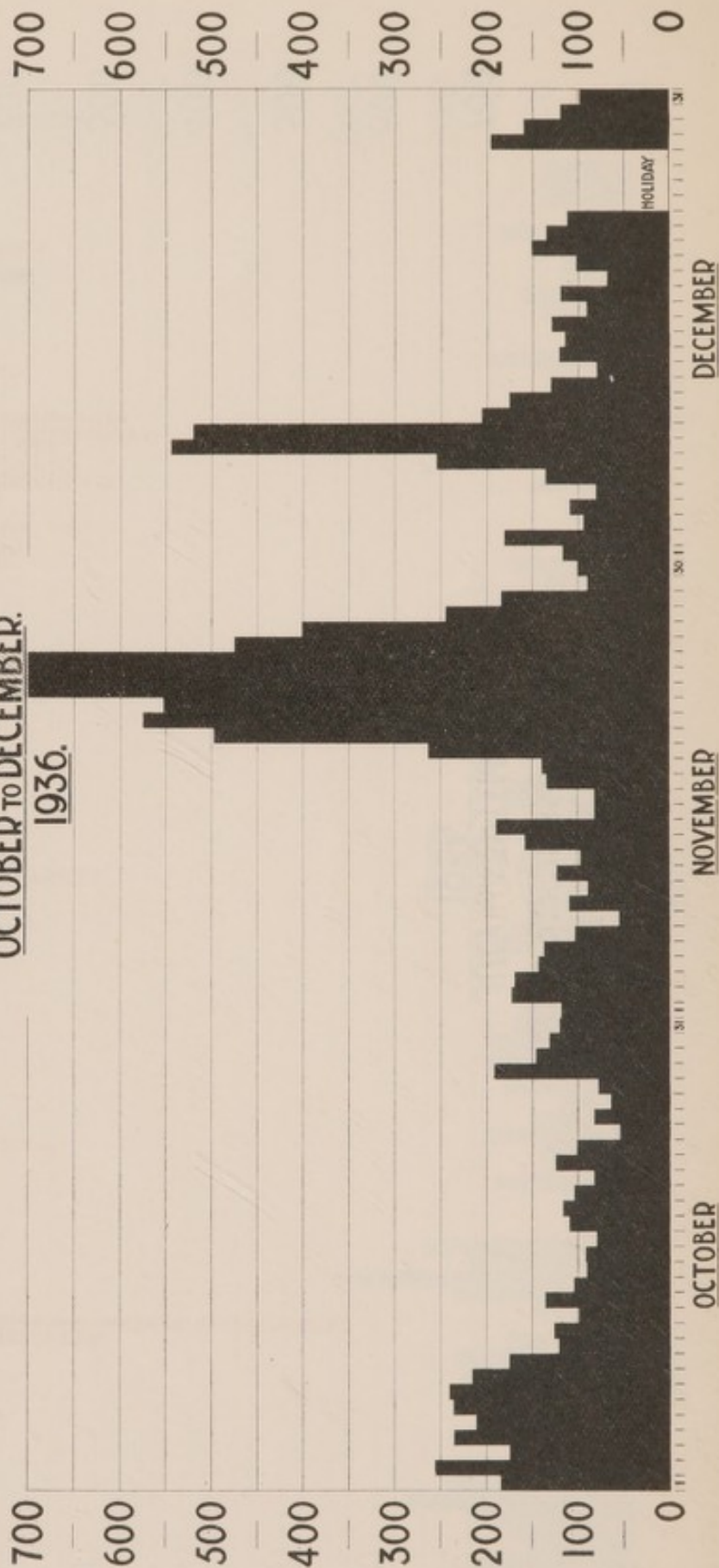


893
1.133
1.576

MEASUREMENT OF SULPHUR POLLUTION.
VOLUMETRIC METHOD.
PARTS PER THOUSAND MILLION.

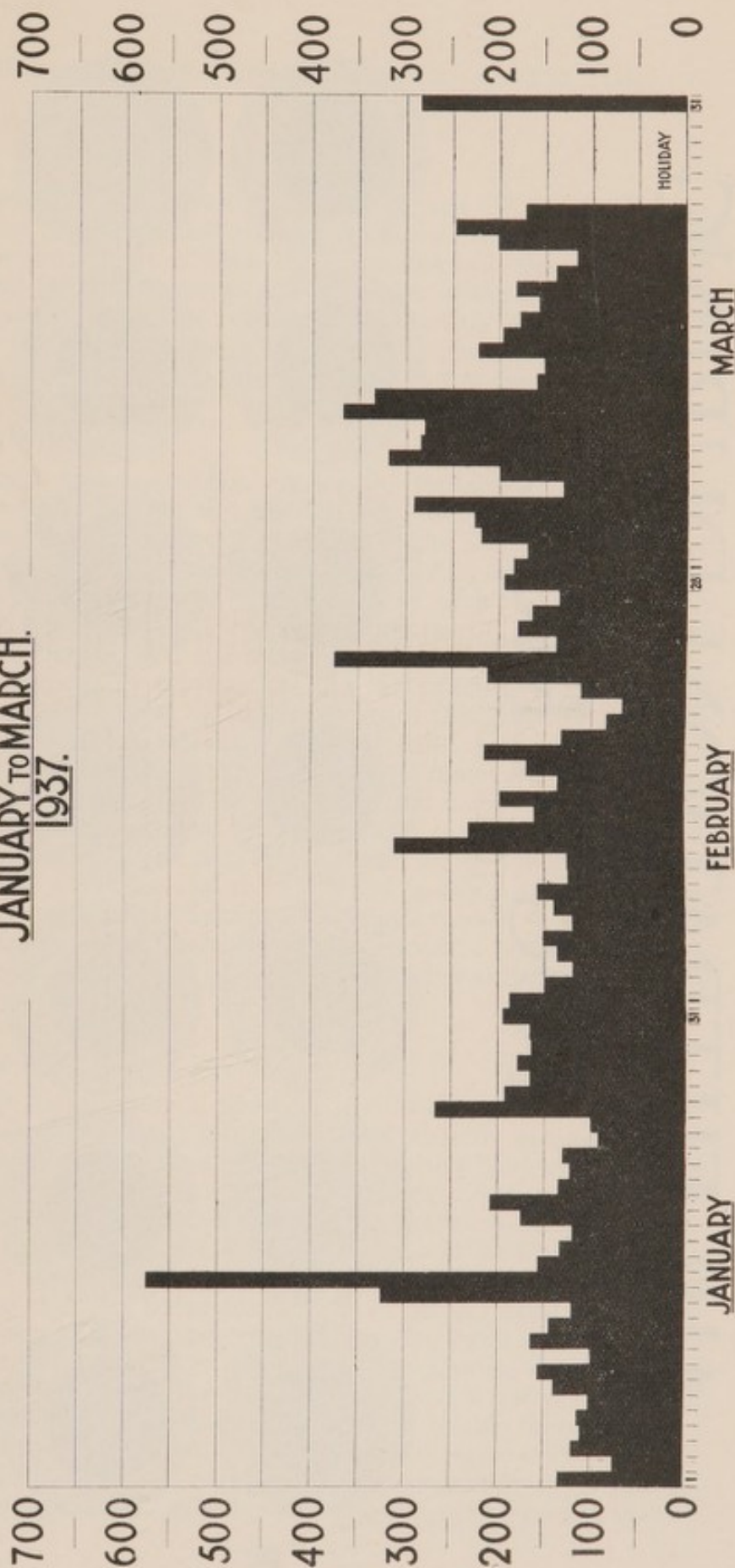
OCTOBER TO DECEMBER.

1936.

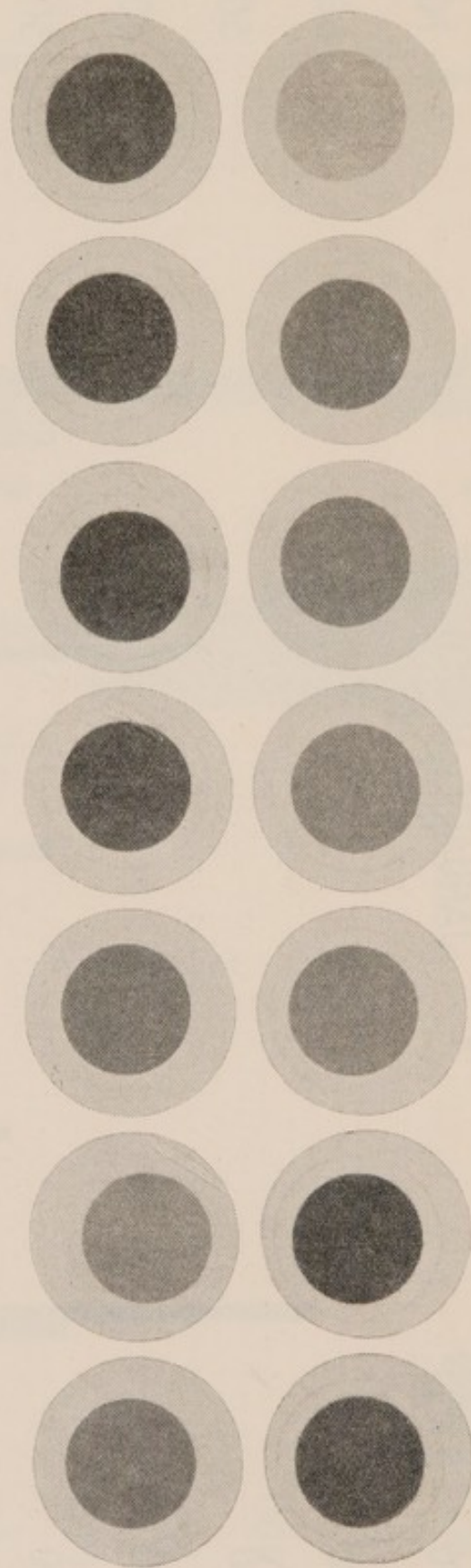


**MEASUREMENT OF SULPHUR POLLUTION.
VOLUMETRIC METHOD.
PARTS PER THOUSAND MILLION.**

**JANUARY TO MARCH.
1937.**



AIR FILTRATION DURING FOG PERIOD



NOVEMBER 16TH. TO 29TH. 1936

REPORT OF THE CHIEF SMOKE INSPECTOR.

GENTLEMEN,

With regard to the Seventh Annual Report of the Committee, progress of an unprecedented nature has been made throughout the year. The improvement of trade has continued with increased output, and a demand for new furnaces and extension of works. A number of small works which have been working intermittently are again working continuously but unfortunately the older type obsolete furnaces have been put into operation and considerable pollution caused.

Instructional Work.

The lectures and instruction classes for furnacemen and stokers were continued at Sheffield and Rotherham; the number of first year men who presented themselves was such that the Sheffield Classes had to be discontinued for the session. This is a matter for regret, because hundreds of furnacemen and stokers in the area would definitely benefit by even one course of lectures of this kind. It is essential, if progress is to be made, that the workmen shall be conversant with the fundamental theories of combustion and the practical application of the same. I would appeal to all employers of this grade of labour to assist in every way to encourage the men to take these courses, which will justify any expenditure that is made. The classes are to be resumed during the winter months for boiler stokers and metallurgical furnacemen and the hope is expressed that a genuine response will be given. Unfortunately, owing to the first year classes being abandoned, there will be no second year class and there will not be any candidates eligible to take the City and Guilds Examination which is to be held next year. Works visits are arranged during the summer months to enable the men to see the varying conditions of combustion and possibly to benefit by the same.

Boiler Chimneys.

Though the main source of pollution due to industrial smoke is not caused by boiler chimneys, continuous observations are essential in order to study the working conditions and ensure that emissions are kept within the specified time standard. During the year it was found necessary to send seventy-five notices to various works for smoke emission and twelve chimneys were reported for prosecution purposes. In most of the plants concerned it was found that the steam demand was heavy and that the boiler furnaces were being forced in order to maintain pressure. When inspecting it has also been noted that the majority of boiler plants have no method of measuring the amount of steam required or of checking the evaporation of water per pound of fuel used. The cost of installing instruments to enable these estimates to be carried out is only small, and will amply repay users. Where steam demand is found to be excessive, various methods of introducing supplementary air are used in order to increase the evaporation to meet

such demand. If the necessary space is available, it is of advantage to instal extra boilers, rather than to attain increased output to the detriment of the boiler plant. It is also a matter of surprise to note the number of boilers that are not covered or "housed" at all, the loss of heat due to this must be considerable, and the life and condition of the boilers considerably reduced. Colliery boiler chimneys continue to cause an amount of pollution. With increased trade and the extended use of mechanical methods the steam demands have been such that colliery chimneys which kept within the standard prescribed were again causing offence. In some cases additional boilers were being provided to overcome this difficulty, whilst others continued to experiment with supplementary air. The classes of fuel used continue to present some difficulty, and a much broader review of the question appears to be essential if these low grade fuels are to be successfully burnt without causing nuisance.

Metallurgical Processes.

The "heavy" trades are showing a remarkable example of what can be done in the manufacture of steel with a minimum of smoke. The more extensive use of gas and electricity is having the desired effect, in fact, the supplies of gas are being utilised to their limit and the daily consumption is estimated at 36 million cubic feet. In addition to this a number of works are using producer gas which is manufactured at the works.

The use of pulverised fuel is being extensively used for re-heating and heat-treatment processes. Reports of its use are in the main satisfactory, but it is premature to make any definite statements with regard to the possibility of its development on a more extensive scale.

One colliery company is pulverising the fuel used for process work at the pithead and delivering it to the works in special vehicles, the fuel being discharged by means of compressed air from the conveyors to the fuel bunkers. This is considered an innovation, the usual methods being to provide unit pulverisers for each furnace.

The majority of furnaces installed in this manner have no method of arresting grit or solid matter emitted from the chimney, but so far there has not been any serious amount of deposit noted. It is advisable that manufacturers, when installing furnaces of this type should make some provision for the arrestment of grit. The use of electricity for steel melting and heat treatment processes is advancing steadily, certain works having reconstruction schemes in progress which will eventually eliminate completely the use of coal as a fuel from the works.

Although gas and electricity can be obtained at prices which compare favourably with those in other manufacturing centres, the price of coal is also comparatively low and when used in conjunction with poor and obsolete plant the results give rise to considerable nuisance.

During the year, 299 intimations were sent to manufacturers with regard to excessive smoke emitted from process chimneys the length of the emission varying from 9 to 60 minutes per hour, and undoubtedly the main source of pollution in the area is due to smoke from such chimneys. The present time affords a good opportunity to take the necessary steps to reduce these smoke emissions to a reasonable time standard in view of flourishing trade conditions and better financial conditions. There is ample proof that even with coal fired furnaces under proper control, the emissions can be kept within a reasonable prescribed standard, and that these excessive emissions are quite unnecessary and cause waste in addition to dirt and inconvenience.

Coke Oven Plants.

There are new plants under construction, and others now in operation in the area are definitely an improvement on the older types, but even then, a great amount of the nuisance caused could be reduced by carrying out the processes more carefully. Where "quenching" is carried on at low levels, there is always liability to pollution. Even towers which have been erected for the purpose of dissipating the vapours, in certain cases are not sufficiently high to do so effectively. The emission of "green gas" during charging periods could be further reduced, and it is hoped that the people concerned in the industry will co-operate in order to keep at a minimum the smoke and fumes emitted almost continuously throughout the year.

Burning Tips and Spoil Banks.

Complaints of serious nuisance caused by fumes and smoke have received a certain amount of attention during the year, and although a certain amount of improvement has been effected by co-operation with the manufacturers and colliery companies concerned, the matter is one that needs further consideration.

Conical Tipping.

A recent practice of having a creeping conveyor or aerial conveyor for tipping all refuse on to a selected site has resulted in a large number of conical or pyramid shaped tips being formed, the height varying with the period in which the tipping has been in progress. In Sheffield one tip has grown to a height of 200 feet in seven years. It is understood that the reason for developing this form of tipping is the reduction in cost, but from an Inspector's point of view the method is wrong because the prevalence to spontaneous combustion is considerably increased and fires on such tips appear to be much worse than with the old embankment method. The reason given for this is that small material remains at the top of the cone whilst the lumpy material rolls to the base and remains there in a loose state, so that when overheating takes place the air has easy access to the material.

In comparing colliery tips it is somewhat surprising to note the difference in the amount of nuisance caused, and where discrimination has been exercised in regard to the various waste materials, there is

little cause for complaint. At some collieries both dry and wet material, together with old pit props and waste wood are dumped, without consideration, on the tip, the result being that deep-seated fires are in operation in many places. Where discrimination is shown, the dry material being placed in one section, the washery waste in another, boiler ashes in a further section, and care is taken to keep all timber away from the tips, as a consequence there is little cause for complaint. If any progress is to be made in colliery districts with regard to the prevention of atmospheric pollution, it is essential that all tips should be controlled in a manner similar to that advocated by the Ministry of Health for domestic refuse—the layering system of placing inert material between given thicknesses of colliery waste. There will be a certain amount of opposition to these proposals on account of increased cost, but it is certain that colliery tips would not be such sites of abomination as they appear at the present time.

In dealing with nuisance from burning tips it is difficult to extinguish deep-seated fires. The simplest method is to trench away and segregate the effected parts, so that they may burn out. The difficulty in most cases is that the dumping of waste continues and fuel is being added to the fires all the time. This is particularly aggravated with the conical system of tipping, when the burning has commenced. From past experience, water application is of little use, for even after heavy flooding the fires have re-commenced. Remedial measures are essential in many cases, but discrimination of the various classes of waste material to be tipped, controlled tipping and a much broader view of pit waste disposal is essential if any progress is to be made in this direction. A large refuse tip in Rotherham, which has been in operation for some years, commenced to burn about October last. It is thought that the fire was caused by pickers being allowed on the site. The tip was immediately fenced in and remedial measures taken in order to try and blanket the effected parts with inert material. It has been found necessary however to trench parts of the site in order to segregate the badly effected places; had trenching been carried out when the fires were first noticed the nuisance would not have spread so rapidly as it has done.

Dust and Fumes Nuisances.

Complaints continue to be made of nuisance caused by dust from extractors at certain works in the Area. From investigation it is found that extractors have been fitted without arrestors; others with arrestors of a poor type, whilst in certain cases where efficient arrestors have been installed, nuisance has recurred due to lack of attention on the part of the workmen in the factories. A considerable amount of discomfort and pollution is caused in this manner and I would appeal to all manufacturers who instal extractors at their works, to see that suitable arrestors are fitted, and that systematic inspection of the arrestor is carried out to ensure that it is thoroughly cleaned and kept in working order.

Refuse Burning.

The number of complaints received during the year has shown a decrease for both trade and domestic refuse burning, but from observations, there is a fair amount of pollution caused in this manner, particularly by people with gardens, who allow green vegetable matter to smoulder and cause inconvenience to their neighbours. It will help the Department and show a respect for ones neighbours if people will refrain from this indiscriminate burning of refuse, as well as assisting in keeping the air we breathe as unpolluted as possible.

Pollution Recording.

The pollution figures for the year show a general increase of both solid matter deposited and of sulphur in the atmosphere and this is in a measure due to increased trade activity, because the increase is greater in the Industrial Districts, but probably not in proportion to the increased output. It was hoped that with the amount of reconstruction work being carried out some improvement of conditions would be noted, but the results are disappointing. Though the larger works are definitely better, the many small factories in the area appear to continue to emit their smoke as usual.

The year under review has been the most prosperous one since the Committee have been operating, but it appears that much greater efforts are necessary in order to achieve the desired results that are being sought, *i.e.*, a clean atmosphere.

I am, gentlemen,

Your obedient servant,

JAMES LAW,

Chief Smoke Inspector.

SHEFFIELD, ROTHERHAM AND DISTRICT

Income and Expenditure Account for the

EXPENDITURE.

1936.				1937.		
£	s.	d.		£	s.	d.
1,328	14	1	Salaries of Inspectors	1,366	13	0
			Employers' Contribution—Health, Pen-			
6	0	1	sions and Unemployment Insurance ..	3	5	5
65	1	8	Superannuation—5% Contribution ..	67	14	2
			Workmen's Compensation and Third Party			
2	14	4	Insurance	2	16	5
44	0	8	Travelling Expenses of Inspectors ..	38	0	11
2	13	4	Motor Car Hire	7	18	11
21	1	9	Deputation Expenses	42	6	6
45	11	11	Printing, Stationery and Advertising ..	30	9	10
0	5	0	Costs and Summonses			
230	0	0	Research Work	226	0	0
192	2	0	Fees of City Analyst	218	5	0
17	1	8	Apparatus	20	2	10
			Subscription to the Department of Scien-			
55	0	0	tific and Industrial Research	55	0	0
			Subscription to the National Smoke Abate-			
25	0	0	ment Society	25	0	0
17	15	8	Postages and Disbursements	16	5	10
				2,119	18	10
			BALANCE—Being Income in excess of			
			Expenditure	3	16	8
£2,053	2	2		£2,123	15	6

BALANCE SHEET,

LIABILITIES.

	£	s.	d.	£	s.	d.
Sundry Creditors				867	3	5
Income and Expenditure Account :—						
Balance 31st March, 1936	23	1	2			
ADD—Income in excess of Expenditure						
for year ended 31st March, 1937 ..	3	16	8			
				26	17	10
				£894	1	3

City Treasurer's Office,
Town Hall, Sheffield, 1.

SMOKE ABATEMENT COMMITTEE.

Year Ended 31st March, 1937.

INCOME.									
1936.									
£	s.	d.					£	s.	d.
			Contributions from Constituent Authorities :—						
			Sheffield	County	Borough				
1,602	16	9	Council	..	..	..	1,748	11	9
187	17	1	Rotherham	Do.	..	..	219	16	9
			Rotherham	Rural	District				
78	16	7	Council	..	..	..	80	1	11
			Rawmarsh	Urban	District				
33	16	6	Council	..	..	..	37	10	2
19	19	3	Stocksbridge	Do.	..	..	21	18	3
8	0	4	Greasbro'	Do.	..	..	—
							2,107	18	10
10	3	4	Bank Interest	..	..	..		15	16 8
1,941	9	10							

			BALANCE—Being Expenditure in excess						
111	12	4	of Income	..	..	..	—
£2,053	2	2					£2,123	15	6

as at 31st MARCH, 1937.

ASSETS.									
							£	s.	d.
Cash Balance—31st March, 1937—									
			In hands of Bankers	..	..	..	894	1	3
							£894	1	3

