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Minutes

ASBESTOSIS RESEARCH COUNCIL

THIRD ANNUAL REPORT FOR THE TWELVE MONTHS

BEGINNING 1st OCTOBER 1959

1. INTRODUCTION

The Asbestosis Research Council was established on the 1st October 1957. This report details the activities sponsored by the Council during the third year of its operation.

2. APPLICATIONS FOR MEMBERSHIP

Although there have been tentative enquiries from interested Companies regarding the work of the Council, there have been no formal applications for membership.

3. COMMITTEES

The work of the Council has continued under the guidance of the Management Committee and the Research Committee. The membership of these Committees during the year was:-

(a) Management Committee

Chairman:	Mr. T. C. Hale	The Cape Asbestos Co., Ltd.
	Mr. A. A. Cross	" " " " "
	Sir William Fenton	British Belting & Asbestos Ltd.
	Mr. R. Barber	" " " " "
	Mr. N. A. Morling	Turner Brothers Asbestos Co. Ltd.
	Mr. J. Waddell	" " " " "
Secretary:	Dr. S. Holmes	" " " " "

The Management Committee met in London on 13th October, 1959.

(b) Research Committee

Chairman:	Dr. J. F. Knox	Turner Brothers Asbestos Co. Ltd.
	Mr. D. W. Hills	" " " " "
	Dr. C. G. Addingley	British Belting & Asbestos Ltd.
	Dr. W. H. A. Beverley	" " " " "
	Dr. R. Gaze	The Cape Asbestos Co. Ltd.
	Dr. W. J. Smither	" " " " "
Secretary:	Dr. S. Holmes	Turner Brothers Asbestos Co. Ltd.

Executive Member: Dr. J. F. Knox.

The Research Committee met four times; in Leeds on 15th December 1959, in Oxford on 28th March 1960, in Cambridge on 11th July 1960 and in Rochdale on 4th October, 1960.

4. FINANCE

(a) Banking Arrangements

The finances of the Council have continued to be administered through an account operated by the Rochdale branch of the District Bank.

(b) Research Committee Budget and Expenditure

Research Budget	£5,400. 0. 0
Research Expenditure	£5,706. 2. 8

It should be noted that the expenditure includes a sum of £43.14. 0 for a microscope for Dr. Beattie. A sum of £350 had been set aside for this in the budget for the previous year.

Full details of the Council's Income and Expenditure are given in Appendix 1.

5. LIAISON WITH THE FACTORY DEPARTMENT AND THE AIR HYGIENE COMMITTEE

Continuing the practice established last year, edited versions of the Second Annual Report were forwarded to the Factory Department and to the Air Hygiene Committee of the Asbestos Textile Institute.

6. RESEARCH PROGRESS

The research work of the Council has continued under the direction of Dr. P. F. Holt at Reading and Dr. J. Beattie at Cambridge. Brief summaries of this work are given below. Full reports appear in Appendices 2 & 3.

(a) Work at Reading

The apparatus for maintaining an asbestos dust cloud, described in the report for last year, has been further modified and has worked extremely well.

The photoelectric dust monitor has been used to follow the dust concentration in the experimental tunnel. It has been found to have ample sensitivity for this work and is very reliable. Trials have shown, however, that it is not sufficiently sensitive to monitor the normal works atmosphere, but a new instrument is being constructed with increased sensitivity. This appears to be a promising approach to the development of an automatic method for continuous recording of dust concentrations in the factory.

Two groups of animals have been exposed to asbestos dust. There is little doubt that lung lesions have been produced. No asbestosis bodies have yet been seen, but they may appear in the rats still to be examined.

Work has commenced on the physics of asbestos dust clouds and studies are being made of the way in which asbestos dust builds up on a coarse gauze, which appears to act as a self-cleaning filter. The behaviour of the fibres is being studied photographically.

(b) Work at Cambridge.

By injection of raw asbestos fibres into the brains of animals asbestosis bodies have been produced and the tissue reaction observed. The thin layer

which forms the covering of the fibre can be seen in two months by special methods and has reached a stage in eight months when it can be seen by ordinary microscopic techniques.

Electron microscope studies of this tissue containing the asbestos material present serious technical difficulties. It has been observed in some specimens that when the fibres and attached cells are in close contact minute droplets are extruded from the cells and this is considered to be a pre-collagenous material. When the asbestosis body has reached its normal thickness local cellular activity ceases.

The injection of [illegible] prepared but intact asbestosis bodies from unpreserved human material excites an inflammatory reaction which subsides in eight to twelve weeks and by twelve months no further progression has been noted. On the other hand the injection of fragmented asbestosis bodies, present in the lung from ten years and upwards, causes a severe reaction which does not subside in eight weeks. After six months it is still severe and continues to progress during a further period of six months. The amount of collagen and fibrosis in the area is seen to increase. As the asbestosis bodies present in a human lung are not all of the same age these changes could continue over a long period. It is suggested that if the bodies could be prevented or delayed from segmenting or fragmenting, asbestosis might be prevented.

Further studies on the chemistry of the capsular protein of the asbestosis body have continued by micro-chemical methods. There appear to be different types of collagen present and quantitative analysis is required to determine the amount present at different stages.

7. DUST SAMPLING AND ANALYSIS

Further experience with the Ottway instrument and improvements in sampling techniques have indicated that the dust count recorded is substantially independent of sampling time over the range of times necessary to produce an adequate sample. Work on membrane filter sampling devices has shown that such an instrument is likely to be suitable for adoption as a standard sampler. Based on the experience gained so far, an instrument is being designed for assessment by the three member companies.

The possibilities of personal monitoring instruments are also being investigated.

8. MEDICAL RESEARCH COUNCIL

In connection with the suggestion by the Medical Research Council to carry out a lung function survey in the industry, Dr. Gilson paid preliminary visits to all three companies. The M.R.C. intend to call a meeting to further this issue. but such a meeting has not yet taken place.

9. INTERNATIONAL SYMPOSIUM AT OXFORD

At the end of March, the members of the Research Committee attended an International Symposium at Oxford on Inhaled Particles and Vapours. On

behalf of the Asbestosis Research Council, the following papers were presented at the Symposium:-

1. "The Asbestosis Body", by J. Beattie.
2. "Studies on Mineral Content and Particle Size Distribution in the Lungs of Asbestos Textile Workers", by J. Beattie and J. F. Knox.

10. PUBLICATIONS

The two papers mentioned in paragraph 9 above will be published shortly as part of the Proceedings of the Symposium. In addition, the following papers have also been accepted for publication and proofs have been received.

1. "A dust-Feed Mechanism Suitable for Fibrous Dusts", by P. F. Holt and D. K. Young.
2. "Studies of the Chemical Properties of Chrysotile in Relation to Asbestosis", by S. G. Clark and P. F. Holt.

11. PROPOSED RESEARCH FELLOWSHIP

With the approval of the Management Committee, negotiations have been conducted with the University of Cambridge with the object of engaging a full time worker to carry out studies at the University on the biological reactions of asbestos using the latest physical and chemical techniques. The terms of reference to cover a period of three years have been agreed and an appointment is expected to be made shortly.

12. RESEARCH COMMITTEE'S COMMENTS

It is felt that substantial progress has been made during the year, both at Cambridge and at Reading and the work at Cambridge will be considerably furthered by the full time appointment soon to be made. The Committee is particularly gratified at the manner in which the work at Reading has expanded to cover more comprehensive animal experiments, the physics of asbestos dust clouds and dust monitoring instruments. To bring the physical aspects to a practical conclusion, it is felt that extra assistance is required. A suitable proposal is being put forward by the Research Committee.