

information is available. Fuller details are available in the *Journal of Photographic Science*, 1, 60 (1953).

Methods of high-speed photography, based on dissection of the image, were then described by Dr. J. S. Courtney-Pratt (University of Cambridge). If a plate embossed with a large number of lenses is placed near the focal plane of a camera, a series of images of the camera lens will be formed on the sensitive material, and these taken all together form a picture of what is in front of the camera, rather like a half-tone illustration. When a small aperture is moved across the camera lens, a continuous line of overlapping small images is formed behind each element of the lenticular screen, thus recording any movement in the objects in front of the camera. In practice, a series of apertures is used, like the original Baird scanning disk for television, and each lenticular element produces a 'raster'. The fundamental advantage of this system is that the speed of the scanning disk, being simple rotation, may be made very high, and with bright enough (for example, self-luminous) subjects records may be obtained at the rate of 4 million/sec. The same system reversed may be used for 'unserambling' in slow motion or statically. A complete description, including variations on the above principle, is given in the *Journal of Photographic Science*, 1, 21 (1953).

C. Burns (British Iron and Steel Research Association) described how the problem of recording the very fast motion of lumps of material swirling round in the hollow just beyond the tuyères in blast furnaces was dealt with. Stereoscopic motion pictures were made using two ports into a tuyère and a mirror system to produce the necessary pairs of pictures side by side on each frame of a 16-mm. film. When the pictures are projected, individual lumps of material can be recognized, against the very heterogeneous background. The location (along the axis of the tuyère) is measured by a quadruple projector arrangement of which the movements are linked. First, the two beams of a pair are made to coincide on some fixed detail in the tuyère, one on each of the projected pictures. The other two beams are then made to cross in space at the distance of the fixed detail in question, and the second pair of beams locked to the first pair. If the first pair of beams is now made to coincide with some other detail, the second pair follows its movements and intersects in space at the original distance of the new detail.

A. J. Insall (Shell Petroleum Co., Thornton le Moors) described the functions and some of the equipment of an industrial photographic section of a laboratory. One of the most important duties of such a section is to be able to repeat record photographs exactly; for this purpose arrangements must be made to locate any object precisely, to be able to duplicate the lighting arrangements and to be able to set the camera to given conditions. Records of all these settings must be kept, for it is commonly the case that photographs (for example, of pistons) require to be repeated, for comparison to be made to detect changes, sometimes at long intervals. Artistic quality (but not the technical quality) is usually unimportant, so that for recording deposits on elements of mechanisms, for example, use may be made of completely diffused lighting. Colour photography is very useful in such cases, since the additional information (on the colour) is valuable.

LIBRARY CO-OPERATION IN GREAT BRITAIN

UNDER the title "Library Co-operation in Great Britain", the report of a critical survey of the working of the National Central Library, London, and the Regional Library Bureaux, made by Mr. R. F. Vollans, deputy city librarian of Westminster, for the joint working party of the executive committee of the National Central Library and the National Committee on Regional Library Co-operation has been published*. The working party's original terms of reference were to consider methods of dealing with areas of union cataloguing at the Regional Bureaux and at the National Central Library; means of improving the efficiency of the system and its comprehensiveness; the financial requirements for coping with the present system and sources from which money can be obtained; what would be reasonable current budgets for the bureaux if this re-organization were effected; and the relationship of the union catalogues of the bureaux and the national union catalogue of the National Central Library. In deciding that the survey should be undertaken by a single individual on its behalf, the working party extended these terms of reference and instructed Mr. Vollans to deal with the coverage by each system of the libraries within its own area, co-operation within each region, the national inter-lending system, union catalogues, the recruitment, qualifications and superannuation of bureau staff, the financing of the regions, and adult education.

In accordance with these instructions, which were further detailed, Mr. Vollans, following an admirable historical survey, reviews in successive chapters the working of the regional library systems, inter-library loan procedure, the scope of service and reasons for non-availability of books, the provision of books to adult classes, union catalogues, subject specialization, bibliographical information, staff and finance. His generous tribute to the efficiency and enthusiasm of the staffs concerned in inter-library loans and his conviction as to the importance of such work do not prevent Mr. Vollans from frank criticisms of the weaknesses or defects he has detected, whether of abuse of procedure, of inappropriate rules or woodenness or unimaginative interpretation of either rules or procedure. To the man of science the report is of interest mainly as an account of the background against which the evolution and organization of a national or regional lending library in science and technology must be considered; but the scientist who reads it may well be led also to a keener appreciation of the difficulties and waste of time which may be caused by inaccuracy or carelessness in making requests for books or periodicals.

The survey shows that all libraries appear to be playing their part in this national inter-lending service, and the small libraries appear to contribute just as much as the larger libraries; nor is it always the unduly large library system which provides the more expensive and more out-of-the-way books. Twenty-one university libraries and seventy-eight special libraries participate in the regional schemes, and these libraries lend more than they borrow, in that they have more specialized resources which would not find a place on the shelves of the ordinary public

* Library Co-operation in Great Britain: Report of the National Central Library and the Regional Library Bureaux. By Robert F. Vollans. Pp. xii+139. (London: National Central Library, 1952.) 5s.

library. The present regions are based on geographical considerations, and are regarded as acceptable and workable units, with the exception of the regional library bureaux of Aberystwyth and Cardiff, which, it is recommended, should be merged to form a Regional Library Bureau of Wales. Except in the London area, the report recommends that all university and special libraries located within the area of a regional library bureau should become participant members of that bureau, and the bureau should be the agency, when necessary, for forwarding applications to the National Central Library. Within the London and Home Counties area, however, university libraries should make application direct to the National Central Library in respect of inter-library loans, and special libraries remain, as at present, outlier libraries of the National Central Library, membership of the London and South-Eastern Library systems remaining restricted to the public-library authorities of the area.

As regards the suggestion that the Science Library, London, might be in a position to screen scientific and technical applications before passing them to the National Central Library, Mr. Vollans recommends no deviation from the present practice. He points out that three distinct aspects of the Science Library service should be considered here: first, the Science Library is a reference library serving some twenty-two thousand readers; second, it operates a loans requisition service for books and periodicals to firms, institutions and libraries (through the medium of the National Central Library), satisfying in 1950 more than forty thousand of 72,295 requests; and thirdly, it operates a photocopying department which last year satisfied 20,348 out of 29,660 requests. In addition, some 230 of the 1,300 corporate bodies, mostly business firms, on the loans list provide details of their own holdings for incorporation in a supplementary union catalogue at the Science Library, and through this supplementary scheme 4,799 requests were satisfied last year. At present, however, the Science Library is not in a position to supply all the books required, and, though its periodical holdings are extensive, Mr. Vollans suggests that it would be wiser in the interests of consistency if the National Central Library continued to act as the clearing-house for all national and international loans. Ultimately, however, he visualizes the National Central Library as ceasing to concern itself with British publications; and, though he gives no clear indication of his views as to the future of the Science Library or its place in the new regional system, it seems possible that the new scheme whereby the Treasury gives a grant for the purchase of extra copies of special types of books and periodicals, which could be held originally but which would be available for loan, in extension of the idea of regional reference libraries for commerce and technology, would apply to the Science Library also.

Besides current periodicals, fiction and some other categories, Mr. Vollans would exclude from inter-library lending books in print costing 25s. or less, so far as the National Central Library is concerned, and those costing 12s. 6d. or less from the scope of the regional bureaux. He also recommends that the National Central Library should cease to purchase books for use in the system of inter-library loans, and that it should transfer to the various local education authorities the provision of books to adult classes. Both these steps would liberate staff which could be used on other activities, particularly in

bringing the present national catalogues up to date and in compiling the new foreign union catalogues which, he suggests, should be the main responsibility of the National Central Library in this field.

The survey proves that the Union Catalogue is a necessary adjunct in the nation-wide service of inter-library loans, and the duplication of entries is not as heavy as might have been expected. Mr. Vollans recommends that the existing regional and national union catalogues, as at present compiled, should only continue until an agreed specified date; after this, the regional union catalogues should contain entries for British books as they appear in the British National Bibliography notified by libraries to the Bureau, using the British National Bibliography numbers, and entries for all other books should be reported either directly on sheaves or by slips, only the latter entries being sent also to the National Central Library. The practice of producing the catalogues in sheaf form will no longer be necessary, and Mr. Vollans makes other proposals for achieving economies in procedure. Much stress is laid on the question of staff, which he regards as a decisive factor in increasing administrative efficiency and reducing the present excessive costs of the inter-library loan service. Apart from the question of qualifications and adequate salaries, he points out that seconding or the adoption of a superannuation scheme which allows interchange of staff between libraries of all kinds is essential for providing the security of tenure and overcoming the difficulty of pension rights which will otherwise hinder the recruitment of staff of the requisite experience.

As regards finance, he recommends an approach to the Treasury with the view of obtaining a grant, to be spread over three years, for the purpose of bringing the regional union catalogues up to date. If this grant is not forthcoming, it is suggested that the National Central Library should direct to the bureaux some of the money saved by discontinuing the purchase of books for its own stock and for adult classes, for the same purpose of bringing the catalogues up to date and thus enabling the National Central Library's own catalogue to be brought up to date.

In an introduction to Mr. Vollans's report, Mr. W. A. Mumford indicates that the report of the joint working party, of which he is chairman, will owe much to Mr. Vollans, although the working party is not in agreement with all the latter's findings.

BRITISH ELECTRICAL AND ALLIED INDUSTRIES RESEARCH ASSOCIATION REPORT FOR 1952

THE thirty-second annual report of the British Electrical and Allied Industries Research Association (usually referred to as the Electrical Research Association) records the maintenance of the activities of the Association at a high level and their expansion in certain directions*.

At the outset, it is noted that the Association has operated this year under new terms of grant from the Department of Scientific and Industrial Research, and it was in relation to these new grant conditions

* Thirty-second Annual Report of the E.R.A. for the Period ended 31st December 1952. Pp. 162. (Leatherhead: British Electrical and Allied Industries Research Association, 1953.)