pathological cases where the globulin/albumin ratio has been increased. It has already been pointed out[1] that the chromatogram of the plasma of a horse immunized against diphtheria toxin (the plasma presumably having an increased globulin content) differs from that of normal horse plasma by the possession of extra fractions at the bottom.

The fact that protein mixtures of different chemical composition yield different patterns is also illustrated by the photographs given in Fig. 3. These show chromatograms of two different samples of cobra venom and of a sample of *Agkistrodon piscivorus* venom, the same quantity (0·8 mgm.) being taken, and no surface-active agents being present. It will be observed that the chromatograms of the two cobra venoms are very similar to each other but differ from that of the other venom.

It is difficult to reconcile two statements in Drs. Hall and Wewalka's communication, namely, "The separation of proteins of quite dissimilar nature by this method, however, is, of course, perfectly practicable", and "the patterns observed in complex mixtures such as serum are so dependent on the conditions of the experiment as to be pure artefacts". We readily agree that all patterns are dependent on the conditions of the experiment; but since separations of proteins admittedly do occur by this technique, the patterns cannot be regarded as solely dependent on the physical conditions and therefore as pure artefacts.

With reference to the suggestion of Swingle and Tiselius[10] that the chromatograms may be "artefacts", we are informed by Dr. Swingle[12] that the evidence referred to in their paper was rather circumstantial and did not seem to justify publication without additional experiments.

Further investigation, especially of a quantitative nature, is needed to decide the chemical nature of the fractions obtained in the second dimension, and such work is now in progress. But ignorance of this fact, at present, need not deter further development of the technique, which is obviously in an exploratory stage. It is possible that it will provide an inexpensive means of clinical aid both in diagnosis and in following treatment.

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ANNUAL EXHIBITION OF THE ROYAL PHOTOGRAPHIC SOCIETY, 1951

THE ninety-sixth annual exhibition of the Royal Photographic Society was opened in London on September 13 for one month and will also be shown at the City Art Gallery, Aberdeen, during November 3–24. The exhibition is divided into five groups: pictorial, record, Nature, medical and scientific photography, with a total of 908 exhibits.

The scientific entries constitute the smallest individual group; but medical and surgical entries are well represented. There is a collection of some nine full-sized radiographs in this latter section, one of which is very effectively shown as a two-colour radiograph by D. Stevenson Clark and entitled "Bas relief colour radiograph of right pneumothorax". This was prepared from the original radiograph by contact-printing a positive to give a magenta image and registering this with a solarized negative coloured cyan. One of the other monochrome radiographs, by R. M. Leman, was given a distinct relief effect presumably by the use of a slightly out of register negative mask, which resulted in a noteworthy emphasis of the arteries shown in this particular exhibit. Among the medical prints is one from Manchester Royal Infirmary, in which the arteries of a heart are well revealed by a radiograph made after injection of lead phosphate. Included in the several examples of ophthalmic photography are two, one by P. N. Cardew and the other by Miss A. E. Milne, in which an annular electronic flash tube was used to illuminate the eye. The reflexion of the tube itself by the outer surface of the cornea indicates whether any imperfections exist on this surface, these being revealed by distortion in the shape of the annulus. Two exhibits by D. M. Kermack showing stages in the dissection of a marine worm provide an illustration of how revealing and orderly a careful example of this type of work can be. A series of photomicrographs by G. C. Lenney on cell division in a mouse tumour must have caught the eye of any who have visited the Festival of Britain Science Exhibition, where a large section is devoted to cell division: in these photographs both normal double-cell division and abnormal multi-cellular division showing stickiness of the chromosomes are well shown.

The most interesting exhibits in the science section are those submitted by the National Physical Laboratory. In one of these there is an example of the use of the Linnick interference microscope, in which the relief effect shown on the surface of a photographic negative of a three-bar resolution test object is examined. Horizontally, the magnification is × 2,100; but by virtue of the optical interference shadows an effective vertical magnification of × 166,000 is achieved. The actual relief effect in the gelatin of the image under examination is seen to be almost one micron. The Laboratory also shows some examples of the *Schlieren* patterns produced by high-velocity air flow. Thus the air flow in the neighbourhood of a supersonic jet is shown, as are the pneumatic disturbances produced around an aerofoil at high subsonic and also supersonic speeds. The shock wave produced in the former case and the 'bow wave' in the latter are clearly indicated. By using the properties of polarized light, the degree of air compression in these waves can be assessed by

measurement of the interference colours, as is shown in a pair of colour transparencies. Brown-Firth Research Laboratories present what must have been a very difficult subject to photograph satisfactorily, namely, the surface of molten chromium–molybdenum steel at 1,600° C. in a Siemens open-hearth furnace. Several ordinary aerophotographs are shown; but there is no doubt that the stereo-viewing of this type of exhibit as shown by Hunting Aerosurveys, Ltd., is much more impressive, particularly to those unfamiliar with the viewing of this type of photograph. The exaggerated relief effect emphasizes even slight contours, and ordinary two-dimensional photographs of this type of subject seem all the flatter by comparison.

The photographic recording of a collection of examples of mechanical engineering submitted by H. C. Lane also illustrates the value of the stereoscopic record compared with that of the ordinary paper print, although it must be remembered that, in a series of this type, the stereophotographs, being transparencies, are likely to excel the prints in quality by virtue of their extended optical density-range quite apart from the three-dimensional effect. Among the more interesting record photographs must be mentioned those of Lost John's Cave, Lech Fell, Lancs, by J. Benjamin, who, with the aid of an illustrated plan, follows up several regions of this cave, which contains 4,000 yards of passages, by a series of photographs. In the record section, a Royal Photographic Society Medal has been awarded to J. H. Steer for his photograph of a "Tablet", and perhaps the "Chair Back" of Miss J. W. Robinson and the "Royal Festival Hall" by Miss Margaret Harker should also be mentioned among many fine examples.

The largest part of the section on Nature is devoted to pictures of birds, of which the owl seems to be the most popular. Special mention is due to W. E. Higham for a fine series of pictures entitled "Golden Eagle".

UNIVERSITY OF OXFORD

NEW DEPARTMENT OF BOTANY

THE new building of the Department of Botany in the University of Oxford was formally opened on October 8 by Lord Rothschild, chairman of the Agricultural Research Council.

The first professor of botany in the University was appointed by Charles II in 1669. The early teaching of the subject was associated with the Botanic Garden which had been founded in 1621, and buildings for the study of botany were erected during the seventeenth century just outside the Garden wall. Extensions were made to contain the library and herbarium of William Sherard as a condition of his endowment of the chair of botany; but these buildings were removed at the end of the eighteenth century and an orangery was used for housing the library and herbarium. This orangery was incorporated in the professor's house, built by Daubeny in 1836. Daubeny also built a lecture room which was joined to another orangery, altered to hold the Fielding Herbarium, presented to the University in 1851. These two orangeries within the Garden wall were the starting-points of the two separate buildings which, until now, have accommodated the Department of Botany. Further additions were made up to 1933 by new construction and by the lease of the adjacent laboratories of Magdalen College.

The history of the Department meant that its buildings were separated from the other sciontific Departments of the University and were unsuitable for the modern study of botany. Soon after Prof. T. G. B. Osborn was appointed to the Sherardian chair in 1937, the University therefore decided to transfer the Department to a new building in the Museum area, although this meant separating it from the Botanic Garden. Sir Hubert Worthington was appointed as architect and the major plans were begun in 1939; but building was held up by the War.

The new building is situated on the south side of the University Parks, behind the Observatory and between the Departments of Pathology and Physical Chemistry. It is united to the new Imperial Forestry Institute by a lecture theatre. The building has a steel frame, reinforced concrete floors and exterior walls of Bladon and Clipsham stone. There are four floors with a total area of nearly 40,000 sq. ft. and the flat roof is available for experimental work.

The teaching of the Department is carried out in three laboratories for advanced study and one for elementary study. The elementary laboratory is designed for a class of 102 in a room that can be comfortably controlled by the demonstrator. There is a small lecture room as well as the large theatre shared with the Department of Forestry. Research is accommodated in large laboratories for plant physiology and mycology and others for ecology and cytogenetics. In addition to private laboratories for the staff, there is also a number of research rooms for one or two workers and rooms for special apparatus. All the main laboratories have their own ancillary rooms for preparing and storing material and apparatus. In one of the northern wings the Fielding Herbarium, the Druce Herbarium (which was formerly kept in its founder's house in north Oxford) and the Forest Botany Herbarium (which used to be kept in the old Imperial Forestry Institute) are collected into two large rooms. Another room contains a small museum and the ancient herbaria. The main store rooms in the basement are served by ramps from street-level and by a lift to all floors and the roof. The departmental library of some fifteen thousand volumes is housed mainly in two stack rooms, except for the collection of taxonomic works which is kept with the herbaria. The reading room contains the Sherard Library and other valuable old books in glass-fronted cases, and is attractively furnished in unstained oak. The furniture and fittings throughout the building have been designed for flexibility and economy in the use of space. Wall benches are supported on cantilevers wherever possible and cupboards and drawers are in interchangeable units. The main services are carried in flues; as well as gas, water and A.C. lighting and power lines, there are 100-volt and 6-volt D.C. circuits in most research rooms; compressed air and fresh air are piped to some benches.

A garden courtyard has been laid out between the new building and the Imperial Forestry Institute and there is a small plot on the north side and a greenhouse on the roof available for growing plants for experimental purposes. The Department will, of course, continue to depend upon the Botanic Garden for much of its material.