



Fig. A1. First extract. Protein concentration 0.61 per cent, pH 6.8, μ 0.2. Speed, 60,000 r.p.m.
 Fig. A2. First extract. Protein concentration 0.61 per cent, pH 6.8, μ 0.2
 Fig. B. Fraction 2. Protein concentration 0.66 per cent, pH 6.8, μ 0.2

obtained by adsorption at 1 per cent protein concentration in 0.001 M $\text{KH}_2\text{PO}_4, \text{Na}_2\text{HPO}_4$ at 1° C., and elution with 0.05 M $\text{KH}_2\text{PO}_4, \text{Na}_2\text{HPO}_4$. Its activity per unit protein concentration was approximately double that of the extract. The main change in the electrophoretic pattern was a marked reduction of the slowest-moving component, and, in addition, a further minor fast-moving component could be resolved. Total recoveries from the columns were low, there being a marked tailing effect on elution.

A simpler fractionation is by ammonium sulphate precipitation in 2N acetate buffer of pH 5.6. On a 1 per cent protein solution, pooled from the most active chromatographed fractions, fraction 1 (precipitated at 50 per cent saturation) contained 23 per cent of the total protein and 18 per cent of the total activity towards precipitated cellulose. Its electrophoretic pattern showed marked enrichment in the fastest- and the slowest-moving components. Fraction 2 (precipitated at 100 per cent saturation) contained 72 per cent of the protein and 81 per cent of the activity. Its electrophoretic pattern (Fig. B) showed appreciable enrichment in the main intermediate component and appreciable loss in the fastest and slowest ones.

The enrichment of fraction 2 in activity towards precipitated cellulose was accompanied by enrichment in activity towards cellobiose and towards linters swollen in alkali by the method of Jørgensen, a swelling treatment claimed to cause only a conversion of crystalline to amorphous cellulose. Assays with swollen linters gave a somewhat higher value (c. 85 per cent) for the total activity in fraction 2. Assays with cellobiose gave results that depended on the concentration of cellobiose, hydrolysis appearing to be inhibited at higher concentrations. However, at all concentrations tested, from 0.1 to 1 per cent cellobiose, fraction 2 had the highest activity.

The rate of enzymatic hydrolysis varied greatly with the substrate, the following data for fraction 2 being typical:

0.1 per cent cellobiose, 0.0025 per cent protein:	54 per cent hydrolysis in 17 hr.
1 per cent precipitated cellulose, 0.0003 per cent protein:	12 " " " "
1 per cent swollen linters, 0.0006 per cent protein:	5.2 " " " "
1 per cent ground linters, 0.006 per cent protein:	1.2 " " 40 "

The percentage hydrolyses for the celluloses were calculated by converting reducing-sugar titres to glucose and are thus minimal. Untreated linters was thus very slowly attacked. The importance of its crystallinity in this respect has been stressed by Pigman⁷.

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- ⁷ Jørgensen, L., "Studies on the Partial Hydrolysis of Cellulose", 140 (Oslo: Trykt Hos Emil Moesture, 1950).
- ⁸ Pigman, W., "The Enzymes", **1**, Pt. 2, 733 (New York: Academic Press, Inc., 1951).

WORLD CONFERENCE ON DOCUMENTATION

THE eighteenth Conference of the International Federation for Documentation was held in Rome during September 15-21, under the auspices of the Consiglio Nazionale delle Ricerche.

More than three hundred participants, representing thirty-one countries and a few supra-national bodies, including the Organization for European Economic Co-operation, Unesco and the Food and Agriculture Organization, took part in the proceedings, which were inaugurated by an official ceremony at the Capitol. The entire Conference was housed in the building of the Consiglio Nazionale delle Ricerche, Piazzale delle Scienze, in front of the Città Universitaria.

More than one hundred papers had been prepared, and, with most of them printed and some duplicated, they filled four bulky volumes which take a few weeks to study. To facilitate reference, not only for the future, but also, mainly, for purposes of the Conference, these papers have been listed in two ways: by country and subject. It is thus possible to gain an overall picture of achievements, ideas, suggestions in a particular country, or study developments, trends and openings in any specialized field. The listing by subject followed closely the grouping adhered to in the Conference programme as follows: (1) application of the Universal Decimal Classification; (2) documentary reproduction methods and mechanical selection devices; (3) bibliography and abstracting; (4) auxiliary publications; (5) training of documentalists; (6) general problems of classification; (7) linguistic problems and terminology.

It was unfortunate that only a few delegates had received their papers in time to allow preparatory study. For technical reasons, outside the control

of the organizers, the rest became available for distribution only after the proceedings had started.

It would require a separate article to assess the encyclopaedic value of these papers, record their contributions to routine, point to new problems which are raised and new approaches which are suggested. The present review must limit itself to the Conference and its outcome.

The main topics discussed by the various sections may be briefly described by abbreviated versions of the recommendations. The recommendation of Section (1) refers to the question of authorities responsible for publicizing and explaining the principles and practice of the Universal Decimal Classification. Among the specific tasks recommended for immediate attention, the following are especially mentioned: compiling and circulating a list of Universal Decimal Classification users; securing distribution of the new cumulative Extensions and Corrections to the Universal Decimal Classification; preparing a short edition based on the latest available Dutch "Verkorte Uitgave"; assisting in the revision of specific Universal Decimal Classification sections with special reference to the preparation of the fourth (English) and fifth (French) editions; preventing the distribution of unauthorized editions. Multilingual editions were also recommended by the Section.

The deliberations of Section (2) were centred on the comparative merits of the different micro-techniques, and the recommendations limited to matters of format and terminology. Questions of method and policy, touched upon in some of the printed papers, did not come up for discussion. Some of the delegates found fault with the exhibition of technical devices, organized for the Conference at the Istituto di Matematica, because it did not offer the ultimate solution of their problems. While the scope of the exhibition did not differ greatly from similar shows previously displayed in Britain or elsewhere, attention might be directed to a series of microcard readers, at different price-levels, from the United States, and to a prototype of a simple camera of Italian make for taking flat microfilm of the 'fiche' or sheet type. This type of film, incidentally, is gaining popularity (as might have been foreseen) for purposes where convenience of handling, filing, and so on, are more important than speed of initial operation.

Section (3) emphasized the need for better dissemination of technical information contained in patent specifications, recommended the drafting of standards for citations and descriptions of references, and discussed the possibility of standardizing the bibliographical and formal presentation of abstracts.

The discussions of Section (4) resulted in a recommendation urging universities and scientific institutions to have academic writings which they deem important published or reproduced by an appropriate process in numbers sufficient for the needs of exchange purposes, and noting, further, that such exchanges should not be based on the monetary value of the document. The Section also suggested that other scholarly production existing only in manuscript form should be listed in analytical bibliographies with indication of the depository library or documentation centre able to supply copies upon demand.

Much thought was devoted by Section (5) to the problem of training documentalists. It was, *inter alia*, suggested that archives and museums should be invited to participate in the deliberations hitherto attended mainly by librarians; that professional

education should be regionalized wherever such development might be considered useful; that prototype programmes of education in documentation should be discussed in 1952, and a conference of persons responsible for the training of librarians and documentalists should be convened for 1953. It was finally suggested that, in response to an international need, documentation should be recognized as a profession in its own right, and that a professional statute for documentalists should be drawn up.

Section (6) recommended a survey of the different systems of classification now used in libraries, archives, documentation centres and government offices, and expressed the hope that possibilities of co-ordinating the different systems might be explored.

The recommendations of Section (7), worked out in considerable detail, may be summarized as follows. The specialized dictionaries hitherto available cover no more than a small part of all technical subjects and languages. Most of these dictionaries are technically inadequate from the user's point of view. Production of specialized vocabularies should be organized on international and national levels, and should be preceded by preparatory tasks under these headings: standardization of terminological and lexicographical principles; compilation of terminological bibliographies and directories of organizations dealing with terminological questions; compilation of bibliographies of classifications and of directories of organizations dealing with classifications. The various tasks should be assigned to specialized agencies, and only the international co-ordination should remain centralized.

The full text of the recommendations—of which only the gist could be given here—was formally adopted by the plenary session and submitted to the Council of the International Federation of Documentation, of which M. Arne Møller (Denmark) is now president.

The working programme of the Conference was pleasantly interrupted by a number of social engagements. A special and unexpected event was the audience granted to the participants of the Conference by the Pope at the Palazzo Pontificio di Castel Gandolfo, the Pope's private residence in the Alban Hills. His speech, in French, in which he summed up the problems confronting documentation, was afterwards published in the *Osservatore Romano* on September 21.

LUCIA MOHOLY

STATISTICAL METHODS IN CHEMISTRY

ON October 25, the London and South Eastern Counties Section of the Royal Institute of Chemistry held a discussion on "The Application of Statistical Methods to Chemistry". This was planned as a supplement to the course of lectures on statistical methods given for the Institute by Mr. D. R. Read in September 1950. Under the chairmanship of Dr. C. W. Herd, more than two hundred members assembled to hear four speakers give prepared answers to questions that had been submitted and to inquire for further information on special points.

In the first of the four short papers, Dr. E. C. Wood described how careful attention to experimental design can benefit the chemist. He emphasized particularly the difference between the 'classical' approach of testing each relevant factor in turn, in