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United States. National Institutes of
Health. Division of Research Grants

Annual report, 1975-1978

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Division of Research Grants

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***DIVISION
OF
RESEARCH
GRANTS***

ANNUAL REPORT

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HIGHLIGHTS

The Division of Research Grants processed 30,167 applications for the FY 1975 councils. This represented a 19 percent increase over FY 1974 in applications processed and assigned and a 26 percent increase in competing applications reviewed.

Training programs have become increasingly complex with three different types of programs in operation--the traditional research training program, the research manpower program, and more recently the NRSA program. New application forms and revision of old ones have been necessitated and new guidelines developed.

There was a sharp increase in inquiries resulting from the NRSA program announced during the year.

The centralization of research grant application kits in control offices in grantee institutions has been generally accepted. Problems remain with NIH components supporting special programs under the research grants mechanism.

Eight conferences were held to review the status of research in population genetics, NMR resource facilities, nutrition intervention, bioinorganic chemistry, growth hormone and growth factors, behavioral toxicology, glycoprotein hormones, and epidemiology and biometry resources and needs.

The Grants Associates Board reviewed 43 candidates; 11 were recommended for the Program. By the end of the fiscal year, 8 GA's will be on board and 7 will have graduated.

A new system was developed to track applications involving human subjects.

Consolidation of various data-capture processes into a single system is presently under study.

Several data items in the IMPAC system were converted to conform with the new DFM accounting numbers.

An informational bulletin, "IMPAC Tech Notice" has been developed for issue as needed to keep users informed of current and proposed changes in the system.

Total redesign of the CRISP system was initiated.

A chart book, "NIH Extramural Trends FY 1967-1974" was prepared for administrative use. A series of overhead slides on key extramural trends was developed and presented in August 1974.

OFFICE OF THE DIRECTOR

The Director attended several meetings during the year under review. He spoke at a workshop for new deans held by the Council of Graduate Schools of the United States in Gainesville, Florida, July 15-19, 1974; to the Association of Independent Research Institutes in Oklahoma City, Oklahoma, September 19-20, 1974; and at a workshop on sponsored research and training at the University of Florida, Gainesville, Florida, October 20-21, 1974.

The Director attended the meetings of the American Council on Education in San Diego, California, October 9-11, 1974; the Association of American Medical Colleges, Chicago, Illinois, November 11-14, 1974; the task force on biomedical sciences, Council of Graduate Schools, Phoenix, Arizona, December 4, 1974; the Western Association of Graduate Schools, Honolulu, Hawaii, March 3-6, 1975; and participated in a conference for science executives in Williamsburg, Virginia, December 8-13, 1974.

The Director is a member of the Coordinating Committee for Program Management.

The Deputy Director participated in the annual meeting of the Association of American Medical Colleges in Chicago, November 13, 1974; in a seminar sponsored by the Faculty of the University of Arkansas in December 1974, and met with graduate and research committees of the University. He also participated in a workshop on proposal development, sources of support, and budgeting at North Carolina State University, Raleigh, North Carolina, February 5-6, 1975; and visited Michael Reese Hospital, Chicago, Illinois, March 19, to consult with grantees.

The Deputy Director is Chairman of the Subgroup on Safeguarding Sensitive Statistical Data; the Coordinating Committee on Protection of Privacy; and the Manpower Utilization/Productivity Committee of ECEA.

The Deputy Director is a member of the Committee on Dissemination of Research Results; the Federal Information Processing Standards Task Group 15; the Grants Associates Board; the ECEA; and the ECEA Subcommittee on Training. He also attends meetings of the Collaborative Program Directors.

The Associate Director for Scientific Review acted as the moderator of the NIH Panel at the Federation of American Societies for Experimental Biology meeting in Atlantic City, April 14-18, 1975, and spoke at the Minority and Women's Opportunity and Resources Conference held at NIH on April 22-24, 1975. He also participated in a Conference for Federal Scientists and Science Executives sponsored by the Brookings Institute at Williamsburg, Virginia, March 9-14, 1975; and attended the Seminar for Executives on Legislative Operation held in Washington, D.C., June 11-13, 1975. The Associate Director is a member of the NIH Executive Committee for Extramural Affairs; the ECEA Subcommittee on Research; NIH Minority Coordinating Committee; Committee on Human Rights; Committee for Development of Peer Review Regulations; Action Committee on Review of R & D Contract Proposals; and the NIH Grants Peer Review Study Team. He is co-Chairman of the Executive Secretaries' Review

Activities Committee and Acting Executive Secretary of the Advisory Committee to the Director, NIH, on DNA Combinants. In his role as Acting Executive Secretary of the DNA Combinant Committee, the Associate Director was responsible for the organization and selection of the membership of this committee.

The Division's formal employee training program continued throughout the year to further the career needs of the staff. Eleven employees attended Federal City College under the Upward Mobility Program, and 27 signed up for the Staff Training Extramural Program (STEP). The Personnel Office received 647 applications for training courses, of which 408 were approved. Of these, 238 employees completed training programs. Ninety-two courses are still in progress. Fifty-six employees attended orientation sessions held throughout the Division during the year.

The Opportunity Program (TOP) Committee held a half-day orientation for employees to help them with problems and complaints. The Committee also assisted in arranging meetings between the Division's female staff members and the Federal Women's Coordinator who held three sessions during a day-long visit to the Westwood Building.

The Committee appointed a subcommittee to review the end results of training courses (especially those taken by minorities, women, and employees below GS 9)--whether or not the courses had a positive effect on employees' careers, and the reasons why they took courses if they did not apply for positions for which the training qualified them, or why they were not selected to fill such positions.

TOP Committee placed a box in the DRG Reference Room where employees could place comments and suggestions that would increase communication between the Committee and the staff.

New staff members are being approached informally by TOP Committee members to brief them on the Committee's role and to offer guidance or direction if needed.

The Committee is actively involved in the review and updating of the brochure, "DRG is People," to be used as a hand-out for new staff members.

The DRG-EEO Counselor participated in the NIH EEO Advisory Council functions and activities including bi-weekly council meetings, monthly Counselor Committee meetings, the annual 2-day NIH orientation for new EEO counselors, the Civil Service Commission 3-day on-site EEO Counselor Interagency Training Program, the NIH EEO Organizational Development Program, including Management by Objectives (2 planning sessions), and several of the NIH STEP Committee Continuing Education Program Modules.

The Counselor met with TOP Committee on a continuing basis, and attended the DRG Director's Staff Meetings and those of his ad hoc EEO program group. The Counselor participated with members of TOP Committee in a periodic 1-day orientation of DRG personnel and office functions, and was a speaker in three 1-day sessions of the DRG Employee Orientation Program, whereby 75 employees were informed of the EEO program. The Counselor also participated in several

Special Management Workshops and Sessions conducted by the NIH Supervisory and Management Development Branch,

The Counselor maintained a continuing open-door policy regarding opportunity for counseling on equal opportunity and discrimination procedures, and conducted several informal interviews and conferences with Division personnel regarding the new NIH Merit Promotion Plan, career ladder opportunities, training and participation in the Upward Mobility Program, and other training and education opportunities.

OFFICE OF GRANTS ASSOCIATES

The Grants Associates Program, unique to the Federal Government, is designed to train established biomedical and behavioral research scientists in health science administration. Since its inception in 1962, the Program has graduated 98 associates, 80 of whom remain in the Federal Government (77 of these are in the PHS). Fourteen others are no longer in Federal employment (although many of these had been in the Public Health Service after graduation from the Program); two others are deceased and two have retired.

Among the graduates are the Associate Director for Extramural Research and Training, and the Assistant to the Associate Director for Collaborative Research, Office of the Director, NIH, an NIH division director, an assistant NIH division director, institute associate directors of extramural programs, and several program directors and branch chiefs within the institutes.

Graduates hold positions in all the PHS agencies with the exception of the CDC and FDA. Within NIH, former associates hold positions within all the institutes (except the newly-established Institute on Aging) and in DRR and DRG. Among the graduates, 10 are women and 15 are members of minority groups.

A 3-day retreat was held this year to review the Program, its mission and the means toward its goals. Several recommendations resulted, some of which are being implemented; others are being processed or reconsidered. Among the recommendations is an emphasis on more formalized training, particularly in management. The varied courses offered in this area are selected by the Grants Associates in consultation with their preceptors to insure that they are appropriate to their training needs. Subsequently these courses are evaluated in terms of relevance to other GA's generally or selectively. These courses have included congressional operations for managers, management principles, program planning and evaluation, committee dynamics, management by objectives and public policy, and management of scientific research. Another recommendation is a more refined mission statement followed by clearer selection criteria. This will assist the Board in its selective process of inviting to the Program the most qualified from among the increasing number of applicants. Another recommendation is the expansion of GA assignments to NIH-wide task forces and to other Federal agencies such as OMB and NSF.

A new area of exploration, but related to the above, is the type of candidate who should enter the Program. Initially, the Program had been aimed at researchers with little, if any, administrative experience. The trend now is to allow into the Program scientists with varying degrees of administrative experience, not necessarily in Government. At present there is a mixture of both those with minimal and those with a fair degree of administrative experience. The rationale is that such a mixture would be advantageous to the GA's who learn a great deal from each other, and also that the person with a fair amount of experience in administration could transfer these skills to Federal administration, thus producing a stronger health scientist administrator. This kind of mixture resulted in an innovation being tried on one candidate, namely an abbreviated

GA program. The abbreviated period would be decided upon during the first few weeks between the associate and his or her preceptor (as opposed to the Board's approving a request during the 12-month training period for an associate to terminate early). Although this option has been available during the history of the Program, it has not been exercised. Should this prove successful, then it could be used again selectively.

The weekly seminars continue to be a blend of orientation to Public Health Service and examples of administration. This year they have included ethical issues: EEO, protection of human subjects, and concerns about conflict of interest.

In FY 1973, 500 inquiries were received about the program, and 557 in FY 1974. Up to 300* are anticipated in FY 1975, based on the expected increase in inquiries after the FASEB meetings held in April. Sixty-six people, including 8 females and 13 minorities, were interviewed at FASEB. The meetings are also expected to produce an influx of applications. Over 250* are expected by the end of this fiscal year compared with 298 received last fiscal year and 252 in FY 1973. Forty-three candidates will have reached Board review this fiscal year compared with 32 from over 250 applicants in each of FY 1973 and FY 1974. As of April 1975, 11 candidates were recommended to join the Program. By the end of this fiscal year, 4 of these will be on the Program, 3 others have firm EOD dates and 4 others have pending EOD dates. The Program has maintained from 8 to 10 associates at any given time. By the end of the fiscal year, the Program will have 8 associates on board and will have graduated 7. The 15 associates in the Program in fiscal year 1975 represent a variety of disciplines: one each in physical chemistry, genetics, experimental psychology, biochemistry, biophysics, microbiology and veterinary medicine, and molecular biophysics; and two each in physiology, organic chemistry, biology, and zoology. The range of disciplines does not affect the goal of the program to develop health scientist administrator generalists, but associates are encouraged to pursue their scientific interests on their own.

* The periodic recruitment advertisement in Science was not placed this year, hence these figures are not as high as in the past 2 years.

OFFICE OF GRANTS INQUIRIES

A sharp increase in routine mail and telephone requests for material resulted from the announcement of National Research Service Awards for individual and institutional postdoctoral fellows.

Amendments to the Freedom of Information Act and the advent of the Privacy Act have required staff attendance at meetings for interpretation of the Acts prerequisite to applying policy. The Office established the DRG Freedom of Information Index as an integral part of the overall NIH Index.

The centralization of grant application forms in control offices in grantee institutions has proved to be a speedier and less costly operation for the NIH than was the old method of mailing applications singly to investigators. Since the new system of bulk-mailing applications became effective in January 1974, complaints have been minor and, in the past 6 months, centralization of applications has been generally accepted by the grantee institutions. The problems now are created internally by NIH institutes that have special programs requiring inserts with application forms.

Restricted travel funds kept the Division exhibit in storage all year. The Grants Inquiries Officer accepted a local speaking engagement January 6, 1975, before campus representatives of the Associated Colleges of the Midwest and the Great Lakes Colleges Association.

A member of the staff was named by the Director as DRG's representative on the NIH Minority and Women's Resources Conference Committee.

A sound-on-slide series, "How a Research Grant is Made," was updated to show women and minority group members on the study sections.

OFFICE OF RESEARCH MANPOWER

During fiscal year 1974, the Office of Research Manpower (ORM) coordinated the reinstatement of training through the Research Manpower program. The National Research Service (NRS) Act of July 1974, however, rescinded these programs and all previous research training authority. Consequently, ORM has once again been involved in the many complexities associated with mounting new programs. For example, in cooperation with a committee of DRG and I/D representatives, the Office developed a new application form for the institutional NRS grant and expedited clearance of the form so that it would be available for the February 1975 application receipt date.

ORM also: prepared new program announcements on the individual and institutional NRS awards, working closely with each I/D on specified research areas considered to be in need of additional trained personnel; revised the individual fellowship application kit to reflect the NRS program, and obtained an extension on use of the application form and related materials until December 1975; and prepared the initial draft on the guidelines governing the NRS program. This document, which was issued in May 1975, reflects the official policy on the program.

Since applicants under the NRS program are subject to certain payback provisions, each applicant under the Research Manpower program was contacted to determine if he or she still wanted to be considered. The Chief, ORM, is serving on the PHS Task Force to implement the payback provisions. These provisions have been of considerable concern, and have caused innumerable discussions with applicants, academia, and NIH personnel.

Updated materials were also prepared for the Research Career Development Program: a) program announcement, b) extension on use of the application form, and c) a draft policy brochure for review by OERT.

The major areas in which the Office is now involved are:

1. developing a new continuation application form for the NRS institutional grant through a committee of DRG and institute representatives; and processing a request for extension of the old form for use under the old program; and,

2. preparing for clearance of a new application form for the individual NRS award. This form was being developed this time last year, but because of the change from the Research Manpower to the NRS program, the drafting committee had to be reconvened to adapt the form to the new program.

Routine operations of the Office included responding to numerous requests from within and outside NIH on status, statistics, and policy on the training programs.

Several tasks remain to be completed, including:

- a. revision or extension before December 1975 of the RCDA application

forms, both new and continuation; the individual fellowship continuation application form; and the fellowship supplementary forms, such as the activation notice and termination notice;

b. revision of the Statement of Appointment Form to accommodate the NRS program, and

c. if the institutes consider it important enough, the Handbook for individual fellows will also need to be revised to accommodate the NRS program.

Problems encountered during the year under review are to a large part situational. The training programs have been in a constant state of change over the last 2 years. As a result of the changes, NIH has an old training program, a Research Manpower program, and an NRS program, and, as indicated above, NIH is in a period when all of the training forms are expiring and need to be revised or extended.

The individual NRS applications received under the May 1, 1974, receipt date were originally submitted under the Research Manpower program (F22) and had to be converted to NRS program. Although these applications were acted on at the November 1974 Council, no awards could be made until the final regulations governing the NRS program were published in the Federal Register. The regulations were published first as proposed rules on January 17, 1975, and then as final regulations on May 2, 1975.

ADMINISTRATIVE BRANCH

The DRG Budget Office has assisted in administering about \$12.1 million for DRG operations: \$9.8 million from the NIH Management Fund and \$2.3 million from the institutes for the support of 47 Study Section Scientific Evaluation Grants. The \$2.3 million was awarded among the study section chairmen; expenditures were monitored by a computer data base system which provides DRG management with up-to-date monthly costs analyses. For the first time, consultant costs were funded almost entirely from Scientific Evaluation Grants, saving time and effort in paying consultants.

The Budget Office, in conjunction with the Personnel Office, has assisted the Department in updating its personnel data system. This required many changes to the data in the Department's terminal data collection system (TDCS). The personnel data system is now being used for the official employment reports to the Civil Service Commission. Future plans are to merge the system with the payroll data system for pay purposes.

The Reference Room reorganized its card catalog system. All the books are now cataloged by subject, as well as title and author contributing to efficiency and savings in time. To correct a gap perceived in coverage of scientific areas, 84 new books and 43 new journals have been acquired. Reference Room personnel continue to provide a service to all Westwood employees.

The Travel Section continued providing information and assistance for DRG personnel and outside consultants traveling for the Government. During the past fiscal year, approximately 5,000 travel vouchers totaling over \$2 million were processed and forwarded for payment for consultants who serve on the various study sections. Another \$250,000 was spent to pay travel costs on approximately 800 vouchers for DRG travelers and other Government employees.

The Special Services Section continued to provide typing and clerical assistance to DRG and other institute/division staff. Four typists with magnetic card typewriters and one CRT unit completed about 2800 letters, 10,000 mailing labels, and 600 Summary Statements. The Section also typed 540 pages of draft and final copy for renewal of Study Section Charters, and several other documents during the period under review.

The Office Services Section compiled and handled an average of 9,000 grant application kits of all types and mailed 9,500 miscellaneous packages each month. The Section also provided planning and assistance in accomplishing several major moves within the Division and acquired and maintained equipment, furniture and supplies, and provided duplication services for Division personnel.

The DRG Mail Room received and processed approximately 30,000 grant applications of all types, and a large volume of supporting documents, letters and publications.

RESEARCH ANALYSIS AND EVALUATION BRANCH

The Research Analysis and Evaluation Branch continually provides support and answers to the Office of the Director, institutes, other Federal agencies, and interagency committees on a variety of questions and areas of the extramural activities of NIH. With the assistance of CRISP, IMPAC and the CSCS codes, the Branch has completed the following reports or assisted in their preparation:

- NIH budget analysis relating to competing and non-competing grants.
- Extramural funding in specified areas of hematology.
- Identification and analysis of extramural activities in basic, applied, clinical, development and control activities, research materials involved, and mechanisms of support of NIH extramural R&D.
- Inventory of clinical trials.
- NIH involvement in human fetal research, FY '72-74.
- Trends in priority scores assigned to traditional research projects.
- Summary and analysis of NIH support of research efforts on DNA hybrid molecules.
- Classification of NIH extramural research support primarily or partially concerned with nutrition.
- Extramural research activities in or related to social research and development.
- Estimate of NIH support of drug development.
- Research in chemistry and biochemistry supported by NIH contracts and grants.
- Research and research training programs which relate to maternal and child health.
- NIH and NIMH support of pediatric research FY '74.
- Follow-up studies on new principal investigators (first published in Science, July 20, 1973).
- Grants and contracts for animal production and facilities.
- FY '74 Matrix of scientific areas of research by institutes that provided support.

Many of the activities reported for prior fiscal years are updated periodically. Staff members are serving on the Federal Interagency Chemistry

Representatives, the NIH Library Committee, DRG Reference Room Advisory Committee, Training Opportunities Committee, and the Grants Associates Board. Nine of the twelve staff members undertook and completed work-related training during the year.

The Branch serves as the contact resource for several ongoing projects and programs, and prepared NIH coordinated responses for several issues raised during the year that spanned several institutes. The Branch continues to code research projects and grants by the Central Scientific Classification System. The Central Scientific Classification Code is presently under revision by the staff. The Branch assumed responsibility for the schedule of NIH Conferences.

At present the major thrust is on completing reports on the extramural programs in diabetes and toxicology, compiling data for the study and review of research and research training programs related to maternal and child health, updating periodical reports, improving the procedures for the broad scientific classification of NIH extramural research grants and contracts, and maintaining the files on the inventory of clinical trials.

REFERRAL BRANCH and SCIENTIFIC REVIEW BRANCH
(Formerly Research Grants Review Branch)

The number of applications assigned and processed by the Referral Branch and reviewed for scientific merit by the Scientific Review Branch in Fiscal Year 1975 far exceeded the previous record year, FY 1974. Competing and non-competing applications reached 30,167, up almost 19 percent from the previous year's total of 25,448. Competing applications assigned to initial review groups for review of technical merit as well as to awarding units rose to 20,618, up 26 percent from the previous year. Almost 79 percent of the research applications were assigned to NIH. During the year, the Scientific Review Branch provided the initial review for scientific merit for more than 90 percent of the NIH competing applications. A table showing the distribution of applications processed in fiscal year 1975 is appended to this report.

Early in the fiscal year, the Referral Branch and the Scientific Review Branch were established following a reorganization that abolished the Research Grants Review Branch and transferred its functions to the new branches. New responsibilities for referral and initial technical review of applications for fellowship and training programs were also assigned to the new branches.

The Referral Branch (1) receives and reviews applications for PHS research and training support to determine referral to the appropriate PHS health agency and to the appropriate NIH initial review group; (2) develops criteria for determining appropriate assignment of applications within the NIH by program area and by competencies of review groups; (3) proposes uniform instructions to applicants for proper preparation of applications and (4) extracts and records preliminary data from such applications and serves as information center for applications pending review.

The Scientific Review Branch (1) recommends policies and procedures governing technical review of applications; (2) administers the 52 study sections which provide scientific review of NIH research grant, fellowship, and research career development applications; (3) explains applications and interprets preliminary recommendations to the National Advisory Councils; (4) conducts the search for the most qualified and representative individuals to serve as members of initial review groups; (5) stimulates and coordinates the activities of NIH study sections or committees in surveys of research fields to determine current status of research and need for further development; and (6) coordinates scientific review activities with appropriate representatives of components of the NIH. On April 25, 1975, four new study sections were established in the Scientific Review Branch: Experimental Virology, Immunological Sciences, Molecular Cytology, and Pathobiological Chemistry.

A book, Invertebrate Immunity, to be published by Academic Press in June 1975, resulted from the conference on this subject conducted by the Tropical Medicine and Parasitology Study Section in April 1974.

"Computers in the Clinical Pathologic Laboratory: Chemistry and Image Processing" is the title of a paper written by Dr. Bernice S. Lipkin, a staff

member of the Scientific Review Branch. The paper is in press for the June 1975 issue of Annual Reviews of Biophysics and Bioengineering.

Dr. Thomas M. Tarpley, Jr., Scientific Review Branch, has prepared for presentation and/or publication several scientific papers this year:

- (1) Wolf, R. O., Moss, M. E., and Tarpley, T. M.: Serum Salivary Isoamylases in Sjogren's Syndrome. IADR/AADR, April 1975. The paper has been submitted to the Annals of Internal Medicine.
- (2) Cummings, Norman A. and Tarpley, T. M., Jr.: Salivary Gland Antigen and Radio-labeled Anti Salivary Duct Antibody in Sjogren's Syndrome. For the annual scientific meeting of the American Rheumatism Association to be held in New Orleans, June 1975.
- (3) John E. Horton, D.M.D., Thomas M. Tarpley, Jr., D.D.S. and Larry D. Wood, D.V.M. "The Healing of Surgical Defects in Alveolar Bone Produced with Ultrasonic Instrumentation, Chisel, and Rotary Bur." Accepted for publication in Oral Surg., Oral Med., Oral Path., Vol. 39:4, April 1975, pp. 536-546.
- (4) Dellon, A. Lee, M.D., Tarpley, Thomas M., Jr., D.D.S., M.S., and Chretien, Paul B., M.D.: Histologic Evaluation of Skin Grafts and Pedicle Flaps Placed Within the Oral Cavity in Humans. Submitted in April 1975 for presentation at the American Society of Oral Surgeons in September 1975.

In January 1975, Dr. Tarpley presented a lecture, "Non-Neoplastic Salivary Gland Swellings," to a group of oral pathologists participating in the U.S. Naval School Course in Oral Pathology. In March 1975, he presented "Non-Neoplastic Salivary Gland Sialadenopathies" in the annual Oral Pathology course at the Armed Forces Institute of Pathology.

As in previous years, but on a very limited scale, study sections conducted workshops and conferences to survey the status of research in their areas, enhance reviewer competence, and stimulate research in neglected areas. In all, eight conferences were held--two in September 1974, five in January 1975, and one in April 1975. Two have been planned for September 1975.

Both of the conferences in September 1974 were held in Bethesda. On September 18, a workshop, "Goals in Population Genetics with Emphasis on Human Populations," was sponsored by the Genetics Study Section. A small group of population geneticists met with members of the Genetics Study Section to review the research objectives and current trends in population genetic studies, with particular attention to what such studies hope to accomplish and to what extent present methodologies are adequate to achieve these goals. Research proposals in this field are exceptionally variable in quality. Furthermore, the problem of scientific evaluation of such applications is accentuated by lack of agreement among population geneticists on the attainable objectives of many types of studies. A main objective of the workshop therefore was to provide members of the Study Section with a broader understanding of the basis for the divergent

viewpoints held by experts, and their assessment of what current methodologies can be expected to achieve.

The discussion concentrated on three main questions in population genetics: 1) the study by population genetics methods of the etiology of human traits, including disease and dysfunction; 2) the study of genetics variation in natural populations of various organisms, including man; 3) the study of the genetics and culture of "primitive" human populations. It is planned to publish a summary of the discussion and information that emerged from this workshop in Genetics--the journal of the Genetics Society of America.

On September 25, 1974, a conference on "High Resolution Nuclear Magnetic Resonance Resource Facilities" was conducted by the Biophysics and Biophysical Chemistry B Study Section to survey existing facilities in the United States, their distribution and mode of operation, and to develop guidelines for optimal operation of such resources. A group of about 15 participants discussed high resolution NMR spectroscopy resources facilities, their basic components, current operations, and suggestions for improving them. Resource sharing and the levying of service charges were analyzed. Plans were described for developing ultrahigh frequency NMR spectrometers in the future. The group recommended establishment of an interagency (DRF-NSF) planning committee to inventory existing NMR facilities for biomedical research in the United States and to assess the need for additional resources. They also recommended that resource instruments displaced by more advanced spectrometers should be made available to other institutions where they could still give valuable service. An annual meeting of resource directors with NIH staff was recommended to exchange information on resource operation and service to the biomedical community.

The first January 1975 workshop "Current Activity and Areas of High Potential and Bioinorganic Chemistry," was conducted in New Orleans on January 6 and 7. At the sessions, which were sponsored by the Medicinal Chemistry B Study Section, the National Science Foundation, and the University of New Orleans, 26 scientists participated directly in the program and about 20 other persons attended. The primary purpose was to give the study section an overview of bioinorganic research areas most likely to be in the forefront of progress during the next decade and hence representing future heavy proposal activity for the study section. Areas covered included metal ion transport and storage, trace metals, toxic and carcinogenic metals, organometallic antitumor agents, nitrogen (and other small molecule) fixation, macromolecular probes and models, metalloproteins, and coenzymes. Results of the workshop are to be published informally by the National Science Foundation.

All of the other January workshops were held in Bethesda. Earliest of these was the January 10 workshop on "Growth Hormone and Growth Factors," sponsored by the Endocrinology Study Section and attended by about 35 persons. A variety of peptide factors that promote cell growth have recently been described, mostly in areas of investigation not traditionally associated with endocrinology. The discovery that a closely related factor is dependent upon hormone and may indeed mediate some of the actions of growth hormone has prompted an increasing number of investigators to explore the endocrinological implications of these new growth factors. The purpose of the meeting was to familiarize

members of the study section with this new body of information and its implications for understanding hormonal control of growth.

The morning session of the meeting was devoted to a discussion of growth hormone and a possible relationship of its biological actions to those of somatomedin, a growth dependent peptide that appears in the plasma several hours after injection of growth hormone. The afternoon session was devoted to a discussion of a series of other peptides that appear to be related both to somatomedin and to processes of growth. The general discussion provided a wealth of informational background for members of the study section to aid them in evaluating the increasing number of research proposals that deal with this new, important, and rapidly developing branch of endocrinology.

On January 15, a conference on "Evaluation of Large-Scale Nutrition Interventions," sponsored by the Nutrition Study Section, was attended by about 50 participants. Both in this country and throughout the world, large-scale nutrition interventions have been made and are being made without serious attempt to assess the benefits to the recipients. There is now a growing concern in both government and scientific circles about this deficiency. The New York Prenatal Project was presented as a point of departure for a discussion of the various aspects to be considered in planning, carrying out, and interpreting the results of nutrition interventions. Following a description of the prenatal project in New York City, discussions of various aspects were presented. Topics included study design, statistical evaluation, ethical considerations, and design comparisons with the Guatemala study.

A workshop on "Behavioral Toxicology," was held on January 16 under sponsorship of the Toxicology Study Section. Two main themes were discussed by the participants: (1) the current status of methods in behavioral toxicology, and (2) the problem of selection of appropriate animal tests for evaluation of hazards to humans. Five invited speakers covered a variety of methods and research results in their presentations on the following subjects: (1) the role of operant conditioning techniques in precise behavioral assessments, particularly where sensorimotor discrimination may be affected by toxic substances; examples of tests in animals and humans exposed to carbon disulphide were given; (2) methods of detection of reversible hyperkinesis in rats exposed to carbon monoxide as neonates; activity of permanent groups of animals monitored in a residential maze equipped with photocells was discussed; (3) importance of social behavior and development studies using the example of young rhesus monkeys given lead in their diet; such studies are of particular importance for comparisons with humans; (4) neurophysiological methods that can be used to detect toxic effects of compounds in animals; the visual system is particularly sensitive to some pesticides; and (5) tests in rodents that can be carried out throughout development when the animals are exposed to toxicants during gestation or early postnatal life. Sensitivity to low levels of toxicant's occurs in swimming tests and open field activity.

In the discussion which followed, the participants discussed the problems of selection of appropriate tests for screening for hazards. It was generally agreed that the developing organism is more sensitive to behavioral alteration than the adult. The precise tests which are most useful are difficult to select, but sufficient knowledge is probably available to make a start. Publication of conference material is planned.

On January 16 and 17, the Reproductive Biology Study Section held a workshop on "The Glycoprotein Hormones and Their Receptors." About 100 persons attended this workshop at which 10 program participants presented the following topics: (1) the glycoprotein hormones, their origin, chemistry, use, and metabolism; (2) human follicular stimulating hormone, its subunits, and their structures; (3) immunologic relationships among the gonadotropins; (4) testicular and relevant receptors, and (5) clinical applications and comparison of these reactions in the human and sub-human primates.

A conference on "Matching Needs and Resources in Epidemiology and Biometry," was sponsored by the epidemiology and Disease Control Study Section, National Cancer Institute, National Heart and Lung Institute, Fogarty International Center, Epidemiology Section of the American Public Health Association, Epidemiology Program Directors of Schools of Public Health, Association of Teachers of Preventive Medicine, and the National Center for Health Statistics of the Health Resources Administration. About 60 people attended the conference, which was held in Los Angeles on April 7 and 8.

During its first decade, the Epidemiology and Disease Control Study Section has observed a dearth of productive epidemiologic research in all categorical areas. Two problems seem to characterize the rejected research proposals in most every instance: (1) they were presented by excellently trained clinicians who lacked epidemiologic concepts and methodological competence, and (2) they failed to involve trained and experienced epidemiologists and biometricians for the planning and ultimately the execution of the research. As the Study Section contemplated various approaches to the problem, it found its colleagues in other organizations were equally concerned. The result was a broadly-based sponsorship for the workshop including both the consumers and the producers of this specialty for biomedical research. The meeting was then to examine needs, problems, and approaches to their resolution. Its agenda was neither comprehensive nor conclusive.

Three of the principal position papers, therefore, provided insight and illustration of the dynamics of the problem from the viewpoint of the program areas of cancer, heart and lung, and infectious diseases. These presentations gave focus to requirements for epidemiologists and biometricians in comprehensive centers, intervention and control trials, specialized centers of research, clinical trials, surveillance and end results programs. Three other papers were then presented that dealt respectively with the research training opportunities in local, State, and Federal public health agencies; the current situation in schools of public health with regard to faculty, research personnel, and students; and the interrelationship of epidemiology with biometry, biostatistics, and health statistics. Each of the papers attempted to include hard data definitive of the problem area, and yet were thought-provoking regarding internal needs of the disciplines of epidemiology and biometry. Moreover, they provided substantive material for discussions, which carried to the second day in the deliberations of small working groups who were attempting to reach a consensus regarding needed follow-up. It is planned for the proceedings to be reported as part of the Fogarty International Center Series on Preventive Medicine.

September conferences in Bethesda are planned by the Medicinal Chemistry B and Tropical Medicine and Parasitology Study Sections. "Ionization, Chemical Ionization, and Field Desorption" is the subject of the conference being sponsored by Medicinal Chemistry B Study Section. "Intracellular Parasitism: Status, Concepts, and Speculations in Research on Leishmania and Trypanosoma Cruzi" is the subject of the second conference.

APPLICATIONS PROCESSED BY REFERRAL BRANCH, OADSR
 Fiscal Year 1975: March 16, 1974 - March 15, 1975

COUNCIL	NOV 74	MARCH 75	JUNE 75	TOTAL FY 75	
		<u>COMPETING</u>			
Types 1, 2, 3	NIH	3,831	3,865	3,987	11,683
	FDA	40	36	22	98
	HS	112	85	138	335
	OH	31	21	25	77
	ADAMHA	934	694	1,088	2,716
	Subtotal	<u>4,948</u>	<u>4,701</u>	<u>5,260</u>	<u>14,909</u>
Construction	0	0	6	6	
PL 480	6	5	4	15	
Training	87	869	349	1,305	
Career Development	929	80	327	1,336	
Fellowships	<u>1,025</u>	<u>0</u>	<u>2,022</u>	<u>3,047</u>	
	Subtotal	<u>2,047</u>	<u>954</u>	<u>2,708</u>	<u>5,709</u>
TOTAL, COMPETING	6,995	5,655	7,968	20,618	
		<u>NON-COMPETING</u>			
Type 5	3,085	2,655	2,751	8,491	
Interim (Administrative)	350	287	265	902	
Cross Fiscal	<u>45</u>	<u>78</u>	<u>33</u>	<u>156</u>	
TOTAL, NON-COMPETING	3,480	3,020	3,049	9,549	
		<u>TOTAL</u>			
COMPETING	6,995	5,655	7,968	20,618	
NON-COMPETING	<u>3,480</u>	<u>3,020</u>	<u>3,049</u>	<u>9,549</u>	
GRAND TOTAL	10,475	8,675	11,017	30,167	

STATISTICS AND ANALYSIS BRANCH

Fiscal year 1975 was characterized by increased demands on the Statistics and Analysis Branch for information services and data processing support. During the year, the Branch provided review and award support services for a record breaking number of competing applications. Similar increases occurred in virtually every other measure of existing SAB operations.

In addition to these increases in routine activities, the SAB met demands for such new services as the development and operation of a system of tracking applications involving human subjects through the review and award process. Another major new project is the Manpower Report which collects information on personnel paid under research grants and contracts.

To meet these and other demands the Branch is continuing to seek out, particularly through application of the latest technology, ways and means by which productivity can be improved. There is, for example, a study currently under way which will consolidate the various data-capture processes into one single method with a significant improvement expected in the utilization of resources.

The Branch, in collaboration with the American Association of Medical Colleges (AAMC), presented to medical school representatives at the November 1974 AAMC meeting in Chicago a proposed system for a medical school/NIH interface on extramural information. Following this presentation, eight schools have participated in a pilot study of such an interface system. A meeting with the participating medical schools, as well as the AAMC, to evaluate the system is planned for June 1975.

Management support and employee interest in training and development for better job performance and career development purposes continued to remain high with 73 Branch employees participating in 55 different training courses and seminars. In addition, a number of courses were applied for but were oversubscribed; employees will pursue this training as spaces become available. A wide spectrum of training was covered including computer-related training, administrative and managerial, communications and office skills, EEO and management sciences. Special training programs in which Branch employees were involved included the Upward Mobility College and attendant workshops and seminars, the STEP Continuing Education Program, the NIH Manager Development Program, the Federal Executive Institute, and the Symposium on the Freedom of Information Act. The three Student Trainees recruited under the Federal Junior Fellowship Program in 1973 continued their third year of training. Also, during FY 1975 the Branch acquired a trainee under the Project Stride Program.

1. Office of Systems Planning. The Office of Systems Planning in collaboration with the other Sections of the Branch, continued its activities for expansion of the NIH extramural central data system and for the design and implementation of new applications. Systems design and procedural development connected with the entry into the system of new accounting numbers established by the Division of Financial Management (DFM), establishment of a human subjects

tracking system, a link with DFM to permit balancing of contract and interagency and intraagency agreement information contained in the IMPAC system, and the processing of Core Center applications for the National Institute of General Medical Sciences were undertaken. These projects are discussed in detail in the individual section reports that follow.

2. Data Processing Section

Document and Entity Numbers. The Section converted several data items in the IMPAC System this year to conform to the following new Division of Financial Management (DFM) accounting numbers:

Document Number - This number replaces the Transaction Number on PHS extramural grant award statements and approval lists. It is used by DFM as the obligation number in the NIH Central Accounting System and the DHEW Federal Assistance Financing System. The new Document Number will assure consistency in the assignment of obligation numbers in various DHEW systems. It contains several characters of the grant number permitting each number to be cross-referenced to its related grant.

Entity Number - This number replaces the PHS Account Number on PHS extramural grant award statements and approval lists. It is used by the DFM as the payee number in the NIH Central Accounting System and DHEW Federal Assistance Financing System. The DHEW Central Registry office is responsible for establishing standardized codes to uniquely identify all entities dealing with the Department. An entity is broadly defined as an individual or organization or as a segment, division, school, or component of the organization. The standard organization code is derived from the Internal Revenue Service Employer Identification Number (EIN) with the Social Security Number (SSN) assigned as the standard code for individuals. Use of codes became mandatory for all agencies on July 1, 1974, for any award to entities included in the Central Registry System.

Core Center Grants. DRG agreed to assign and review Core Center applications for NIGMS beginning with the June 1975 review cycle. Data relating to these applications were available in the IMPAC pending file in April. The procedures established for processing these applications provided for recording the full range of Initial Review Group, National Advisory Council, and Awarding Unit actions for both the Core Center and the related individual projects.

Human Subjects Tracking System. A computerized tracking system has been installed in the Section to identify projects involving human subjects. The system was implemented in May 1975 for applications assigned for September review by DRG Study Sections. The system documents the fact that review of questions involving human subjects has taken place, decisions reached, and problems resolved in the following manner:

- At the time a pending application is received, an entry is made in the IMPAC computer record indicating whether human subjects are involved in the proposed project.

- If human subjects are involved, the Study Section will determine whether there is adequate protection or if possible risks exist. This distinction will also be recorded in the IMPAC computer record.
- In the case of possible risks, awarding unit staff are responsible for resolving the problem and issuing a Grant/Application Change Notice to that effect.

No award statements will be produced by the IMPAC System until all possible risks have been resolved by the appropriate awarding unit.

Contracts. A link between the Division of Financial Management's Central Accounting System and the IMPAC System, similar to the grant link between the two systems, is being developed for research contracts and interagency and intraagency agreements. Under this system, DFM will provide SAB monthly tapes on these contracts and agreements containing dollars encumbered, entity number, object class codes, and document numbers to permit reconciliation between the NIH Central Accounting System and the IMPAC contract files. The system will be fully operational in fiscal year 1976 and will provide increased control over data in the contract file.

Approval Lists. The Section has assumed additional operating responsibilities associated with a system being programmed to provide the Division of Financial Management with IMPAC grant-award data on magnetic tape. This system will result in major procedural changes in the grant award process. Under the new procedures, the awarding units will forward the original signed grant-award statements and approval lists directly to the Data Processing Section Control Point. On receipt, the staff will update a special IMPAC file, and, from this file, will create an encumbrance transaction tape for DFM. DPS will then forward the signed approval lists to DFM. Once operational, considerable manpower and time savings will be realized in DFM because they will no longer have to keypunch approval lists.

IMPAC Tech Notice. DPS has developed a new informational bulletin called "IMPAC Tech Notice" to notify users of the IMPAC system of current and proposed changes in the system. It will be issued on an "as needed" and not periodic basis.

System for Computer Retrieval of Information of Scientific Projects (CRISP). A total redesign of the CRISP system has been initiated to permit the generation of an increasing number of reports, to improve the accuracy and contents of these reports, to provide more flexibility in reporting, and to reduce operational costs. All aspects of the system's maintenance and reporting procedures have been considered, data collection methods have been reexamined, and input formats have been simplified and combined as appropriate. Record contents have been altered, internal coding of data changed, and the number of on-line files and records have been reduced to speed procession and facilitate use of the system.

Expansion of Record. IMPAC Master File records have been expanded from 1138 to 1378 bytes. This expansion will allow for future development as follows:

- Expansion of research contract records to include the collection and maintenance of certain data from the Request for Proposal (RFP) form. Commitment information on incrementally funded contracts will also be added.
- Development of a telecommunications system which will permit awarding units to have direct access to the IMPAC System's files and produce grant award notices via remote terminals.
- Expansion of IMPAC records to identify grants awarded under Public Law 93-348, National Research Act. One of the conditions of the National Research Service Award Program is that no trainee will be appointed unless he or she has signed and submitted a statement of intent to meet the service or payback provisions required under this law. It is expected that the IMPAC System will be used to monitor this compliance.

3. Research Documentation Section (RDS). The Section maintains a computerized disk storage and retrieval system, CRISP (Computer Retrieval of Information on Scientific Projects) containing scientific data on the research grants and contracts supported by the Public Health Service. Through this medium, RDS functions to service ad hoc and recurring requests for scientific information from Government administrators, scientists, and information personnel for purposes such as analysis and evaluation of research programs, specific scientific areas, and preparation of reports. In similar fashion, the Section responds to inquiries from grantee and non-grantee institutions and scientists, the news media, and other non-Government individuals engaged in, concerned with, or reporting on medical research.

RDS publishes annually as a "spin off" of the CRISP file:

1. The Research Grants Index, prepared in two volumes. Volume I is a scientific subject index with associated project numbers and titles. Volume II contains three sections (a) project identification data (b) research contract identification data and (c) project investigator information.
2. The Medical and Health Related Sciences Thesaurus, the vocabulary authority list of subject headings used by the RDS Indexing Staff in indexing the research projects.

CRISP has the query capability of providing information ranging from a straightforward listing of grants pertaining to a single scientific subject term to a compendium of projects relating to any number of terms, using a combination of Boolean search logic. Select queries for providing individual institutes with tapes or hard copy of their projects by subject, project (sub-project) number or investigator, and individual institute listing or projects with indexing terms (Scientific Profiles) can be provided. Query capability limiting subject searches or Scientific Profiles to certain programs (R, M, N, P, S) or IPF Codes is available.

A specially designed CRISP subroutine provides for furnishing grantee institutions or NIH institutes possessing appropriate computer capabilities with specially formatted tapes with which they can search the scientific subject content of their own research grant and contract records. This subroutine called CESI (CRISP Extract System for Institutions/Institutes) is updated monthly and can furnish select tapes on an ad hoc or recurring basis.

In addition, performing subject searches and producing Scientific Profiles or Investigator Listings on subprojects of program projects, center and other large grants is a unique feature of the CRISP System.

New features of the CRISP system include: (1) the CESI System described above; (2) a narrative file termed CRISP File 5 (Format F) which offers the capability of furnishing research grant and contract narratives in response to grant or subject queries, and provides users with summaries of project objectives in addition to previously existing formats describing fiscal or subject heading information; and (3) Principal Investigator Indexer Records (computer printouts of individual project Scientific Profiles) which have been modified to eliminate the need of typing address labels. The innovations described above have been made possible largely through the efforts of the SAB System Planning and Data Processing Groups.

Research Grants Index. Linotron tapes for the fully automated printing of this two-volume set were submitted to the Government Printing Office in January for publication (DHEW Publication No. (NIH) 75-200) in May 1975.

Medical and Health Related Sciences Thesaurus. In addition to its in-house use, the revised edition (DHEW Publication No. (NIH) 75-199) was distributed on a request basis to research analysts, information specialists and other individuals who have responsibility for scientific communication systems.

CRISP Services. In addition to responding to hundreds of requests on a wide range of subjects, the Section (1) prepared Linotron tapes used in the creation of extract Indexes for three institutes; (2) provided Scientific Profile data reports and/or CESI tapes for numerous Grantee Institutions; and (3) furnished NIH-wide scientific area data to responsible institutes.

In attempts to improve SAB personnel utilization, RDS Technical Information Specialists have assumed responsibility for professional editing operations involving thousands of approved research project applications during the current fiscal year. This activity was formerly conducted by other members of the SAB staff.

Intramural research projects. Efforts are well underway to develop a system for incorporating the keyword indexing of individual intramural research project reports into the CRISP System. This will allow for uniform reporting of intramural research using the full capacity of Boolean logic heretofore available only on queries for information on extramural research.

Training. A total of 11 employees participated in NIH training program. The courses included WYLBUR, CPS, System/370, Mag Card, IRS Query, STEP Module 6, Supervision, and Science, Technology & Government. In addition, one employee continued in Upward Mobility College.

4. Reports, Analysis, and Presentations Section. The primary function of the Section is to satisfy the information requirements of NIH and PHS centralized extramural activities. In fulfilling this function, the Section utilizes the IMPAC system as well as other data sources. Its responsibilities include: design, maintenance, and operation of computer reporting systems; training and technical assistance in data retrieval; planning and coordination of NIH responses to annual surveys covering Federal obligations for R & D; preparation of formal publications such as the PHS "Blue Books" and the NIH Basic Data Book; statistical analysis to compile and present visual material dealing with extramural trends or other topics; and the development and implementation of special evaluation projects. This Section also works closely with the Data Processing Section in maintaining and extending the IMPAC system and has direct responsibility for establishing institution classifications and related computer files, as well as ensuring the accuracy of selected key data items for publications or reports.

Publications. The following volumes of the annual multi-volume series on PHS Grants and Awards were issued:

- (1) Public Health Service Grants and Awards, Part VI, FY 1973 Health Services and Mental Health Administration. (DHEW Publication No. (NIH) 74-500).
- (2) Public Health Service Grants and Awards, Part I, FY 1974 and FY 1974. Research Grants. (DHEW Publication No. (NIH) 75-494).
- (3) Public Health Service Grants and Awards, Part III, FY 1974 and FY 1973/1974. Research and Development Contracts. (DHEW Publication No. (NIH) 75-496).
- (4) Public Health Service Grants and Awards, Part IV, FY 1974 and FY 1973/1974. Health Planning and Health Services Grants. (DHEW Publication No. (NIH) 75-497).

Data for the pocket reference book, Basic Data Relating to the NIH-1975 were compiled in cooperation with the NIH Office of Program Planning and Evaluation. This publication presents information on the programs and resources of the NIH.

Special Statistical Presentations. The Section compiled and analyzed extramural program statistics for fiscal year 1967-1974, and participated with the Chief, Statistics and Analysis Branch, in developing a set of overhead projection slides illustrating key extramural trends. These slides were presented formally to the Director, NIH, and other officials in August 1974, and subsequently to various additional audiences. The data were also issued with an accompanying analysis, in a chart-book entitled NIH Extramural Trend Fiscal Years 1967-1974 prepared for administrative use.

Reporting Activities. There are several major reporting activities which are recurring or cyclical and consume a large portion of the man-hours available in this Section. The annual survey conducted by the National Science Foundation, entitled Federal Funds for Research, Development, and Other Scientific Activities, is coordinated and prepared by this Section for the entire NIH. In general, the survey covers all the NIH intramural and extramural research activities for the past fiscal year along with estimated obligations for the next 2 fiscal years by performer, field of science, geographic area, basic and applied research and development, and combinations of the above. A segment of the report is also devoted to "Scientific and Technical Information Activities."

The CASE Report summarizes support to institutions of higher education and other nonprofit organizations. The NIH response to this survey is coordinated and prepared by this Section. It requires an institution-by-institution report of all NIH extramural support, by program, for most nonprofit organizations, with an individual report for each health professional school. In addition, data by field of science grouping and program are also requested for institutions of higher education.

The Section assisted other PHS agencies by compiling their CASE Reports for those programs that are regularly processed by DRG.

Obligations for Medical and Health-Related Research and Training Activities is an annual survey of all Government-sponsored medical research and training. The NIH response to this survey is also coordinated and prepared by this Section and requires data on intramural and extramural research and development by field of science, performer, programs, and state. Additional NIH data required include manpower statistics related to graduate training grants, fellowships, and research career program awards by degree sought, institution, field of science and institutional versus individual support.

At the beginning of each review cycle for research and training grant applications, statistical reports are prepared which present data on the number and dollar value of applications received for review. The presentation is by institute, fiscal year of support, and type of application. Copies are distributed to each institute/division. In addition, statistical tables showing summaries of initial review group actions on research and training grant applications are prepared twice during each review cycle for use by the Division of Financial Management, the institutes/divisions, and the Office of Research Manpower, DRG.

The Section supplies material each month for the NIH Management Data Book, published by the Associate Director for Administration to provide top management with a comprehensive view of the resources, status, and trends of major programs and operations.

Inquiries. The Section responds to hundreds of requests for information each month from Federal agencies, NIH officials, other Government and non-Government organizations. These requests are primarily for statistical and analytical information concerning the NIH extramural programs and characteristics of grantee institutions contained in the IMPAC system. The response to these

inquiries frequently requires analysis and compilation of historical data covering several years, design of special computer reporting files, providing consultation services to requesters concerning available data, and assisting in developing specifications for the output. The Section is responsible for supplying magnetic tape extracts from the IMPAC system to several institutes and outside organizations for special research projects, or as inputs to existing management information systems.

The Section has devoted considerable effort to the development of shelf, or reference listings, unpublished reports, and microfiche, to answer routine inquiries covering support to individual investigators or specific institutions. The Inquiry and Reporting System (a computer software facility) is the primary method for data extraction, manipulation, and hard-copy presentation requests. More than 9,000 queries were processed by the Section during fiscal year 1975.

Institutional Research. The Section has the responsibility for establishing and maintaining the Institution Profile File (IPF). The IPF is the central registry of names, locations, geographic and other selected data for organizations participating in the Public Health Service extramural programs. This file is the single source for organizational information established to assure uniform reporting and to eliminate the necessity for storing similar information in individual grant and award files. In fiscal year 1974, over 1,000 new institutions were added to the IPF. The IPF now contains about 21,500 records on institutions participating in NIH programs, as well as the programs of other agencies of the Public Health Service.

Annual Manpower Report. The Section participated in planning and designing the annual report form for personnel working on NIH research grants. This report will supply needed information on the manpower used in the performance of biomedical research funded by NIH. It will build upon and supplement the data from the 1970 manpower sample survey conducted by the Section. The initial distribution of the form to principal investigators and program directors was made in December 1973.

The Section has coordinated responses to grantee correspondence concerning completion of the form, and also has helped to solve processing and systems design problems. A computer file containing data for fiscal year 1973 grants was developed by the Section during fiscal year 1975.

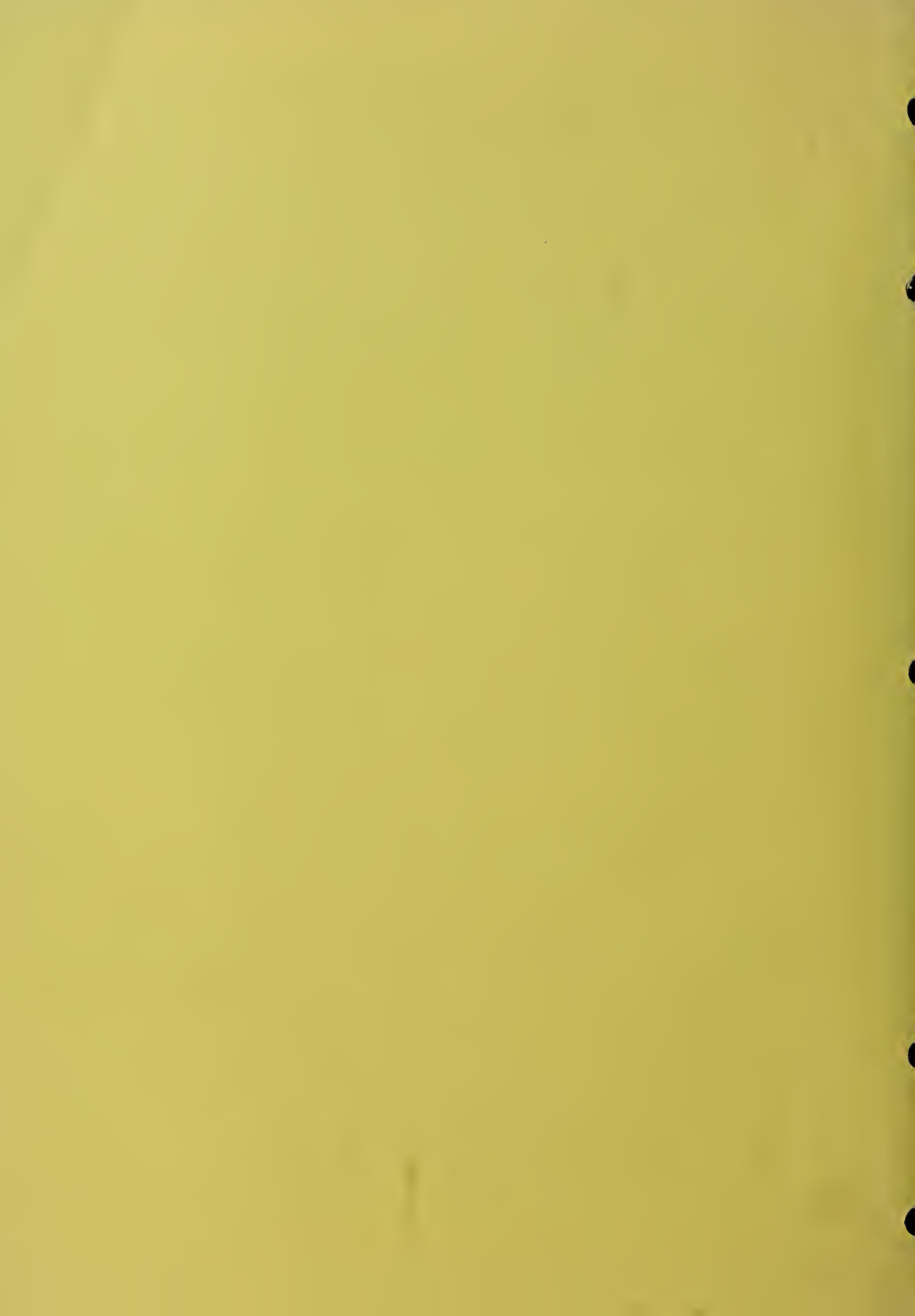
Research Grant Expenditures. A computerized data base of the Report of Expenditures (ROEs) for fiscal year 1972 NIH research grants was established. The data base combines, with pertinent data from the IMPAC file, information reported to NIH on the ROE form by grantees. Data input and table programming were performed by a contractor funded under the NIH Health Evaluation Program.

Retrieval Methodology. Two basic IMPAC Inquiry and Reporting System (IRS) courses were offered by the Section. A total of 45 persons attended these courses. IRS is the primary instrument for extracting and reporting IMPAC data.

About eight consultations are handled each day for DRG and institute/division personnel needing assistance in debugging queries, developing more advanced queries, and applying new techniques.

Retrieval Applications and Procedures. RAP was continued as an informal, technical series to provide users with accurate information and instructions on how to apply new or more efficient retrieval procedures, and to correct recurring IRS problems. About 60 copies of each issue are distributed to DRG and institute/division personnel responsible for compiling IMPAC data.

Graphic Arts. Approximately 3,000 pieces of graphic art work and photographics were completed by the Illustrator in fiscal year 1975. This is a considerable increase over the 1,100 pieces of work completed in fiscal year 1974. The bulk of this work included: cover designs, charts, certificates, slides, signs, visuals, special exhibits, and illustrations for flyers and handbooks. Other major assignments involved the development and preparation of slides for various statistical presentations by the Director, NIH, and other officials. The Illustrator was also responsible for the artistic preparation and assembly of the chartbook entitled Extramural Trends, Fiscal Years 1967-1974.



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***DIVISION
OF
RESEARCH
GRANTS***

ANNUAL REPORT

Fiscal Year 1976

United States National Institute of Health
Division of Extramural Grants
Report of research activities

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HIGHLIGHTS

The Division processed 32,222 applications—a 9 percent increase over fiscal year 1975.

To improve management of the 52 study sections, they were grouped into four areas: Clinical Sciences Review; Biomedical Sciences Review; Social and Behavioral Sciences Review; and Special Review.

Five workshops sponsored by the study sections were held during the year: mass spectrometry; steroid receptors; intracellular parasitism; obesity; and membrane function and structure.

Sixteen Grants Associates, selected from a field of 207, participated in the Program. Efforts are being made to interest more women and minority group members in the GA Program.

The Division continued to manage the NIH Inventory of Clinical Trials.

A study on new principal investigators showed that the number who are women increased substantially during the past 3 years.

The Division developed and installed a new data capture system, and modified the Manpower Report form.

The feasibility is being determined of establishing a system by which CRISP system data base can be made available via remote terminals to institutions throughout the country.

Computer preparation of the Resumé of Transactions was begun.

A link between the Division of Financial Management's Central Accounting System and the IMPAC system was placed in operation for Research and Development Contracts similar to that for research grants.

For the first time, the publication, "Rosters with competencies of NIH Initial Review Groups," was prepared by computer from the Committee Management Information Systems file.

A computer system has been put in operation for payback monitoring required under the National Research Service Award Act.

The Division observed National Secretaries Week with a seminar and the NIH "Women in Science" week with a coffee for DRG's women.

OFFICE OF THE DIRECTOR

Senior members of the OD staff continued throughout the year to develop and maintain contact with the academic and scientific communities through participation in many scientific meetings, including the American Society of Parasitology, New Orleans, LA, November 8-14; Association of American Medical Colleges, Annual Meeting, Washington, D.C., November 4, and the AAMC Group on Business Affairs (Southern Region) Nashville, Tennessee, January 29-30, and (Northeast, Southern, Mid-West and Western Regions) Hot Springs, Arkansas, April 28-30; Association of Independent Research Institutes, Pasadena, CA, September 19; Association for Research in Vision and Ophthalmology, Sarasota, Florida, April 27-29; Children's Hospital Medical Center, Boston, MA, October 15; Council of Graduate Schools, Atlanta, GA, December 1-3; Eastern Society of Teachers of Oral Pathology, National Naval Dental Center, Bethesda, MD, October 18; Federation of American Societies for Experimental Biology, Anaheim, CA, April 11-16; Harbor General Hospital, Professional Staff Association, Torrance, CA, April 9; Mid-western Association of Graduate Schools, Chicago, Illinois, March 29-30; North Carolina State University, Raleigh, North Carolina, February 3; Purdue Research Foundation, Lafayette, Indiana, September 12; Southern University, Baton Rouge, LA, May 8; University of Southern Colorado, Pueblo, Colorado, May 11; University of Wisconsin Workshop for New Deans, July 22; Washington State University, Pullman, Washington, February 22-23; and the Western Association of Graduate Schools, Monterey, CA, March 7-9.

The Director sponsored a seminar for DRG secretarial and supportive staff during National Secretaries Week, and gave a coffee to honor DRG's women as part of the NIH "Women in Science" celebrations, April 26-May 7.

The Director is a member of the Coordinating Committee on Program Mechanisms.

The Deputy Director and the Associate Director participated in the STEP Module on Sex-Related Attitudes and Behaviors in Work and Career Development held in Columbia, MD, September 17-18.

The Deputy Director is a member of the Executive Committee for Extramural Affairs; the NIH Forms Clearance Review Committee; the Editorial Advisory Committee for the Thirteenth Edition of American Men and Women of Science, and the NIH/ADAMHA/HRA Steering Committee for the NAS/NRC Research Manpower Study. He represents DRG at the meetings of the Collaborative Program Directors, and is the principal DRG contact point for the President's Biomedical Research Panel.

The Deputy Director is Chairman of the Subcommittee of ECEA on Manpower Utilization/Productivity; the NIH Grant Forms Review Committee; the NIH Coordinating Committee on Protection of Privacy; the Committee to Review Legislation and Policy Relating to the Freedom of Information and Privacy Acts; and Vice Chairman of the Grants Associates Board.

The Associate Director participated in public hearings concerning the NIH Grants

Peer Review System held in Chicago, Illinois, February 11; San Francisco, CA, February 19, and Bethesda, MD, February 26. He also attended the Senior Staff Seminar at Airlie House, Warrenton, VA, June 21-23.

The Associate Director is a member of the NIH Executive Committee for Extramural Affairs; ECEA Subcommittee on Research; ECEA Subcommittee on Training; NIH Coordinating Committee on Minority Research and Training; Committee for Development of Peer Review Regulations; Action Committee on Review of R&D Contract Proposals; NIH Grants Peer Review Study Team; Subcommittee on Technical Evaluation of R&D Contract Proposals, and the Executive Secretaries' Review Activities Committee (co-chairman).

The Division's formal employee training program continued throughout the year to further the career needs of the staff. Twenty-one employees attended Federal City College under the Upward Mobility Program and two graduated in the spring. The Personnel Office received 299 applications for training courses. Of these, 217 employees completed training programs and 29 courses are still in progress. There were also 35 employees who signed up for the Staff Training Extramural Program (STEP) modules.

TOP (The Opportunity Program) Committee has continued to introduce itself to new DRG employees. This practice, together with TOP inclusion in the DRG orientations for new personnel and the use of the TOP Line, has assured greater exposure of the program to employees. The Committee has encouraged the use of the TOP Box for questions to be answered in Top Line of the Director's monthly memorandum, but there have been few inquiries. There has, on the other hand, been an increase in contacts between Committee members and DRG employees, mostly on job dissatisfaction and lack of job mobility. This has resulted in greater involvement by DRG Personnel Office and the availability of the job hunter's manual, "What Color is Your Parachute?"

TOP Committee invited the DRG Personnel Officer to meet with the group to pose several questions asked repeatedly by DRG employees, and to suggest a series of meetings regarding the merit promotion plan, job classification, and so on, in the hope that this would reduce the number of questions.

The brochure, "DRG is People" is still being revised. As one major section is outstanding, the Committee recommended that the sections already completed be forwarded for printing in loose leaf binder form. Updates and additions could then be made as needed without revising the entire document.

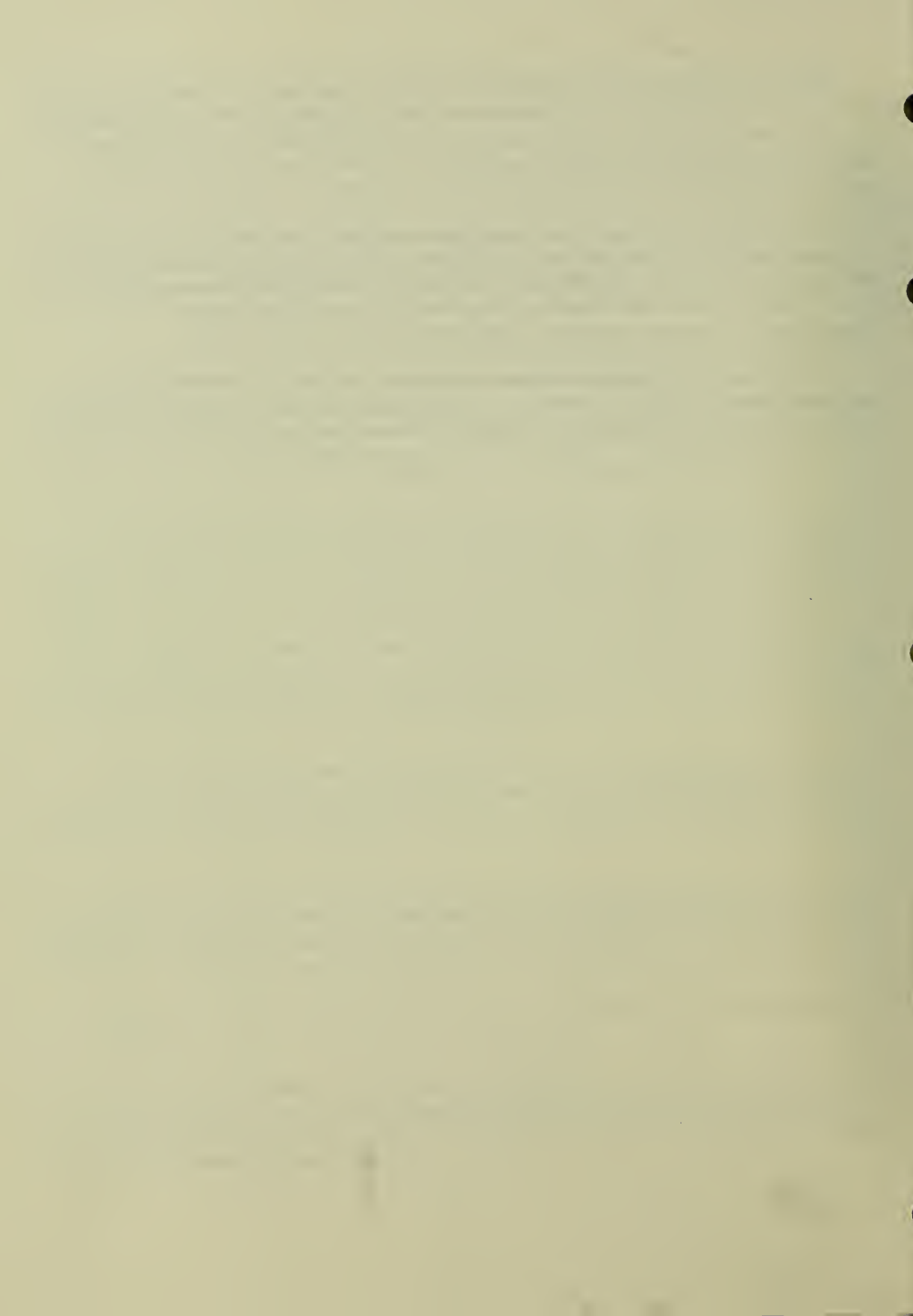
The training outcome study proposed last year is currently with the Personnel Office for completion.

The DRG-EEO Counselor participated in the NIH EEO Advisory Council functions and activities including bi-weekly council meetings, monthly Counselor Committee meetings, the annual NIH orientation for new EEO counselors, and several of the NIH STEP Committee Continuing Education Program Modules.

The Counselor met with TOP Committee on a continuing basis, and attended the DRG Director's Staff Meetings. The Counselor participated with members of TOP Committee in a periodic 1-day orientation of DRG personnel in office functions, and in several Special Management Workshops and Sessions conducted by the NIH Executive and Management Development Branch.

The Counselor maintained a continuing open-door policy regarding opportunity for counseling on equal opportunity and discrimination procedures, and conducted several informal interviews and conferences with Division personnel regarding the new NIH Merit Promotion Plan, career ladder opportunities, training and participation in the Upward Mobility Program, and other training and education opportunities.

The Counselor attended the DRG functions held during National Secretories Week, and participated in the Director's "coffee" held to honor all women employees of DRG in conjunction with the special NIH "Women in Science" program.



GRANTS ASSOCIATES PROGRAM

The Grants Associates Program, completing its 14th year, has graduated 106 Health Scientist Administrators: 95 men; 11 women; 14 minority group members. Thirty-six participants came from Federal agencies, including the NIH.

During the year under review, 16 GAs, including 3 women and 1 minority group member, were in the Program, selected from 207 applicants.

To encourage more women and minority group members to become aware of the program, a subcommittee, chaired by a former GA member, submitted Affirmative Action recommendations to the Board, which has forwarded them to ADERT for approval, recommending that a program announcement (not a recruitment advertisement) be placed in selected newsletters of scientific organizations composed predominantly or exclusively of women and minority groups.

The Board has refined the Program's mission statement stressing the recruitment and training objectives, and has drafted a revision and update of the GA Program brochure to be used in recruiting. The revision fully describes the program and the qualities of the candidates it seeks. The Board also drafted a GA Program Handbook for both Board members and GAs, summarizing the current policies and procedures of the GA Program as well as providing a useful orientation guide for new Board members and GAs.

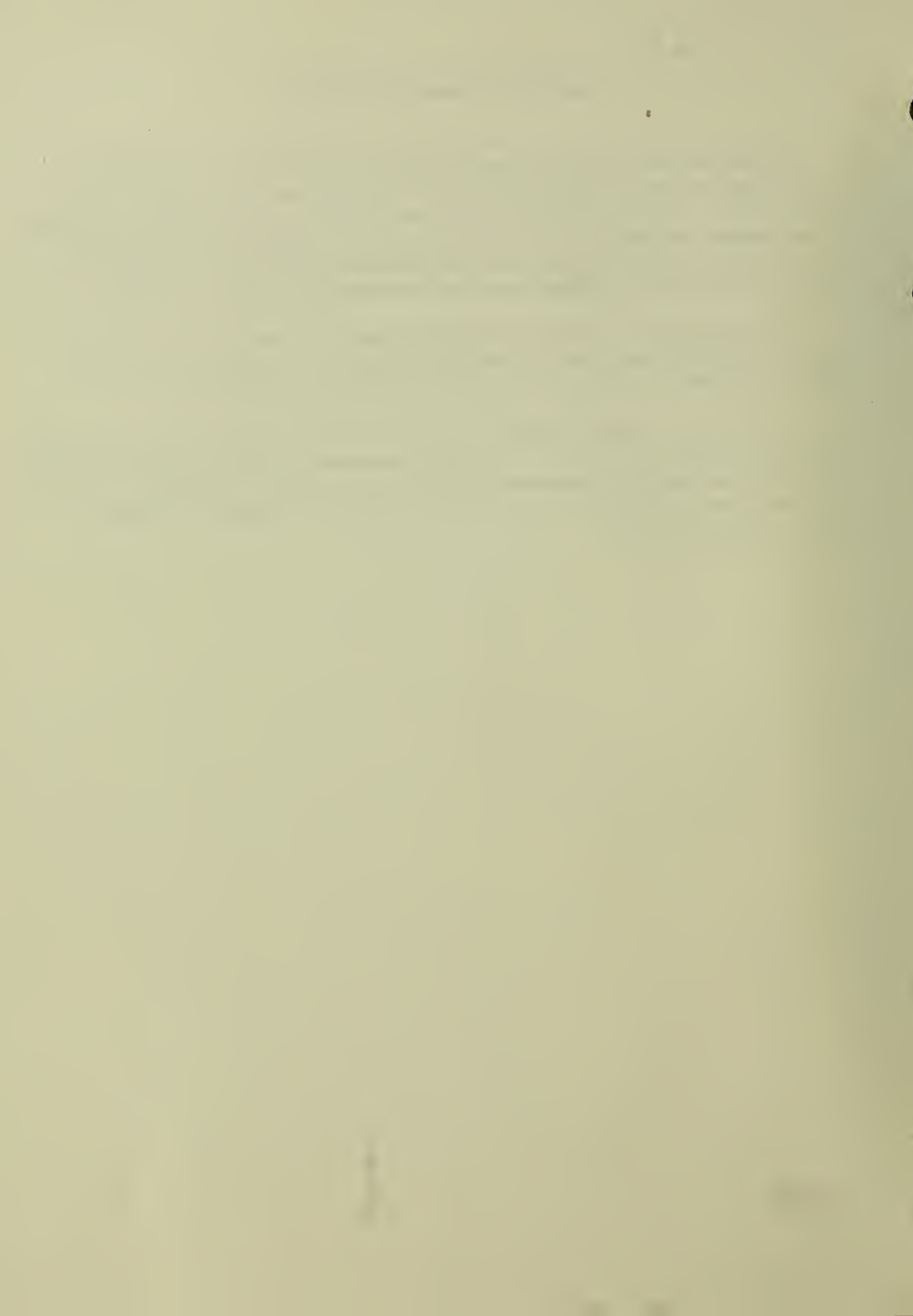
The Seminar Series this year has been more structured and has had more continuity between topics. Further, in advance of each seminar, GAs and others in regular attendance have been identifying specific areas they would like brought into focus. The speakers are informed of these areas in advance of the seminars. By combining requests with the speaker's selected topics, maximum information has been provided and duplication of effort reduced. This year, for the first time, credit was given for the number of training hours spent in seminar participation.

OFFICE OF GRANTS INQUIRIES

The workload during the year under review was particularly heavy. Routine mail and telephone requests for information, publications, and forms of all kinds were at an all-time high. In the latter months of 1975, there was an unusual demand for information and application forms for the January 2 receipt date for fellowships and training grants. To keep abreast of the workload, the Office has endeavored to streamline its operations to insure that time spent on correspondence and record keeping is kept to a minimum.

The Office supplied materials for the NIH exhibit in the Department's Bicentennial Exhibit and for a National Library of Medicine exhibit, but continued restrictions on travel kept the DRG exhibit in storage again this year.

A member of the staff attended two STEP Modules and a course initiated by the OPM Training and Education Branch, served as DRG representative on the Minority and Women's Opportunity and Resources Conference Committee, and organized and directed a seminar on "Communications in the Office" for DRG secretarial and supportive staff during National Secretaries Week.



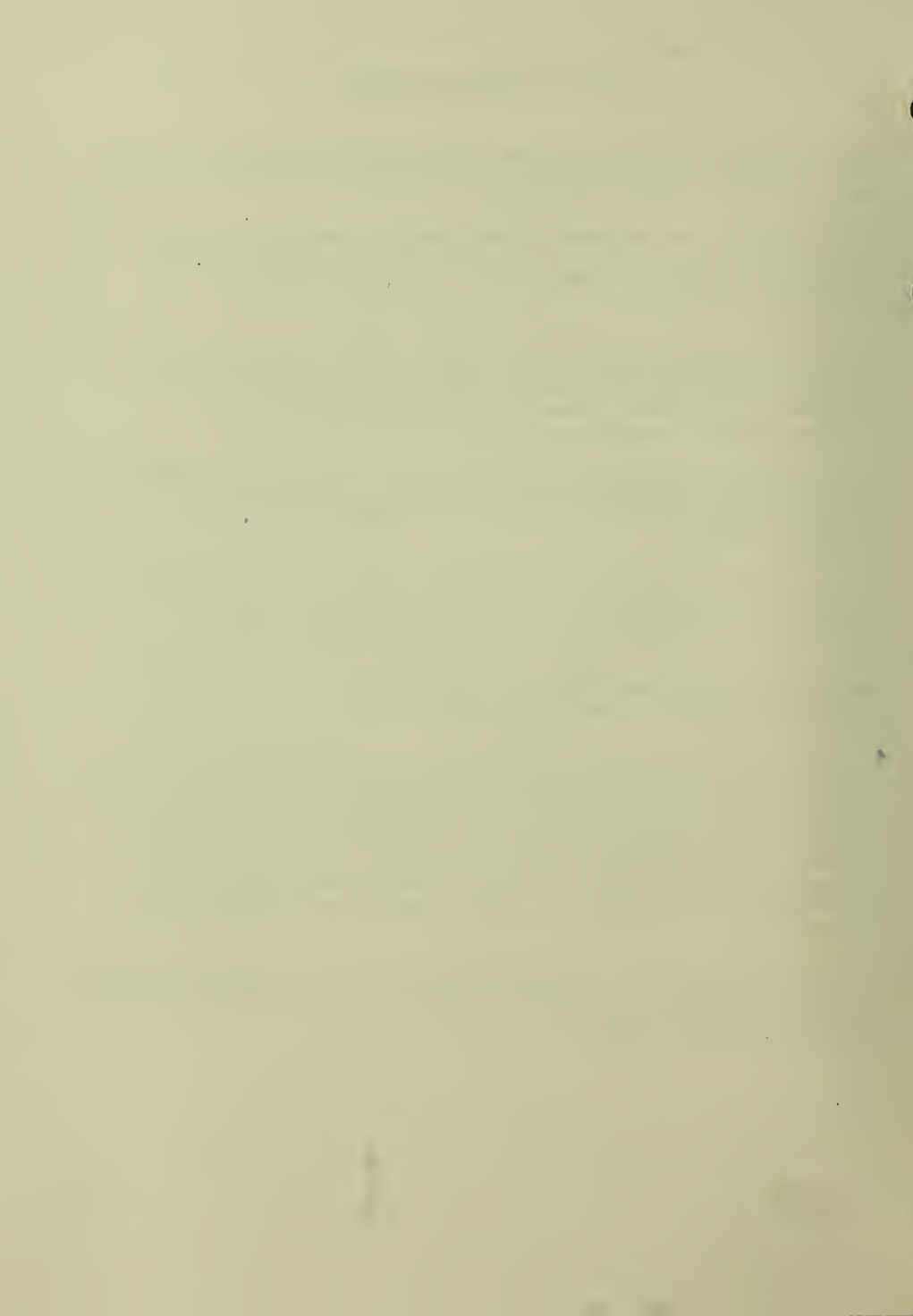
OFFICE OF RESEARCH MANPOWER

The Office of Research Manpower has been involved in coordinating NIH research training and research career programs. Examples of these activities in FY 1976 are as follows:

- (1) Worked with the Research Manpower Officer of NIH in developing training program statistics needed by the National Academy of Science for their report on Personnel Needs and Training for Biomedical and Behavioral Research.
- (2) Worked with the Research Grant Officer, NIH, on the study of the Research Career Development Award program. This included analysing how the awarding units use the award and their suggested changes in the program, and developing a comprehensive statistical report on the salaries, age and research grant support of awardees.
- (3) Initiated the clearance request on the extension of the research career program, fellowships, and training grant application forms. Updated and modified the application kits in keeping with policy and procedural change.
- (4) Responded to many inquiries from the academic community, applicants, congressional offices, and NIH staff on the policies, procedures, and status of the research training and career development programs.
- (5) Held a meeting of awarding unit operating personnel to inform them on the latest developments in the training programs. This proved very successful and will be repeated as needed.

The Office is working on such items as a revised National Research Service (NRS) Award announcement and Payback flier incorporating changes brought about by the Act extending the NRS funding authority, and proposed policy changes on such items as medical coverage for trainees and the fellowship institutional allowance. Things to be done include revision of many program forms and documents; development of statistics both projections and historical data; and revision in policy and procedures in keeping with the changes in training programs and/or administrative efficiency.

The Acting Chief is the NIH representative on the Federal Interagency Commission on Education, DRG representative on the NIH Extramural Training Advisory Committee, and has recently been appointed to the NIH Grants Management Advisory Committee.



ADMINISTRATIVE BRANCH

In a year of reorganization the following changes were made within the Branch:

- (1) The Travel Section was abolished: the voucher audit function was transferred to the Budget Office, and the section supervisor was assigned to the staff of the Branch Chief to continue her role in processing Division travel vouchers and providing guidance and assistance to DRG travelers.
- (2) The Special Services Section (word processing) was abolished and the equipment was disbursed to the various branches. Training has been made available for those who wish to use or continue to use this media to alleviate their repetitive or draft typing workload.
- (3) The Mail Room was transferred to the Office Services Section for better utilization of available manpower to meet the increasing demands placed on it by the growing volume of applications received to meet each receipt date.

Budget Office

The DRG Budget Office has assisted in administering about \$13 million for DRG operations: \$10.3 million from the NIH Management Fund and \$2.7 million from the institutes for the support of 51 study section scientific evaluation grants. The \$2.7 million was awarded among the study section chairmen; expenditures were monitored by a computer data base system which provides DRG management with up-to-date monthly cost analyses. Consultant costs were funded almost entirely from scientific evaluation grants, saving time and effort in paying consultants.

The Budget Office, in conjunction with the Personnel Office, has continued to assist the Department in updating its personnel data system. This required many changes to the data in the Department's terminal data collection system (TDCS). The personnel data system is now being used for the official employment reports to the Civil Service Commission. Future plans are to merge the system with the payroll data system for pay purposes.

During the year under review approximately 5,000 audit vouchers were processed, totaling over \$2 million for payment of the consultants serving on the various study sections.

Office Services Section

The Office Services Section each month assembled and handled an average of 10,000 grant application kits of all types and mailed 9,500 miscellaneous packages. The Section also provided planning and assistance in accomplishing several major moves within the Division and acquired and maintained equipment, furniture and supplies, and provided duplication services for Division personnel.

The Mail Unit received and processed approximately 32,000 grant applications of all types, and a large volume of supporting documents, letters and publications during the year.

REFERRAL BRANCH

The Referral Branch receives and reviews applications for PHS research and training support to determine referral to the appropriate PHS health agency and to the appropriate NIH initial review group; develops criteria for determining appropriate assignment of applications within the NIH by program area and by competencies of review groups; proposes uniform instructions to applicants for proper preparation of applications; extracts and records preliminary data from such applications; and serves as the information center for applications pending review.

The number of applications assigned and processed by the Referral Branch in fiscal year 1976 exceeded the previous record year, fiscal 1975. Competing and non-competing applications reached 32,222, up more than 9 percent from the previous year's total of 30,167. Almost 79 percent of the research applications were assigned to the NIH.

During the year, the Assignment Section of the Referral Branch referred 90 percent of all competing applications to the Scientific Review Branch for initial review for scientific merit.

A table showing the distribution of applications processed in fiscal year 1976 is appended to this report.

Two new innovative procedures were introduced in the Project Control Section that have enhanced the services the Section affords to DRG and awarding component staff. One is a receipt card system for non-competitive continuation applications, and the other a microfilm tape, provided by the Statistics and Analysis Branch, that lists grant applications by number. Information on grantee applicants is now readily available from the Section either by grant number or name of applicant.

The Chief gave a presentation on "Central Receipt and Referral of Applications" to the Pharmacology Research Associates meeting, sponsored by NIGMS, in Bethesda, Md., March 3, 1976, and on "Receipt and Assignment of Grant Applications" to a meeting of the Eastern Society of Teachers of Oral Pathology, sponsored by the National Naval Medical Center, in Bethesda, MD, October 18, 1975, and attended the Civil Service Commission's Executive Seminar on Science, Technology and Public Policy at the Oak Ridge Executive Seminar Center, September 7-19, 1975.

The Assistant Chief for Special Programs attended the NIH Extramural Collaborative Program Retreat in Ocean City, MD, October 22-24, 1975.

The Assistant Chief for Research attended the Civil Service Commission's Congressional Operations Seminar for Managers at the CSC General Management Training Center, Washington, D.C., July 7-11, 1975, a seminar on "Problem Solving and Decision Making for Mid-Level Managers" at the DHEW Career Development Institute, Washington, D.C., December 1-5, 1975, and the NIH Extramural Collaborative Program Retreat in

Williamsburg, VA, September 24-26, 1975.

Two members of the Project Control Section staff served on TOP Committee.

In addition to 5 attending the Upward Mobility Program, 14 Project Control Section staff participated in several training courses during the year.

APPLICATIONS PROCESSED BY REFERRAL BRANCH, OADSR
 March 16, 1975 - March 16, 1976

Council	November 1975	March 1976	June 1976*	Total FY 76
		<u>COMPETING</u>		
Types 1, 2, 3				
NIH	3,524	4,568	194	8,286
FDA	20	41	1	62
HS	72	90	113	275
OH	22	34	--	56
ADAMHA	886	700	201	1,787
Subtotal	4,524	5,433	509	10,466
Construction	7	11	--	18
PL 480	9	4	3	16
Training	60	502	862	1,424
Career Development	260	316	2	578
Fellowships	952	16	2,575	3,543
Subtotal	1,288	849	3,442	5,579
TOTAL	5,812	6,282	3,951	16,045
		<u>NON-COMPETING</u>		
Type 5	5,080	4,560	5,193	14,833
Interim (Administrative)	529	377	372	1,278
Cross Fiscal	33	29	4	66
TOTAL	5,642	4,966	5,569	16,177
COMPETING	5,812	6,282	3,951	16,045
NON-COMPETING	5,642	4,966	5,569	16,177
GRAND TOTAL	11,454	11,248	9,520	32,222

*The regular June councils were deferred to October 1976. Figures represent special council meetings for consideration of only fellowship and other special programs. If the change in fiscal year and council schedule had not been made, the number of applications for the June council would have totaled more than 8,000.

RESEARCH ANALYSIS AND EVALUATION BRANCH

The Research Analysis and Evaluation Branch continued to be used as a central source of information on the scientific content of NIH extramural activities, and for analyses of trends having to do with characteristics of NIH grant programs. Major efforts included the FY 1975 Inventory of Clinical Trials, an updating of the study on "Support of New Principal Investigators by NIH", an analysis of the NIH support of research in immunology, research relating to diabetes, several reports prepared for the President's Biomedical Research Panel, and assistance for two study groups of the NAS-NRC.

The NIH Inventory of Clinical Trials is managed by the Branch, which is responsible for establishment and maintenance of a computerized information system and for publication of the annual inventory. Reports and analyses are prepared in response to questions and requests from the Office of the Director of NIH and others. The inventory form for collecting data was revised and cleared for use in the field.

The study on new principal investigators, which was published in *Science* in 1973, was updated to include the period FY 1973-1975. Presentations of the data were made to the NIAMDD and NHLI Advisory Councils, and to the ECEA. It was shown that both the number and proportion of all research project principal investigators who were new to NIH in FY 1974 and FY 1975 increased substantially. Also the number and percentage of new principal investigators who are women increased sharply during the last 3 fiscal years.

Studies are in progress to classify the NIH support of research in immunology and virology. Several staff members have been participating in the task.

A report on NIH support of diabetes research, FY 1974, was prepared and RAEB staff members supplied detailed information and assistance relating to diabetes research for the National Commission on Diabetes.

A report on NIH support of research in toxicology summarized the nature of the research and tabulated the amounts awarded by major categories, by mechanisms of support and by awarding units.

Reports prepared for the President's Biomedical Research Panel included NIH support of research in the behavioral and psychological sciences, research on reverse transcriptase, nutrition and long-term trend data for the support of basic and clinical research.

Assistance provided to NAS-NRC study groups included the retrieval of data from IMPAC and CRISP systems relating to research on human development, and collaboration with the Reports, Analysis and Presentation Section of SAB to summarize NIH initial review groups and the number of awards by discipline-oriented and problem-oriented review groups over a several year span in NIH history.

Beginning with FY 1976 the NIH Central Scientific Classification System (CSCS) was

revised to simplify the classification of grants by scientific field or discipline (with broader categories now), to include more detailed information as to whether research materials were of animal or human origin, and to include other categories of research materials. The revision of 1971 remained constant for 5 full fiscal years, 1971-1975. The CSCS system was initiated in 1966. The Branch continues to code research contracts and grants by the Central Scientific Classification System.

The Branch Chief was designated project officer on a contract to support a group within the World Health Organization to prepare an International Nomenclature of Diseases. Three U.S. Public Health agencies (NIH, NIMH, and NCHSR) are jointly supporting the project, which is expected to take 4 years to complete. He was also a member of the NIH/NIMH GCRC-BID Clinical Coordinating Committee and is a liaison member of the NIH Clinical Trials Committee.

Using DRG information sources, the RAEB prepared reports or supplied data on a variety of other subjects including the following examples:

- Clinical genetics
- Radiation research and nuclear medicine
- Endocrinology
- Clinical research in New York City
- Biological effects of solar radiation
- Longevity of research grants
- Fields of training of NIH fellows and trainees by B/I/D program area
- Clinical trials involving dialyzable transfer factor
- Chemistry research
- Social sciences research
- Arctic research
- NIH cited nutrition research in the published literature

The Branch uses its computer terminal to provide MEDLINE assistance to users in the Westwood Building. A number of DRG executive secretaries and institute personnel have become regular users. The Branch also provides assistance in the use of other available on-line information systems such as TOXLINE and those that might be needed by DRG personnel.

The "Schedule of NIH Conferences" is coordinated, typed and distributed by the Branch. The schedule is printed quarterly. Follow-up reports of previously held meetings are included to provide information on the results of conferences and publication data for published proceedings.

RAEB staff members have been involved in a variety of assignments outside the Division. One is a member of the Grants Associates Board and the Chairman of its subcommittee on training, and also chaired a committee (Data Management of Grants and Contracts) at the Extramural/Collaborative Retreat in Ocean City. The committee dealt

principally with the information needs of the IMPAC system as it pertains to contracts. Another staff member is also serving on the committee, while another serves on the NIH Library Advisory Committee.

One RAEB employee graduated from Federal City College in the NIH Upward Mobility Program.

SCIENTIFIC REVIEW BRANCH

The Scientific Review Branch recommends policies and procedures governing technical review of applications; administers the 52 study sections that provide scientific review of NIH research grant, fellowship, and research career development award applications; explains applications, and interprets preliminary recommendations to the national advisory councils; conducts the search for the most qualified and representative individuals to serve as members of initial review groups; stimulates and coordinates the activities of NIH study sections or committees in surveys of research fields to determine current status of research and need for further development; and coordinates scientific review activities with appropriate representatives of components of the NIH.

The number of applications assigned to the Scientific Review Branch for review for scientific merit during fiscal year 1976 exceeded the previous record year, fiscal 1975. Competing and non-competing applications reached 32,222, up more than 9 percent from the previous year's total of 30,167. Almost 79 percent of the research applications were assigned to the NIH. During the year, the Scientific Review Branch provided initial review for scientific merit for more than 90 percent of the NIH competing applications.

The table appended to the Referral Branch report shows the distribution of applications processed in fiscal year 1976.

As a result of the increase in the workload, a reorganization for management purposes was effected in the Scientific Review Branch. The 52 study sections have been grouped into four areas: Special Review; Clinical Sciences Review; Biomedical Sciences Review; and Social and Behavioral Sciences Review. The purpose of these groups is to bring together those study sections which, broadly speaking, deal with related scientific areas. The supervisors of these groups have the authority to act for the Chief of the Branch in directing the operations of their respective sections.

The following publications were prepared by staff:

- (1) A. Lee Dellon, M.D., Thomas M. Tarpley, D.D.S., M.S., and Paul B. Chretien, M.D.: "Histologic Evaluation of Intra-Oral Skin Grafts and Pedicle Flaps in Humans." Accepted for publication in the Journal of Oral Surgery.
- (2) Paul N. Baer, D.D.S., and Thomas M. Tarpley, Jr., D.D.S., M.S.: "Long Term Effects of a Liquid Diet on Salivary Glands, Periodontium, and Palatal

Keratinization." Journal of Dental Research, Vol. 55, #3, May-June 1976.

- (3) Robert O. Wolf, M.A., D.D.S., Michael E. Ross, M.D., and Thomas M. Tarpley, Jr., D.D.S., M.S.: "Changes in Serum Salivary Isoamylases in Sjögrens Syndrome." Accepted for publication in the American Journal of Clinical Pathology.
- (4) Thomas M. Tarpley, Jr., D.D.S., M.S., and Joseph S. Giansant, D.M.D., M.S.D.: "Adenoid Cystic Carcinoma Analysis of 50 Oral Cases." Accepted for publication in Oral Surgery, Oral Medicine, Oral Pathology.
- (5) McCutcheon, R. S.: "Over the Counter Drugs." PharmIndex 20:11A, 1975.
- (6) McCutcheon, R.S.: "Psychopharmacology—Mood Altering Drugs." PharmIndex 21:2A, 1976.
- (7) McCutcheon, R.S., Casarett, L.J. and Doull: "The Basic Science of Poisons." Toxicology. I. MacMillan Publishing Co., Inc., New York, 1975.
- (8) Lipkin, Bernice Sacks, "The Role of the Study Section in the NIH Peer Review System." Behavior Research Methods and Instrumentation. In press.
- (9) Lipkin, Bernice Sacks, "Stimuli and Obstacles to the Adoption of Automated Systems: From the Perspective of Government." First National Conference on the Medicolegal Aspects of Computer Use in Health Care Delivery. In press.
- (10) Lipkin, Lewis E. and Lipkin, Bernice Sacks, "Data Type Construction and the Analysis of Complex Situations." Proc of the First International Conference on Physics in Industry, International Union for Pure and Applied Physics. In press.

Dr. Tarpley was lecturer at the U.S. Regional Naval Dental Center, San Diego Naval Hospital, San Diego, California in December 1975; the U.S. Naval Dental Center's Short Course in Oral Pathology in January 1976; the Annual Oral Pathology Course at the Armed Forces Institute of Pathology in March 1976; and for the Resident Program at the U.S. Army Institute of Dental Research in March 1976.

The following workshops were sponsored by staff:

The Medicinal Chemistry B Study Section sponsored a workshop on Biomedical Mass Spectrometry on September 12-13, 1975, in conjunction with its regular September meeting. The primary purpose of the workshop was to familiarize those members of the Study Section who are not primarily mass spectrometrists with current status of the field. Two members of the Study Section and six outside speakers covered such areas as new methods of ionization, development of new instruments and techniques, uses of stable isotopes, profiling or screening of physiological fluids using gas chromatography/mass spectrometry, and quantitative analysis of specific components of physiological fluids.

The manner of presentation and the subject matter chosen were primarily designed to increase the level of understanding of mass spectrometry in the Study Section and to aid the members in their review of applications in the area.

The Endocrinology Study Section sponsored a workshop on "Steroid Receptors" on January 22-23, 1976, in New Orleans, La. During the first session, the various methods for measuring steroid receptors in biological fluids were reviewed. This presentation was designed to inform Study Section members about the most up-to-date methodology for receptor quantification. In addition, the problems in measuring thyroxin receptors were also reviewed. This subject was included because many of the techniques used for steroid receptors were also of use in measuring thyroxin and triiodothyronine binding.

The second topic covered was the chemical changes in the receptor which have been termed activation. Evidence concerning the sight for this transformation was presented at this time.

The fractionation of steroid receptors was next reviewed. Emphasis was on currently accepted methodology for yielding receptor preparations of varying degrees of purity. Affinity chromatography and sequential chromatography were discussed. Finally, the action of receptor molecules on purified chromatin was reviewed.

In general, most of the speakers emphasized techniques and presented a critical discussion of what procedures could best be used in the future for studies of hormone action. The study section members felt that the workshop was helpful and would provide a background for grant application review.

On September 5, 1975, 63 conferees, including members of the Tropical Medicine and Parasitology Study Section, outside experts, and graduate students, met to consider the topic - Intracellular Parasitism: Status, Concepts and Speculations in Research on Leishmania and Trypanosoma cruzi. The workshop had a dual purpose: (1) to focus attention of the Study Section and the other participants on new and especially interesting aspects of intracellular parasitism, with particular reference to these two parasites, and (2) to bring together some of the most active workers in this field to exchange views directly and to speculate on promising leads and ideas. The five invited speakers, the five discussants, and others considered a wide range of research findings and potential leads on: New Approaches to the Study of Obligate Intracellular Parasites; Nature, Function and Interactions of the Host/Parasite Cell Membrane; Immune Responses to Leishmania: In vitro Macrophage Response to Intracellular Parasites, and overall aspects of the problems of intracellular parasitism. An attempt was made to find meaning and perspective in the views presented.

Concepts in this area were explored and challenged and suggestions were made for new research directions to advance the field. The workshop findings confirmed that intracellular parasitism represents the most intimate degree of host-parasite interaction readily available for study. It provides exceptional opportunities to investigate and compare physiological and immunological survival patterns, mechanisms of foreign cell

entry and protection from the host, and various host response patterns.

This conference further clarified the importance of T. cruzi and L. donovani cell infections as distinctive models of intracellular adaptation and host response. These parasitic protozoan models demonstrate excellent potential for study of delayed hypersensitivity and cell mediated immunity, investigations in the forefront of immunological interest today. The workshop gave insight into host/parasite cell structures/functions relating to establishment or prevention of intracellular infection in the host. Research on such systems may lead to discovery and/or design of inhibitors that prevent parasite penetration or entrance into the host cells. Inhibition of cell penetration would be of great interest as a new treatment approach, or as a prophylactic for the many millions of humans/animals infected with or exposed to such intracellular protozoa as Leishmania, trypanosomes, malarial agents, Toxoplasma and others. The subject is of important medical interest as it is possible that the principles determining host cell-parasite cell interactions may also govern the encounter of host cells with bacteria, viruses and even malignant cells. The evolution of highly specific patterns and mechanisms of parasitism and cell mediated immunity for the different parasites was also described.

The workshop pointed up the relatively limited understanding of host cell controls or intracellular parasites and thus the need for further research in the area, taking into account that all modern techniques must be employed in these cellular studies; cell mediated immune reactions are likely to be important aspects of these host-parasite relationships, and that for understanding and control of the whole host cell-intracellular parasite system, the structural and functional aspects of both cells together must be dealt with. Such research on intracellular protozoan parasites also promises further insight into the basic problems of metabolic controls, morphogenesis, and cell mediated immunity.

The Nutrition Study Section sponsored a workshop on obesity in Bethesda, Maryland on January 28, 1976. At an earlier workshop organized by the Nutrition Study Section in 1965, the topic of nutritional anthropometry was discussed. Since then there has been increasing interest in and use of anthropometry and of other indirect measures of body composition in nutritional assessment, nutrition surveillance, and in the study of obesity. It seemed timely to focus discussions on some of the anthropometric findings of the Ten-State Nutrition Survey and interpretations of the data with respect to obesity. Because of increasing use of aspirated samples of subcutaneous adipose tissue to derive estimates of the number and size of fat cells (adipocytes) in the human body, it is also believed advisable to examine critically this technique and related procedures involved in deriving estimates of total body fat. At the January meeting, the continuum of leanness to fatness (obesity) was emphasized by Dr. S. M. Garn in examining socio-economic and family-line aspects of obesity among populations included in recent large-scale nutrition surveys. Although a statistical definition of obesity might be agreed upon, what we really need are operational definitions based on morbidity and mortality data across ethnic and occupational groups. Dr. Jules Hirsch critically examined the techniques used to study cellularity of adipose tissue. In the ensuing discussions, it was generally agreed that estimates of the national prevalence of obesity based upon the best available techniques applicable to field studies should be derived from the next cycle of the health and

nutrition examination survey (HANES). Efforts should be exerted to examine associations between obesity, current and past, and indices of emotional and physical health of HANES participants. A major problem confronting the researcher is the lack of readily applicable techniques to determine total body fat, especially of the infant and young child. Determination of total body fat is an essential prerequisite for estimation of total number of adipocytes in the body even though some recent studies in both animals and in man suggest that cell size rather than cell number may be the mechanism controlling total body fat.

A workshop on "Membrane Structure and Function" is scheduled for June 1, 1976, at the Scripps Clinic and Research Foundation, La Jolla, California sponsored by the Pathology A Study Section. The Pathology B Study Section membership and the faculty of the University of California San Diego campus will attend. The topics to be discussed include "Arrangements of Proteins in the Plasma Membrane"; "The Mechanochemistry of Cell Membranes"; "Surface Dynamics of Normal and Transformed Cells"; "The role of Fc and C3 Receptors in Phagocytosis"; "Complement Transmembrane Channels"; and "The Interrelation of Chronic Viral Infection and Autoimmunity."

Several members of the staff attended STEP Modules and other training courses during the year.

STATISTICS AND ANALYSIS BRANCH

Fiscal year 1976 was one in which there was a continued increase in demands on Statistics and Analysis Branch services. Significant among these were the inclusion into IMPAC of selected HRA programs which were centralized during the fiscal year; the expansion of the Trainee Appointment System to include ADAMHA programs; the development and implementation of the payback system required by the National Research Services Award Act; the expansion of the CRISP system to include intramural projects; and the implementation and expansion of the AAMC/NIH Institution Interface System.

Offsetting these additional responsibilities, the Branch has developed and implemented changes designed to increase productivity and effectiveness. Significant among them were the reduction and simplification of the Manpower Report form, and the development and installation of a new data capture system. A more detailed discussion of this new system is contained in the Data Processing Section portion of this report.

The Branch is also involved in determining the feasibility of establishing a system by which the CRISP system data base can be made available via remote terminals to institutions throughout the country. If successful, this system would, at virtually no cost to DRG, reduce the number of inquiries received from outside the NIH and processed within DRG, and eliminate the need for the transmittal of CRISP data via magnetic tape to institutions. It would also significantly improve accessibility to CRISP information not only with respect to the amount of information, but would also provide for quicker turnaround.

Following the completion of a pilot study with selected medical schools and the American Association of Medical Colleges (AAMC), the Branch presented a description of the institution interface system at the November 1975 annual AAMC meeting. Following that meeting, approximately 25 institutions have requested to participate in this system. Feedback from this AAMC/NIH institution interface is contributing to improving the integrity of the IMPAC system.

Branch managers and supervisors continued their support of training and development programs for enhancing employee skills, better job performance, and career development purposes. Employee interest remained high. Although the Division found it necessary to curtail training somewhat because of budgetary restrictions, 43 Branch employees attended 27 different training courses. These included communications and office skills, administrative and managerial, editorial and publications, statistics, pre-retirement, consumer education, medical sciences, and computer-related courses. NIH-sponsored, interagency, and outside training was taken. Five SAB employees continued enrollment in the Upward Mobility College and attendant workshops and seminars. Other special training programs in which Branch employees participated included the NIH Manager Development Program and the STEP Continuing Education Program. Four employees continued in special work-study programs—three 4-year student trainees recruited under the Federal Junior Fellowship Program, and one trainee under the Project Stride Program. Plans are under way for continuation of training during FY 1977.

1. Office of Systems Planning. The Office of Systems Planning, in carrying out its assigned functions, increased its efforts to improve the NIH Extramural Central Data System and to expand services to its users. Major efforts during the year included the design and development of a tracking system to follow the payback activities of all trainees and fellows supported under the National Research Service Award Act of 1974; development of a system to provide transaction tapes on grant obligation data to the Division of Financial Management (DFM); and development of a system to enter accounting information provided by DFM on research contracts into IMPAC for reconciliation. All work was done in collaboration with the individual sections of SAB. New systems and applications are discussed in the Section reports that follow.

2. Data Processing Section

DRG/DFM Approval List Link. A new system was installed that provides for direct tape input of grant obligation data from the DRG IMPAC System to the Division of Financial Management's Central Accounting System. Following are the major steps of this system:

1. DRG prepares the Approval Lists and Notice of Grant Awarded forms upon request and sends them to the awarding units for signature.
2. At the time the Approval Lists and Notice of Grant Awarded forms are prepared, DRG creates an Approval List Data File which contains the grant obligation data.
3. Awarding units sign and return the documents to DRG.
4. DRG validates the obligation data, updates the Approval List Data File, and creates a transaction update tape for DFM.
5. DFM updates the Central Accounting System with the DRG produced tape.

DFM/DRG Contract Link. A link between the Division of Financial Management's Central Accounting System and the IMPAC System, similar to the grant link between the two systems, was placed in operation this year for Research and Development Contracts. Under this system, DFM provides the IMPAC System with monthly contract tapes that contain dollars encumbered, entity numbers, object class codes, and document numbers. This link permits reconciliation of Research Contract data between the Central Accounting System and the IMPAC System.

Resumé of Transactions. The Section began computer preparation of the Resumé of Transactions this year. Prior to implementation of this system, grant and research contract changes received in the Section had to be typed manually for dissemination of this information to the awarding units. Under the new system, whenever grant and research contract data changes are received from the awarding units, computer files are updated and the ROT is produced automatically. More timely issuances of ROTs and manpower savings in the Section have both resulted from this process.

Committee Management Information System. The publication, "Rosters with Competencies of NIH Initial Review Groups," was computer prepared for the first time this year from the Committee Management Information System file. This file contains complete and up-to-date records of all NIH advisory councils and committees and their members. The publication, which is issued for administrative use only, was produced for the Office of the Associate Director for Scientific Review, DRG.

National Research Service Awards. Under the National Research Service Award Act, all individuals receiving support for training must comply with the payback provisions required by this legislation. A computer system is being placed in operation in the Section to monitor this compliance. A record will be set for each fellow or trainee supported under NRSA. The major processing steps in this system are as follows:

- (1) DRG will make annual mailings of the Annual Payback Activities Certification (APAC) Form to each former awardee 1 month prior to the termination anniversary date and will send one follow-up if required.
- (2) DRG will notify the BID if additional follow-up is necessary.
- (3) DRG will serve as the central receipt office and will record receipt of the APAC form in its computer file forwarding the form to the BID for approval of payback service.
- (4) After the APAC form has been accepted by the BID, DRG will capture payback service information and maintain a computer record of payback obligation status on each fellow or trainee.
- (5) DRG will close the individual's computer record upon completion of the payback obligation and notify the BID.

IMPAC User's Area. Modifications were made to the IMPAC Open/Pending Master Files which provide for updating user items by means of specific bytes rather than replacement of the entire item. This reduces the amount of effort a BID must go through to update their portion of IMPAC records.

Biographic Data. The following items of biographic data for the research career (K) and fellowship (F) programs were added to the IMPAC Open/Pending Master Files:

<u>Item Name</u>	<u>Program Coverage</u>
Degree Sought	F
First Doctorate Held	F & K
Second Doctorate Held	F & K
State or Country Code	F
Birthdate	F & K
Baccalaureate or Masters Held	F & K
Academic Level Code	F

Incorporation of this data into the master files permitted disestablishment of the Research Career/Fellowship Biographic File.

IBM 3740 Data Entry System. An IBM 3740 Data Entry System has been installed in the Section. This system uses IBM diskettes for entering and storing information. With a combination of IBM diskettes and data stations, source data capture for grants and research contracts has been decentralized. This decentralization has the advantage of combining data processing and data capture in a single office. Introduction of this system has significantly increased the speed and accuracy of data collection.

NCI Research Contracts. A system was established in the Section whereby NCI research contract documents are routed directly to the IMPAC System's Control Point. NCI contract data are then combined with other institute contract data in the IMPAC System for report production. As part of the above process, the Section reviews and verifies the NCI data.

CSCS Conversion. The IMPAC Open/Pending files were converted to a revised Central Scientific Classification System (CSCS) coding structure. The revision was made to emphasize major categories of research and to provide a simpler coding structure. The revision was made at the request of the Office of the Director, NIH.

3. Research Documentation Section (RDS). The Section maintains a computerized disk storage and retrieval system, CRISP (Computer Retrieval of Information on Scientific Projects) containing scientific data on research grants and contracts supported by the Public Health Service, as well as NIH and NIMH intramural research. Through this medium, RDS functions to service ad hoc and recurring requests for scientific information from Government administrators, scientists, and information personnel for purposes such as analysis and evaluation of research programs, specific scientific areas, and preparation of reports. In similar fashion, the Section responds to inquiries from grantee and non-grantee institutions and scientists, the news media, and other non-Government sources engaged in, concerned with, or reporting on medical research.

RDS publishes annually as a "spin off" of the CRISP file:

- (1) The Research Grants Index which is prepared in two volumes. Volume I is a scientific subject index with associated project numbers and titles. Volume II contains three sections (a) project identification data (b) research contract identification data and (c) project investigator information.
- (2) The Medical and Health Related Sciences Thesaurus, the vocabulary authority list of subject headings used by the RDS Indexing Staff in indexing the research projects.

CRISP has the query capability of providing, in several optional formats, information ranging from a straightforward listing of research pertaining to a single scientific subject term to a compendium of projects relating to any number of terms, using a combination of

Boolean search logic. Select queries for providing individual institutes with tapes or hard copy of their projects by subject, project (subproject) number of investigator, and individual institute listing or projects with indexing terms (Scientific Profiles) can be provided. Query capability limiting subject searches or Scientific Profiles to certain program (R, M, N, P, S, Z) or IPF Codes is available.

A specially designed CRISP subroutine provides for furnishing grantee institutions or NIH institutes possessing appropriate computer capabilities specially formatted tapes with which they can search the scientific subject content of their own research grant and contract records. This subroutine called CESI (CRISP Extract System for Institutions/Institutes) is updated monthly and can furnish select tapes on an ad hoc or recurring basis.

In addition, performing subject searches and producing Scientific Profiles or Investigator Listings on subprojects of program projects, center and other large grants are a unique feature of the CRISP System.

Addition of Intramural Research Projects to CRISP. In cooperation with the NIH OD, as well as NIH and NIMH intramural staffs, the Section has developed a numbering system for individual intramural research project reports compatible with that for PHS-supported extramural research. This has made possible the incorporation of keyword indexing for these reports into the CRISP System data base. The result is the establishment of a system that will allow for uniform reporting of intramural research, using the full capacity of Boolean logic heretofore only available on queries for information on extramural research.

Research Grants Index. Linotron tapes for the fully automated printing of this two-volume set were submitted to the Government Printing Office in December for publication (DHEW Publication No. (NIH) 76-200) in April 1976.

Medical and Health Related Sciences Thesaurus. In addition to its in-house use, the revised edition (DHEW Publication No. (NIH) 76-199) was distributed on a request basis to research analysts, information specialists and other individuals who have the responsibility for scientific communication systems.

CRISP Services. In addition to responding to hundreds of requests on a wide range of subjects, the Section prepared Linotron tapes used in the creation of extract Indexes for four institutes; provided Scientific Profile data reports and/or CESI tapes for numerous grantee institutions; furnished NIH-wide scientific area data to appropriate institutes; and performed professional editing operations involving thousands of approved research grant and contract applications during the current fiscal year.

4. Reports, Analysis and Presentations Section. The primary function of the Section is to satisfy the information requirements of NIH and PHS centralized extramural activities. In fulfilling this function, the Section utilizes the IMPAC system as well as other data sources. Its responsibilities include design, maintenance, and operation of computer reporting systems; training and technical assistance in data retrieval; planning and coordination of NIH responses to annual surveys covering Federal obligations for R & D; preparation of

formal publications such as listings of NIH grants and awards and the NIH basic data booklet; statistical analysis to compile and present visual materials dealing with extramural trends or other topics; and the development and implementation of special evaluation projects. This Section also works closely with the Data Processing Section in maintaining and extending the IMPAC system, and has direct responsibility for establishing institution classifications and related computer files, as well as ensuring the accuracy of selected key data items for publication or reports.

Publications. The following volumes of listings of NIH extramural awards were issued:

- (1) National Institutes of Health Research Grants, FY 1975 (DHEW Publication No. (NIH) 76-1042)
- (2) National Institutes of Health Grants for Training, Construction, Medical Libraries, FY 1975 (DHEW Publication No. (NIH) 76-1043)
- (3) National Institutes of Health Research and Development Contracts, FY 1975 (DHEW Publication No. (NIH) 76-1044)

One volume in the annual multi-volume series on PHS Grants and Awards was issued during FY 1976:

Public Health Services Grants and Awards, Part II, FY 1974 and FY 1973 Released Funds. Training, Construction, Medical Libraries (DHEW Publication No. (NIH) 75-495).

Data for the pocket reference book, Basic Data Relating to the NIH - 1975, were compiled in cooperation with the NIH Office of Program Planning and Evaluation. This publication presents information on the programs and resources of the NIH.

Special Statistical Presentations. The Section compiled and analyzed extramural program statistics for fiscal year 1967-1975, and participated with the Chief, Statistics and Analysis Branch, in developing a set of 35 mm slides illustrating key extramural trends. These slides were presented formally to the Director, NIH, and other officials in August 1975, and subsequently to other audiences. The data were also issued, with an accompanying analysis, in a chart-book entitled NIH Extramural Trends, Fiscal Years 1967-1975, prepared for administrative use.

Reporting Activities. The annual survey conducted by the National Science Foundation, entitled Federal Funds for Research, Development, and other Scientific Activities, is coordinated and prepared by this Section for the entire NIH. In general, the survey covers all the NIH intramural and extramural research activities for the past fiscal year along with the estimated obligations for the next two fiscal years, by performer, field of science, geographic area, basic and applied research and development, and combinations of the above. A segment of the report is also devoted to "Scientific and Technical Information Activities."

The CASE Report. The survey of DHEW obligations to institutions of higher education and other nonprofit organizations summarizes support to individual institutions. The NIH response to this survey is coordinated and prepared by this Section. It requires an institution-by-institution report of all NIH extramural support by program for most nonprofit organizations, with an individual report for each health professional school. In addition, data by field of science grouping and program are also requested for institutions of higher education.

The Section assisted other PHS agencies by compiling research and research training portions of their CASE reports as recorded in the IMPAC system.

Obligations for Medical and Health-Related Research and Training Activities is an annual survey of all Government-sponsored medical research and training. The NIH response to this survey is also coordinated and prepared by this Section and requires data on intramural and extramural research and development by field of science, performer, programs, and state.

At the beginning of each review cycle for research and training applications, statistical reports are prepared which present data on the number and dollar value of applications received for review. The presentation is by institute, fiscal year of support, type of application, and IRG. Copies are distributed to each institute/division, and to SRB/RRB, DRG. In addition, statistical tables showing summaries of initial review group actions on research and training grant applications are prepared twice during each review cycle for use by the Division of Financial Management and the institutes/divisions.

Around 100 monthly reports were regularly prepared for the institutes and divisions covering data on grants and contracts currently active and fiscal year awards made to date by geographic location, principal investigator, program class, grant number, budget start date, and so on. These reports were distributed to 130 individuals in the I/Ds of PHS. In addition, 11 reports or computer tapes are provided to institutes on a weekly basis.

Listings and address labels were furnished to DFM, OD; ADAMHA; HRA, and FDA on a monthly basis, identifying the grants for which reports on expenditures are overdue.

The Section supplies material each month for the NIH Management Data Book, published by the Associate Director for Administration to provide top management with a comprehensive view of the resources, status, and trends of major programs and operations.

Inquiries. The Section responds to hundreds of requests for information each month from Federal agencies, NIH officials, other government and nongovernment organizations. These requests are primarily for statistical and analytical information concerning the NIH extramural programs and characteristics of grantee institutions contained in the IMPAC system. The response to these inquiries frequently requires analysis and compilation of historical data covering several years, design of special computer reporting files, providing consultation services to requesters concerning available data, and assisting in developing specifications for the output. The Section is responsible for supplying magnetic tape

extracts from the IMPAC system to several institutes and outside organizations for special research projects, or as inputs to existing management information systems.

The Section has devoted considerable effort to the development of shelf, or reference listings, unpublished reports, and microfiche, to answer routine inquiries covering support to individual investigators or specific institutions. The Inquiry and Reporting System (a computer software facility) is the primary method for data extraction, manipulation, and hard-copy presentation requested. More than 13,000 queries were processed by the Section during fiscal year 1976.

Institutional Research. The Section has the responsibility for establishing and maintaining the Institution Profile File (IPF). The IPF is the central registry of names, locations, geographic and other selected data for organizations participating in the Public Health Service extramural programs. This file is the single source for organizational information established to assure uniform reporting and to eliminate the necessity for storing similar information in individual grant and award files. In fiscal year 1975, approximately 600 new institutions were added to the IPF. The IPF now contains about 22,000 records on institutions participating in NIH activities, as well as the activities of other agencies of the Public Health Service.

Grants and Contracts Information Interface. DRG has developed and implemented an IMPAC system called "NIH/Institution Interface." This system provides information to grantee institutions covering their awards and applications. The information, which is provided on either magnetic tape or in predesigned reports, is provided to the institution in exchange for feedback dealing with suggested changes to the IMPAC data.

The system was developed in cooperation with the American Association of Medical Colleges in response to requests from several grantee institutions. Its primary objectives are to improve the integrity of the IMPAC system; provide a cost effective service to grantee institutions; and promote systems compatibility through common items and definitions.

Research Grant Manpower Report. The Section has edited and compiled statistical estimates covering all paid employment on NIH research grants, FY 1973. These activities were guided by a report, "Guidelines and Recommendations for the NIH Manpower Report," which was prepared under a contract supported by the NIH Health Evaluation Plan from FY 1975 funds. Similar procedures will be used for fiscal years 1974 and 1975. A series of tables has been developed from the file on personnel working on NIH research grants showing distribution by occupational categories, number of positions per grant, time spent working on the grant and salaries received by degree. Data have been provided to the National Academy of Sciences and other sources. Charts and tables were developed for a slide presentation on the highlights of the FY 1973 Manpower Report data.

The Section is continually coordinating responses to grantee correspondence concerning completion of the form and is concerned with the accuracy of the data reported. A computer file for fiscal years 1974 and 1975 is being developed under a contract funded

under the NIH Health Evaluation Plan and monitored by the Section.

Research Grant Expenditures. A computerized data base of the Report of Expenditures (ROE's) for fiscal year 1972 NIH research grants was established. Two reports were published on NIH expenditures on fiscal year 1972 research grants.

Retrieval Methodology. Two basic IMPAC Inquiry and Reporting System (IRS) courses were offered by the Section. A total of 30 persons attended these courses. IRS is the primary instrument for extracting and reporting IMPAC data.

About eight consultations are handled each day for DRG and institute/division personnel needing assistance in debugging queries, developing more advances queries, and applying new techniques.

Retrieval Applications and Procedures. RAPS was continued as an informal, technical series to provide users with accurate information and instructions on how to apply new or more efficient retrieval procedures; and to correct recurring IRS problems. The articles contained information about "Better Reporting with the IPF" and "Microfiche Processing with IRS." About 60 copies of each issue are distributed to DRG and institute/division personnel responsible for compiling IMPAC data.

Graphic Arts. Approximately 1,200 pieces of graphic art work and photographs were completed by the Illustrator in FY 1976. This is a considerable decrease from the 2,775 pieces of work completed in FY 1975, but the Illustrator assumed considerable additional responsibility for managing the work of an outside contractor (Creative Technologies, Inc.) on several major graphic presentations and publications. In addition, during FY 1976, the PHS grants and awards publications were suspended and replaced by an annual listing of NIH grants and contracts. Because of this change, all covers and title pages were redesigned. Other work involved cover designs, update of the IMPAC brochure, charts, certificates, signs, slides, vu-graphs, and various illustrations for flyers.

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***DIVISION
OF
RESEARCH
GRANTS***

ANNUAL REPORT

Library
National Institutes of Health
Bethesda, Maryland 20814

Fiscal Year 1977

*United States National Academy of Sciences
of Research Grants
History program attached*

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HIGHLIGHTS

The number of grant and award applications assigned and processed exceeded the fiscal year 1976 record, with competing and noncompeting applications up more than 12 percent from the previous year's total of 32,222.

Scientific Review Branch reorganized. Fifty-one study sections grouped into four Sections: Biomedical Sciences; Clinical Sciences; Social and Behavioral Sciences; and Special.

The Division implemented its part of a NIH-wide computer-based system for reporting consultants' incomes from payments made from scientific evaluation grants.

Trainee Appointment System expanded to include follow-up controls required for full implementation of the NRSA payback system.

Major redesigning of the CRISP system underway to increase effectiveness and to reduce operating costs.

CRISP system expanded to include publication of separate Research Awards Indexes for NCI, NHLBI, NIGMS, NINCDS and NIDR.

Procedures were implemented to reflect policy for acceptance of applications for DNA recombinant research as announced by NIH to the scientific community.

Major effort undertaken to establish a tracking system within IMPAC for identification of all grant applications involving recombinant DNA research; recording determination whether proposal complies with NIH guidelines; and adding footnotes to Award Notices authorizing use of Federal funds for support of approved DNA research.

The manpower reporting system was expanded to include extramural contracts.

The Institution Profile File now contains 23,000 records on institutions that have participated in NIH and PHS activities.

OFFICE OF THE DIRECTOR

The Director addressed the Annual Meeting of the Association of Independent Research Institutes on new developments in NIH's programs, Cherry Hill, New Jersey, September 16-17, 1976. He participated in a Symposium on Extramural Funding at North Carolina Agricultural and Technical State University, Greensboro, North Carolina, October 26, 1976; a Workshop on Proposal Development and Sources of Support at West Virginia University, Morgantown, West Virginia, October 29-30, 1976; a Faculty Workshop at Iowa State University where he discussed the research grants process and gave an overview of the NIH, Ames, Iowa, November 9, 1976; the Annual Meeting of the American Academy of Dermatology, where he contributed to the Research Support Program, Chicago, Illinois, December 3, 1976, and a Workshop at Lake Forest College on NIH Support for Biomedical Research, also in Chicago on the same day. The Director represented the Deputy Director, NIH, at the Smithsonian Science Information Exchange, Washington, D.C., January 17, 1977. He participated in the Third Annual Workshop on Proposal Development, Sources of Support, and Research Management at North Carolina State University, Raleigh, North Carolina, February 8-9, 1977; the Annual Meeting of the Western Association of Graduate Schools, Albuquerque, New Mexico, March 6-9, 1977, and the Council of Graduate Schools of the United States Summer Workshop, Knoxville, Tennessee, July 13-15, 1977.

The Director is a member of the Executive Committee for Extramural Affairs, the Grants Associates Board, and the working group on the review of the Grants Peer Review Study Team Report.

The NIH scientific review and evaluation process was presented by the Associate Director for Scientific Review at several meetings in which he participated during 1977--a Conference at Oral Roberts University, Tulsa, Oklahoma, April 12; a Workshop at the University of Oklahoma, Oklahoma City, Oklahoma, April 13; NIH STEP Module No. 5--"Boundaries, Roles, and Missions of the NIH," Marriottsville, Maryland, April 26; a NIH Workshop at Atlanta University Center, Atlanta, Georgia, June 1-3; and a meeting of the American Society of Parasitologists, Las Vegas, Nevada, August 17. He also participated in the Annual Planning Committee Meeting of STEP, Harper's Ferry, West Virginia, July 11.

The Associate Director is a member of the NIH Executive Committee for Extramural Affairs; ECEA Subcommittee on Research; ECEA Subcommittee on Training; NIH Coordinating Committee on Minority Research and Training; Committee for Development of Peer Review Regulations; and the NIH Grants Peer Review Study Team. He is Chairman of the NIH Forms Committee and the NIH Task Force on Travel, and co-Chairman of the Executive Secretaries Review Activities Committee.

The Division's formal employee training program continued throughout the year to meet the career development needs of the staff. Eighteen employees attended Federal City College, (renamed The University of the District of Columbia), under the Upward Mobility Program and one graduated in the spring.

Three hundred employees signed up for a total of 540 courses and of these 456 were completed. The Personnel Office developed a DRG orientation program for new employees. In addition, the Personnel Office presented seminars on various aspects of personnel management, for example, How to Apply for a Job; Job Classification and the HEW Three Year Plan; and The Merit Promotion Process.

TOP (The Opportunity Program) Committee, a special advisory committee to the Director of DRG, continued to introduce itself to new DRG employees. This practice, together with TOP's inclusion in the DRG orientations for new personnel, and the use of the TOP Line in the Director's monthly memorandum, "Continuing to keep you informed," has assured greater exposure of the Committee's functions to employees. The Committee continued to encourage the use of the TOP Suggestion Box for questions or concerns to be dealt with in TOP Line. Contacts between TOP and the DRG Personnel Office regarding training, job satisfaction, and dead end jobs resulted in two seminars with the prospect of more to come.

The Committee held regular bi-weekly meetings and several special meetings during the year when immediate problems required discussion. Recommendations from the previous Committee members on the Merit Promotion Plan and the completion of the brochure, "DRG is People" were reviewed; the latter will be replaced by other booklets, and orientation seminars held by the Personnel Office.

To overcome the lack of accessibility to informational materials available only on the NIH Campus, TOP Committee requested the installation of an information rack in the Westwood Lobby to provide staffers with pamphlets on programs and various diseases and conditions studied by the NIH institutes.

The Committee organized an arts and crafts show for DRGers to exhibit their handiwork in an effort to encourage good relationships among employees.

The DRG-EEO Counselor participated in the NIH EEO Advisory Council functions and activities including bi-weekly council meetings, monthly counseling committee meetings, and the annual NIH orientation for new EEO counselors.

The Counselor met with TOP Committee on a continuing basis, and attended the DRG Director's staff meetings. He participated with members of TOP Committee in a periodic 1-day orientation for DRG personnel and in several special management workshops conducted by NIH.

The Counselor maintained a continuing open-door policy for counseling on equal opportunity and discrimination procedures, and conducted informal interviews and conferences with Division personnel on the NIH Merit Promotion Plan, career ladder opportunities, training and participation in the Upward Mobility Program, and other training and education opportunities.

The Counselor proposed the new NIH Harvey Bullock Jr. award for EEO achievement and participated in its establishment and the initial review and award. He is a member of the ad hoc review committee for that award and the

ad hoc committees to improve DEO/EEO Counsel relationships; review the 1976-77 NIH Affirmative Action Plan; and review the 1976 NIH Civil Rights Plan. He was an honorary committee member for the Black History Observance session, "Beyond Civil Rights: A New Day of Equality" held at NIH in February 1977.

GRANTS ASSOCIATES PROGRAM

During its 15th year, the Grants Associates Program will have graduated nine male and one female Grants Associates. Nine have assumed health scientist administrator positions, three each with NCI and NIAMDD, and one each with NIEHS, NEI, and DRG. The other is with NIMH (ADAMHA). Two of the GAs came from a Government agency—one from FDA and the other from the NINCDS intramural program. Five male and one female GAs on the Program this fiscal year will graduate in fiscal year 1978. One is a minority group member.

The number of inquiries about the Program rose steadily to almost 200 compared with 134 last year. The number of applications for the Program received by the CSC was 276 midyear compared with 245 last year. At least 50 more are expected by the end of the year. One hundred and fifty-seven applicants were rated eligible; 21 of these were recommended by CSC for interviews with the Grants Associates Board, of which the Board reviewed five. The reason for this small number was that CSC stopped recommending candidates for GA Board interviews after January 1, 1977, changing its procedures to permit such interviews only after CSC certification of eligibles. This accounts for the change in the statistical reporting from last year. Because of the change in CSC procedures, only candidates who are "top of the register" will be interviewed for final selection. Under these new procedures, the Board reviewed eight candidates between June-July 1977 and selected four, all of whom have accepted.

This year the GA Program implemented the Board's Affirmative Action Plan by issuing a Program announcement quarterly in the following newsletters: "Women in Cell Biology" (American Society for Cell Biology), "Association of Women in Science," "Society for the Advancement of Chicanos and Native Americans in Science," "Organization of Black Scientists," and the "Affirmative Action Newsletter." The intention is to increase the pool of women and minority applicants for the Program. Next fiscal year, an evaluation of the number of responses to the announcement will be made.

Changes in the GA Program during the year included:

- 1) the establishment of a standing Subcommittee on Training. This subcommittee offers recommendations to the GA Board on both formal training and on-the-job assignments which resulted in
 - a) an additional required core assignment, viz. one which would involve familiarity with and use of the NIH information systems, and
 - b) three required courses, other than the Congressional Operations Seminar for Managers, Federal Budget Process, Survey of Modern Management Concepts, and Introduction to Supervision;
- 2) contracting with a social psychologist consultant for both individual GA and preceptor consultation and group seminars on the general area of management skills, specifically those related to the interpersonal aspects, for example, communication, committee dynamics, group and team development, and conflict management.

The Seminar Series continues to be the main vehicle for formal training of Grants Associates. This year almost 200 seminar hours of training were

provided to both GAs and the 18 non-GAs selected by ADERT from about 30 nominees. These nominations were made by B/I/D directors from among interested extramural, collaborative and intramural scientists. In addition, the GAs individually took a variety of other courses through NIH and CSC for a total of 1,140 additional hours and at a total tuition cost of \$6,270. GAs have also taken advantage of the STEP seminars and lectures.

OFFICE OF GRANTS INQUIRIES

As a result of the procedure established last year for publishing separate NIH listings of grants and awards, distribution of the Public Health Service listings became the responsibility of the Data Management Office, DHEW Division of Grants and Contracts, the Office of Grants Inquiries retaining responsibility for filling requests for copies of the NIH listings.

On August 1, 1977, the Office transferred responsibility for the institutional control of application kits to the Office Services Section, DRG Administrative Branch.

The Information Officer assumed responsibility for coordinating requests for information under the Privacy Act in addition to those under the Freedom of Information Act.

A member of the staff has been delegated to represent the Division on the NIH Committee on Implementation of Regulations on Nondiscrimination on the Basis of Handicap.

Members of the staff attended training courses on management techniques and Federal grants management, an Upward Mobility College course, and two STEP modules.

OFFICE OF RESEARCH MANPOWER

The Office of Research Manpower continued to be involved in the central coordination of NIH research training programs.

In 1977 the Office --

- 1) had a leading role, in conjunction with the NIH Research Manpower Officer, for development of training program statistics for the National Academy of Sciences for use in their report on Personnel Needs and Training for Biomedical and Behavioral Research;
- 2) assisted the NIH Research Grants Officer in developing the revised research career development award program announced in February 1977; coordinated the development of new review guidelines for the program, and is working on revised application instructions that would enable RCDA applicants to use the standard research grant application form (NIH 398);
- 3) reinstated the Fellowship Forms Review Committee to update the research fellowship forms including the Research Fellowship Award Notice, recently acknowledged by the PHS to meet all financial and managerial conditions for such documents. The Statement of Appointment of Trainees Form (PHS 2271) was revised and submitted to the OMB for clearance;
- 4) responded to numerous inquiries from the academic community, applicants, congressional offices and PHS staff on the policy, procedures, statistics and status of the research training and career development award programs. Many inquiries involved complex issues emanating from the payback provisions of the National Research Service Award program.
- 5) has been working on a number of policy issues and problems, such as health insurance for fellows at Federal laboratories and rebudgeting of trainee stipends.

In addition to and related to the above, the Office of Research Manpower is continuously involved in the development of program statistics and revision of program applications and related forms. The latter is particularly difficult in the light of Administration guidelines for reducing public reporting burdens by 50 percent.

The Program Analyst, ORM, is the NIH representative on the Federal Interagency Commission on Education, DHEW; DRG representative on the NIH Extramural Training Advisory Committee and the NIH Grants Management Advisory Committee and also serves as a member of the NIH Ad Hoc Payback Committee and as an observer to the Executive Committee for Extramural Affairs.

ADMINISTRATIVE BRANCH

The Administrative Branch continued to provide the Division with administrative and financial management (including budget, and scientific evaluation grants), property and supply control, space planning and assignment; to maintain supplies of publications and application forms used in the PHS extramural programs; to be responsible for the efficient running of the DRG Reference and Mail Rooms, and to maintain liaison with other NIH service components for effective coordination of procedures and services. On August 1, the Branch assumed responsibility for centralized distribution of application forms by the grantee institutions.

Financial Management Section. The Section assisted in administering about \$16.5 million for the Division's operations, of which \$13 million was from the NIH Management Fund, supplemented by \$3.5 million from the institutes for support of scientific evaluation grants awarded to study section chairmen. The Section monitored the expenditures through a computer data base system that provides Division management with up-to-date monthly cost analyses. Consultant costs were again paid almost entirely from the scientific evaluation grants with consequent savings in both time and effort. In October 1976 the Section implemented the Division's part of a NIH-wide computer-based system for reporting consultants' incomes from payments made from the scientific evaluation grants during 1976.

Office Services Section. The Section continued to review and approve requests for supplies and equipment needed by the Division; to provide property and supply control; to participate in space planning and assignment; to maintain the Division's mail room; to be responsible for wide distribution of PHS and NIH extramural forms and publications; and to maintain liaison with other NIH service components for effective coordination of procedures and services. On August 1, the Section assumed responsibility for maintaining the institutional application control listing.

The number of grant application kits assembled and handled continued to average around 10,000 a month, and about 9,500 miscellaneous packages were mailed each month. The Mail Unit received and processed approximately 35,000 grant applications of all types, and a large volume of supporting documents, letters and publications.

Reference Room. To accommodate space limitations, the Reference Room was physically compressed into smaller space resulting in a cut in the number of books and journals previously on the shelves. Nonetheless, a number of staff and visitors made use of the facility and requests for research assistance increased.

During the year, the collection of reference books, telephone directories, and college and university catalogs was updated.

REFERRAL BRANCH

The number of applications assigned and processed by the Referral Branch in fiscal year 1977 exceeded the previous record year, fiscal 1976. Competing and non-competing applications reached 37,161, up more than 12 percent from the previous year's total of 32,222.

During the fiscal year the Branch responded to the receipt of applications resulting from 38 announcements to the scientific community reflecting special emphasis programs of the awarding units. The Branch also implemented procedures to reflect policies for acceptance of applications for DNA recombinant research as announced by the NIH to the scientific community.

Training and development courses were again supported by management for Branch personnel with 29 (including employees taking more than one course) participating in training with the following breakdown: two attended Executive Management courses and 27 attended miscellaneous courses. All training was job related for the purpose of enhancing skills and better job performance. Two employees are enrolled in Upward Mobility College.

The Chief of the Branch participated in the Dermatology Research Support Workshop in Chicago, Illinois, December 1976. He also gave a presentation on Central Receipt, Referral, and Review of Research Grant Applications sponsored by the University of Illinois in Springfield, Illinois, December 1976.

On February 14, 1977, a 6-month flexitime experiment began for employees of the Project Control Section. An evaluation of the experiment will be made in September and October. As of this date, Project Control employees find the flexible hours system superior to fixed times of arrival and departure.

A table showing the distribution of applications processed in Fiscal Year 1977 is appended to this report.

APPLICATIONS PROCESSED BY REFERRAL BRANCH FOR FY 1977 COUNCILS

Council		October 1976	January 1977	May 1977	Total FY 77
		<u>COMPETING</u>			
Number of Applications (1)	New	4892	4847	5801	15540
	Renewal	1583	1771	1735	5089
	Supplement	152	184	154	490
	TOTAL	6627	6802	7690	21119
Distribution (percent)	NIH	80.2	84.3	85.0	
	ADAMHA	15.0	11.8	12.1	
	Other (2)	4.8	3.9	2.9	
		<u>NON-COMPETING</u>			
Type 5		3767	4548	5795	14110
Interim		191	1435	306	1932
(Administrative)	TOTAL	3958	5983	6101	16042
COMPETING		6627	6802	7690	21119
NON-COMPETING		3958	5983	6101	16042
GRAND TOTAL		10585	12785	13791	37161

(1) Includes applications for regular research, program projects, centers, construction, training, fellowships, career awards, and minority programs.

(2) Includes FDA, HRA, OH

RESEARCH ANALYSIS AND EVALUATION BRANCH

The Research Analysis and Evaluation Branch conducted studies and prepared reports on health problems and other issues of interest to several or all of the institutes; worked on problems associated with NIH-wide classification schemes; served as intermediary in numerous requests for information from a wide variety of sources; and continued to manage the NIH Inventory of Clinical Trials.

Reports on health problems and research areas of concern to a majority of the institutes were a major part of the Branch effort this year. Studies were made of NIH research efforts in relation to Trans-NIH health problems and the requirements of other coordinating committees. At the same time these reports were being prepared, new methodologies for producing them in the most advantageous manner were explored with a view to greater accuracy and less consumption of professional labor. As a result, improvements in search strategies were achieved.

The Branch conducted an experimental study of the variability among classification of NIH extramural activity coders when six health scientists coded the same batch of research awards according to the NSF definitions of basic and applied research. On another classification problem relating to a broad categorization of R&D contracts, the Branch participated in committee work under the guidance of the Associate Director for Collaborative Research.

An analysis of approval rates and raw priority scores in relation to the normalization of priority scores was the subject of Branch presentations to the NHLBI Advisory Council and to a workshop on peer review with executive secretaries of study sections and B/I/D health scientist administrators.

As examples of work done, RAEB staff members prepared reports or supplied data on the following specific subjects:

- Equipment Expenditures for NIH and Selected Institutes FY 1974-76
- NIH Supported Research in Taste and Smell
- Analysis of Blood and Blood-related Research Supported by NIH
- NIH Support of Research involving Behavioral and Social Science Disciplines FY 1975
- Applicants for NIGMS Grants for which the P.I. has had no NIH Research Grant Support since FY 1966
- Grants supporting audio-visual devices
- Prosthetic Materials and Orthopedics
- Research Awards to Schools of Pharmacy, FY 1976
- Analysis of NIH Extramural Support for Immunology Research

- NIH Supported Research Projects involving the use of Marine Mammals for FY 1976 and 1977
- Nutrition Research - an Analysis of Recent Literature
- NIH Support of Radiology/Radiation Research
- Numbers of Competing Applications for NIH Research Grants and Postdoctoral Fellowships for FY 1971-75, by Review Action and Sex
- Trends in Earned Degrees held by Principal Investigators on NIH Research Projects (M.D.'s vs. Ph.D.'s)
- Research on Rehabilitation of Patients
- Detailed Classification of Research Projects in Chemistry according to NSF Subcategories

A printed version of the fiscal year 1976 NIH Inventory of Clinical Trials was prepared for distribution to clinicians and others interested in that facet of the NIH R&D program. Data was collected for the fiscal year 1976 Inventory and preparations were made for initiating the fiscal year 1977 Inventory.

SCIENTIFIC REVIEW BRANCH

Applications assigned to the Scientific Review Branch for review for scientific merit during fiscal year 1977 exceeded the previous record year, fiscal 1976. Applications have been on the increase since 1973. The number of applications reviewed totalled 17,741 based on three review rounds. The normal workload for a study section has increased from 80-85 applications to 100-150 per review cycle. Review has also become more complex through the years with the addition of program project and center grant applications, NSRA postdoctoral fellowships, young investigator awards, and biotechnical resource program proposals, all requiring different review procedures. The administrative requirements for human subjects in research, laboratory animals, DNA recombinant research, and the Privacy Act, also require special handling. The increased workload has been accomplished with no increase in personnel and has put a strain on both staff and consultants. During the year, the Branch lost considerable office space which has resulted in cramped work areas used to process the tremendous increase in paper flow. It is expected that additional space will be available for fiscal 1978.

The reorganization of the Branch for management purposes was completed this spring. The 51 study sections have been grouped into four Sections: Biomedical Sciences Review, Clinical Sciences Review, Social and Behavioral Sciences Review, and Special Program Review. The supervisors of these groups have the authority to act for the Chief of the Branch in directing the operations of their respective sections.

Training and development courses were again supported by management for Branch personnel with 206 (including employees taking more than one course) participating. Twenty-five employees attended Executive Management courses and STEP seminars; 151 attended miscellaneous courses, such as shorthand and travel, and 25 attended Medical and Scientific Terminology courses. All training was job related for the purpose of enhancing employee skills and better job performance. Five employees continued enrollment at Upward Mobility College.

Staff members participated in various assignments during the year.

Dr. Edmund S. Copeland assisted the Clinical Neuropharmacology Branch, DCBR, in the setup and operation of the Varian ESR instrument loaned to NIMH by the Walter Reed Institute of Research. Since he knows the instrument and the ESR technique well, he collaborates with investigators in CNB, DCBR, approximately one day a week from April 1, 1977 through March 31, 1978.

Dr. Thomas M. Tarpley lectured on:

"Sjögrens Syndrome" - American Oral Cancer Society - District of Columbia Division - Georgetown University Hospital, Dec. 1976,

"Salivary Gland Swelling" - U. S. Naval Dental School - Short Course, Jan. 1977,

"Non-neoplastic Salivary Gland Sialoadenopathies" - Annual Oral Pathology Course - AFIP, March 1977,

"Salivary Gland Tumors" - AFIP Residents Program, Mar. 1977

"Salivary Gland Swellings" - Georgetown University Dental School, Mar. 1977, and

"Clinical Aspects of Sjogrens Syndrome" - U. S. Army Institute of Dental Research - Annual Program, April 1977.

Dr. Asher A. Hyatt delivered an address on March 18, 1977, at Emory University to chairmen of chemistry departments from the southeast area describing the NIH granting process.

Dr. Joseph A. Kaiser was a participant at a workshop conducted by the American Society for Pharmacology and Experimental Therapeutics at its annual meeting in New Orleans, August 1976. Dr. Kaiser, a member of the Society since 1963, discussed the NIH extramural programs with special reference to the research grant program, its participants, mechanism of operation, and funding.

Mr. Frederick J. Gutter, Executive Secretary, Communicative Sciences Study Section, participated as an instructor in a course entitled "NIH Research Grants" at the American Academy of Ophthalmology and Otolaryngology Annual Meeting in Las Vegas, Nevada, October 4-10, 1976.

The Reproductive Biology Study Section sponsored a workshop conference dealing with "Hypothalamic Peptide Hormones and Pituitary Regulation." It was held in conjunction with the study Section's November meeting on the NIH campus, November 1-2, 1976. The workshop was attended by about 230 scientists. It was the most recent of three symposia on neuroendocrinology that have been sponsored by the NIH. The first one was held on December 6-8, 1961, in the New Everglades Hotel in Miami, Florida. (See Advances in Neuroendocrinology, A. V. Nalbandov (ed.), University of Illinois Press, Urbana, Illinois, 1963.) The second workshop was held on January 8-11, 1969, in the Arizona Inn at Tucson, Arizona, and was unique in several respects. (See Workshop Conference on Bioassay and Chemistry of the Hypophysiotropic Hormones of the Hypothalamus: A Critical Evaluation, J. Meites, ed., The Williams and Wilkins Co., Baltimore, Maryland, 1970.)

This, the third workshop relating to hypothalamic releasing hormone and hypothalamic releasing factors, had as its primary purpose the review and analysis of the current status of the hypothalamic hypophysiotropic hormones and to summarize their roles in the regulation of the anterior pituitary gland. The biochemistry, physiology, pharmacology, and cellular biology of luteinizing hormone releasing hormone (LHRH), thyrotropin releasing hormone (TRH), and somatostatin as well as that of agonistic and antagonistic analogs of these three peptides were discussed in detail. The status of corticotropin releasing hormone, prolactin release inhibiting hormone, and substances affecting the release of melanocyte stimulating hormone was reviewed. The biosynthesis of TRH was also discussed.

The principles of axoplasmic transport were analyzed in terms of hypothalamic neurons, and the physical properties of subcellular neuronal particles

(synaptosomes) containing LHRH and TRH and the utility of these particles as a model system for the study of mechanisms controlling LHRH and TRH release were discussed. Secretion of LHRH into hypophysial portal blood of rats, rabbits, and monkeys was demonstrated, and evidence for retrograde blood flow in the pituitary stalk was presented, raising the possibility that anterior pituitary hormones reach the brain in very high concentrations. The mechanism of action of LHRH along with the role of LHRH in the regulation of the menstrual or ovulatory cycle of women was examined in detail, including an analysis of the influence of estrogen, progesterone, and catecholamines on the responsiveness of the gonadotrophs of the pituitary to LHRH. The biosynthesis as well as the status of TRH as a regulator of TSH and prolactin release was reviewed. The significance of extrahypothalamic locations of TRH and somatostatin was discussed, and the relationship of somatostatin to insulin and glucagon secretion and carbohydrate homeostasis in normal and diabetic persons was examined.

This is the second time a workshop of this magnitude has been organized by the Reproductive Biology Study Section. Two hundred and thirty scientists from the United States and Canada attended the workshop. Sixteen outstanding speakers (4 study section members and 12 outside speakers) informed the study section members and other participants of the state of the art and of the research being undertaken and recently completed on Peptide Releasing Hormones. This workshop included 16 formal presentations which were followed by broad discussion including the role of these hormones in reproduction.

The presentations and discussions of this workshop will be beneficial to the study section members in review of applications and to the observer audience hopefully in the filing of better applications. The proceedings of this workshop have been published by the Plenum Press, New York, N.Y., in Advances in Experimental Medicine and Biology, Vol.87, 366 pages.

Pathobiological Chemistry Study Section sponsored a workshop in Bethesda, Maryland, on November 3, 1976. Dr. Karl Piez reviewed current thinking on collagen structure and fibril formation, questions relevant to disease processes, because the major interstitial forms of collagen are found in vivo as highly ordered fibrils. The current model assumes that microfibrils associate to make the fibril. The microfibril is a 5-fold helix of rod-like collagen molecules, staggered by 68 nm, the native fibril repeat, and rotated by 72 degrees to form a closed helix about 4 nm in diameter and of indefinite length. Fibril formation is probably influenced in vivo by other molecules present such as ions, other proteins and proteoglycans. Stabilization of collagen fibril structure occurs through enzymatic conversions of certain lysine and hydroxylysine residues to aldehydes and their spontaneous condensation with themselves or with amino groups of lysine and hydroxylysine to form imine and aldol crosslinks. The steps which result in stable multichain crosslinks are not yet understood. Of considerable interest is how different collagen types crosslink and how the process is regulated to produce tissue differences.

Dr. Darwin Prockop discussed clinical phenomena associated with aberrations in collagen synthesis. In Type VII Ehlers-Danlos Syndrome, because of a defect in the conversion of procollagen to collagen, collagen

fibers do not achieve normal tensile strength and rupture easily. In Type VI Ehlers-Danlos Syndrome, lack of lysyl hydroxylase prevents the conversion of lysine to hydroxylysine; the crosslinks which form among the aberrant collagen molecules are not sufficiently stable and cause skeletal deformities and hyperelasticity of the skin. In Type IV Ehlers-Danlos Syndrome, there appears to be a decreased activity of lysyl oxidase, which synthesizes the aldehyde groups necessary to form crosslinks. The failure of wounds to heal in scurvy cannot be explained in terms of the requirement for ascorbic acid in the hydroxylation of peptidyl prolyl residues by the enzyme prolyl hydroxylase. In the absence of normal hydroxylation, the polypeptide chains cannot fold into a triple helix which is stable at 37 degrees C. Because collagen biosynthesis involves a large number of unusual steps, the pathway appears to be well suited for manipulation by external agents and the development of animal models for collagen diseases.

Dr. Edward Harris discussed the role of collagenase in pathologic states. Collagenase is now known to be synthesized in a variety of cells, and appears to be secreted as a zymogen. A variety of inhibitors of collagenase have been identified in serum and various tissues. Collagen production by fibroblasts can be enhanced or inhibited by a number of agents. Each collagen type may be degraded in a characteristic fashion by collagenase. Thus, the type of cell producing the enzyme, the form (latent or active) in which the enzyme is released from the cells, the presence or absence of inhibitors or activators of collagenase, and ratio of collagen-synthesis to breakdown in the tissue under study, all influence the pathologic state.

Dr. E. J. Miller summarized the current knowledge on the biosynthesis, characterization, and possible physiological roles of genetically distinct collagens, synthesized by different cells and tissues. Collagen is initially synthesized as a large precursor molecule. The intracellular steps in the synthesis of procollagen (pro α -chain) seem to include assembly of primary structure, hydroxylation of appropriate prolyl and lysyl residues in nascent polypeptide chains, glycosylation of certain hydroxyllysyl residues, chain association accompanied by interchain disulfide bonding and triple helix formation. The conversion of procollagen to collagen apparently occurs extracellularly mediated by proteases. Fiber formation appears to be a critical event in the eventual function of collagen. The collagen of major connective tissues appears to be Type I, a hybrid of two $\alpha_1(I)$ and one $\alpha_2(I)$ chains. Type II collagen is composed of three identical $\alpha_1(II)$ chains and is present in hyaline cartilages. Type III collagen (three identical $\alpha_1(III)$ chains) is present in selected connective tissues such as dermis, major vessels, and uterine wall where it coexists with Type I collagen. The collagen of basement membranes seems to be still different (Type IV) and has yet to be well-characterized. Of clinical interest is the finding that most patients with classical rheumatoid arthritis commonly exhibit moderately high titers of antibodies specific to Type I, II, and III collagens, and their component chains, in their sera and joint fluids.

Dr. C. Franzblau reviewed the chemistry and biosynthesis of elastic fibers and their possible role in a variety of cardiovascular and pulmonary diseases. As with collagen, there appears to be a precursor form of elastin, namely, tropoelastin. The nature of the enzymes involved, the cross-linking

process, the microfibril or microprotein components, and the precursor molecules of elastic fibers, all are critical to the evaluation of elastin in normal versus pathologic states. Also, the development of a particular disease state may relate to the balance of protease and antiprotease activities of a tissue. This balance normally controls or prevents elastases from attacking elastic fibers. When it is impaired, diseases such as emphysema may set in.

Dr. V. Hascall presented a conceptual model for the structure of cartilage proteoglycans based on the work of several workers. Using this model, it has been possible to gain insight into a variety of normal and pathologic processes. These include: (a) the role of proteoglycans for cartilage function; (b) how changes in proteoglycan structure influence tissue function during aging and degenerative processes; (c) the changes in proteoglycan structure which occur during differentiation of mesenchymal cells to chondrocytes; (d) differences in proteoglycans present in the matrix during the process of cartilage calcification and replacement by bone tissue.

The Endocrinology Study Section and the Human Embryology and Development Study Section sponsored a workshop on February 17-18, 1977, on fetal endocrinology in San Diego, California. Recent advances in our understanding of the morphological development of the placenta were reviewed by Dr. A. Enders; the development of fetal antigens was discussed by Dr. S. Joshi, and the general problem of immunologic protection of the fetus was surveyed by Dr. D. Stites. The onset of progesterone synthesis by the rodent placenta was described by Dr. M. Sherman, and the possible role of progesterone in preventing maternal rejection of the placenta and fetus was described by Dr. P. Siiteri. Recent evidence that the human placenta may produce ACTH was presented by Dr. D. Krieger; the regulation of placental HCG messenger RNA synthesis was described by Dr. I. Boime, and the genetic aspects of placental protein synthesis as studied in cell cultures was discussed by Dr. P. Kohler. Developmental aspects of fetal endocrine function in the human was discussed by Drs. S. Kaplan and D. Fisher; development and regulation of the fetal endocrine system in the rhesus monkey was reviewed by Drs. R. Jaffe and J. Resko. Dr. G. Ross summarized our knowledge concerning the development of human ovarian function and its regulation. Dr. J. Wilson reviewed sexual differentiation of the male genital tract and its regulation by testosterone and dehydrotestosterone, and developmental patterns of hepatic enzyme activities and the influence of sex hormones were discussed by Dr. O. Greengard and Dr. L. Henrichs.

A workshop at NIH on nutrition and immunology, sponsored by the Nutrition Study Section, was held at NIH on February 23, 1977.

The first speaker, Dr. R. A. Good, detailed the complex anatomical and functional role of the immune system. The nutritional emphasis in his presentation underscored the drastically altered development of the thymus in the malnourished and the delayed involution of this key organ during chronic caloric restriction. These altered patterns of development have important clinical manifestations in terms of immunity. The necessity of animal models to explore mechanisms of the response was emphasized. Dr. G. D. Niswander reviewed the research technique of radio-immunoassay, widely used in nutritional and other experimental protocols. The method utilizes the immune system

to produce antibodies for highly sensitive assays. The review was a timely commentary on a commonly applied technique encountered in many research protocols. Three additional speakers addressed clinical problems of malnutrition and the immune system. Drs. R. Suskind and R. Edelman evaluated their findings obtained during study of malnourished infants, pointing out problems of this experimentation such as obtaining adequate control and experimental groups. They suggested the future priorities for research in this area might be to assess the effects on immune competence following intrauterine malnutrition, during specific nutrient deficiencies (pyridoxine, vitamin A, specific amino acids, iron, zinc), and during adult malnutrition. The final speaker, Dr. W. Beisel, emphasized the importance of nutritional status during infections and indicated a need for more information related to protein requirements associated with the demands of the immunologic response during infection.

A workshop was held by the Applied Physiology and Orthopedics Study Section in La Jolla, California on March 9, 1977, on the subject of locomotion research. The objective of this workshop was to examine the research performed with gait walkways (and their associated computer facilities) and to assess current directions. Ten experts in bioengineering, neurophysiology, and orthopedics were invited; six presented papers.

Dr. Morris Milner, McMasters Medical College, Hamilton, Canada, presented an overview of existing gait laboratories in the United States, Canada, and the United Kingdom. Dr. Milner had sent out a questionnaire in advance of the workshop and collected an extremely useful compendium of information regarding the staffing, facilities, methodologies, and research emphasis of these establishments. These data provided a baseline for the following papers and discussions. Dr. Sheldon Simon, Department of Orthopedic Surgery, Children's Hospital (Harvard), Boston, outlined the latest techniques for analyzing gait and handling the resulting data. Dr. David Sutherland, Director, Gait Laboratory, Children's Hospital, San Diego, discussed the need to obtain normative data in order to assess abnormal data, pre- and postsurgery. Dr. Jacquelin Perry, Director, Pathokinesiology Laboratory, Rancho Los Amigos Hospital, Downey, California, described how the data obtained in gait analysis can be translated into clinical practice. Dr. Patricia Murray, Veterans Administration Hospital, Milwaukee, presented research results involving the evaluation of hip and knee prosthetic replacements. Dr. Edmund Chao, Director of the Orthopedic Biomechanical Laboratory, Mayo Clinic, followed with a discussion of the state-of-the-art in biomechanical test methodologies for implants. The formal presentations were all clinical, but in a lengthy discussion at the end of the workshop, recent work on animal locomotion and neuromuscular control of locomotion was discussed (Drs. Houk, McMahon, Stein, Milner, and Basmajian). Animal work must still precede human research in many areas of investigation, especially neurophysiology, and participants agreed that much more high caliber interdisciplinary research was needed. Because research in the field of gait and locomotion is published in a wide variety of journals, and reported at meetings of at least six or more professional societies, the workshop participants, both guests and study section members, agreed that a condensed version of the day's highlights should be published to clarify the state of the art. Expected publication date is late summer 1977.

A workshop sponsored by the Tropical Medicine and Parasitology Study Section was held in North Falmouth, Massachusetts on June 26, 1977. Seventy-five conferees, including members of the TMP Study Section, outside authorities and graduate students met to discuss "Insect Endocrine Systems: Their Present and Potential Role in Arthropod Control." Three study section members and eight invited authorities covered the current concept in insect control and the state of knowledge about the endocrine mechanisms controlling development, reproduction and behavior in some of the more important insect vectors of disease - mosquitoes, tsetse flies and reduviids.

The following topics were presented and discussed: Introduction - Importance of Arthropod-Borne Disease in the World and Current Control Methods; Insect Endocrine Mechanisms; Insect Growth Regulators and Their Point of Attack (to include discussion of mosquito control); Insect Growth Regulators in the Field (especially control of various flies); Antiallotropins - A Fourth Generation Insecticide; The Fine-Tuning of Ecdysone Initiated Tanning; Hormonal Control of Behavior in Insects; Neuroendocrine Control of Reproduction in Mosquitoes; Endocrine Control of Reproduction in Tsetse Flies and in Rhodnius; Gonadotropic Action of Juvenile Hormone; "Where do we go From Here?", and "An Overall Perspective."

The manner of presentation and subject matter chosen were designed to review the present status of the research to provide the study section with background to discharge their responsibilities for reviewing applications and reporting the status of the work in the field with suggestion of future needs and research.

The Experimental Virology Study Section sponsored a workshop on "New Findings on the Complexity of Nucleic Acids in Viral Genomes" at Madison, Wisconsin, on June 16, 1977.

The rapidly moving field of viral nucleic acid technology, coupled with a variety of mechanisms of nucleic acid replication among animal, plant and bacterial viruses, suggested the need for a workshop to familiarize the members of the Study Section with this complicated area of research. The program consisted of three study section members and four invited speakers. Topics presented were concerned with DNA rearrangements and extracellular and intracellular DNA in herpesviruses, SV40 vectors for molecular cloning, genome organization in picornaviruses and RNA tumor viruses, unusual features of bacteriophage mu DNA and transfer like sequences in messenger RNA of brome mosaic virus. The workshop was also attended by an audience of 60 persons both faculty and students at the University of Wisconsin.

The following publications were prepared by staff:

- (1) A. Lee Dellon, M.D., Thomas M. Tarpley, D.D.S., M.S., and Paul B. Chretien, M.D. "Histologic Evaluation of Intra-Oral Skin Grafts and Pedicle Flaps in Humans." Journal of Oral Surgery, Vol. 34, September 1976, pp. 789-794.
- (2) Copeland, E. S., Alving, C. R. and Grenan, M. M. "Light-Induced Leakage of Spin Label Marker from Liposomes in the Presence of Phototoxic

Phenothiazines." Photochem. Photobiol. 24: 41-48, 1976.

- (3) Copeland, E. S. "Secondary Radical Reactions in Irradiated Invertase and their Relation to Loss of Biological Activity." An ESR Study. Radiat. Res. 68: 190-195, 1976.
- (4) Copeland, E. S. and deBaare, L. "Electron Spin Resonance Study of the Synaptosome Opiate Receptor. Kinetics of Stereospecific Binding of Spin Labeled Morphine." Biophysical J. 16: 1245-1255, 1976.
- (5) Dhindsa, D. S., Black, J. A., Koler, R. D., Rigas, D. A., Templeton, J. W., and Metcalfe, J.: "Respiratory characteristics of blood from Basenji dogs with classical erythrocyte pyruvate kinase deficiency." Respir. Physiol. 26: 65-75, 1976.
- (6) Malinow, M. R., McLaughlin, P., Dhindsa, D. S., Metcalfe, J., Ochsner, A. J. III, Hill, J., and McNulty, W. P.: "Failure of carbon monoxide to induce myocardial infarction in cholesterol-fed cynomolgus monkeys (*Macaca fascicularis*)." Cardiovascular Research 10: 101-108, 1976.
- (7) Jones, R. T., Koler, R. D., Duerst, M. L., and Dhindsa, D. S.: "Hemoglobin Willamette ($\alpha_2\beta_2$ 51PRO \rightarrow ARG (D2). A new abnormal human hemoglobin." Hemoglobin I: 45-57, 1976.
- (8) Sunderland, C. O., Dhindsa, D. S., Henken, D. P., Nichols, G. M., Metcalfe, J., and Lees, M. H.: "Respiratory characteristics of blood following the interatrial baffle procedure for dextro transposition of the great arteries." Biol. Neonate. 30: 156-162, 1976.
- (9) Murphy, W. S., Metcalfe, J., Hoversland, A. S., and Dhindsa, D. S.: "Postnatal changes in blood respiratory characteristics in an American opossum (*Didelphis virginiana*)." Respir. Physiol., 29: 73-80, 1977.
- (10) Rankin, J. H. G., Dhindsa, D. S., and Metcalfe, J.: "High gain placental cardiovascular control." Proc. Soc. Expt. Biol. 154: 606-609, 1977.
- (11) Castro, A., Dhindsa, D. S., Hoversland, A. S., Malkus, H., and Metcalfe, J.: "Serum electrolytes in normal Pygmy goats." Am. J. Vet. Res. 38: 663-664, 1977.
- (12) Castro, A., Dhindsa, D. S., Hoversland, A. S., and Metcalfe, J.: "Serum proteins and protein electrophoretic patterns in normal Pygmy goats." Am. J. Vet. Res. 38: 665-667, 1977.
- (13) Bristow, J. D., Metcalfe, J., Krall, M. A., Welch, J. E., Black, J. A., and Dhindsa, D. S.: "Reduction of blood oxygen affinity in dogs by infusion of glycolytic intermediates." Am. J. App. Physiol. In Press, 1977.
- (14) McCutcheon, R. S.: "Helminthiasis." PharmIndex. Vol. 19, No. 8: 11-15, 1977.

STATISTICS AND ANALYSIS BRANCH

Increased demands on Statistics and Analysis Branch services continued in fiscal year 1977. Significant among these were:

- 1) the expansion of -
 - a) the Trainee Appointment System (2271) to establish the necessary follow-up controls required for full implementation of the payback system under the National Research Service Award Act (NRSA), and the establishment of a central clearance system to ensure that individuals submitting fellowship applications do not have outstanding payback requirements under the NRSA;
 - b) the IMPAC to include a system for tracking recombinant DNA projects through the review and award process.
 - c) the CRISP system services to include separate Index publications for the NCI, NHLBI, NIGMS, NINCDS, and NIDR.
- 2) the development and implementation of -
 - a) a NIH Registry on recombinant DNA projects;
 - b) the Research Contract Manpower Information System;
- 3) the establishment of the initial steps required for the recording of sub-projects into the IMPAC system.

During the year, four institutions requested entry into the NIH/Institution Interface System, while three were retired. The total number of institutions in the Interface System at present is 26.

To meet these demands, the Branch has several projects underway designed primarily to increase its productivity and effectiveness:

- 1) The development of a system whereby an institute can independently generate its award notices from the IMPAC system. This project is being conducted in collaboration with ADAMHA. When fully implemented, the awarding institute will experience greater control over award processing as well as significantly shorter turnaround time in award notice preparation. SAB will benefit from a reduction in clerical processing requirements.
- 2) A study to determine the feasibility of introducing upper and lower case display capabilities in the CRISP and IMPAC systems. If successful, this will eliminate double data capture through the single capture, in upper and lower case, of project titles and other items in the IMPAC system which can then be transferred direct to the CRISP system.
- 3) A system has been developed and implemented with H representatives to

adapt the NIH-maintained Institution Profile System (IPF) for use by the PHS Grants Data System (GDS). The implementation of this system will significantly reduce the need for the expenditure of considerable professional and clerical effort for researching institutions required only by GDS. This effort is usually concentrated at the end of the fiscal year for the annual grant and award listings ("Blue Books").

4) The Branch is also involved in a major redesign of the CRISP system. The improvements in this new design, when fully implemented in fiscal year 1978, will significantly increase the effectiveness of the CRISP system and reduce its operating costs.

Branch managers and supervisors continued their support of training and development programs for enhancing employee skills, better job performance, and to aid in career development. Although the Division found it necessary to curtail some training because of budgetary restrictions, 91 Branch employees attended 46 different training courses and seminars. These covered a broad cross-section of training program areas, including communications and office skills, administrative and supervisory, editorial and publications, civil rights/equal employment opportunity, statistics, Government contracts, retirement planning, consumer education, medical sciences, and computer-related courses. NIH-sponsored, interagency, and outside training was taken. Four SAB employees continued enrollment in the Upward Mobility College, attending workshops and seminars. Other special training programs in which Branch employees participated included the NIH Executive/Manager Development Program and the STEP Continuing Education Program. Three employees continued in special work-study programs--two 4-year student trainees recruited under the Federal Junior Fellowship Program, and one trainee under the Project Stride Program. Plans are under way for continuation of training during FY 1978.

1. Office of Systems Planning.

In carrying out its assigned mission, the Office of Systems Planning continued its day-to-day efforts to improve the NIH Extramural Central Data System, working in collaboration with the individual sections of SAB. Considerable effort was devoted to the implementation and establishment of operational procedures associated with the system for monitoring the payback activities of all trainees and fellows supported under the National Research Service Award Act of 1974.

In collaboration with the Office of Recombinant DNA Activities, a major systems effort was undertaken to establish a tracking system within IMPAC for the identification of all grant applications involving recombinant DNA research; to record the IRG determination whether the proposed research complies with NIH guidelines; and to add footnotes to all Grant Award Notices authorizing the use of Federal funds for support of approved DNA research beginning October 1, 1977. The tracking system will begin with all applications to be reviewed at the January-February 1978 review cycle. In addition, information requirements have been established for maintenance of an NIH registry of approved recombinant DNA research. Efforts are underway to devise appropriate record and file structures to collect, store, and report information included in the registry.

2. Data Processing Section

DRG/HSA Approval List Link. A computer link, similar to the one existing between DRG and the NIH Central Accounting System, was installed which provides for direct tape input of grant obligation data from the DRG IMPAC System to the Health Services Administration's (HSA) Accounting System. Whenever Approval Lists and Notice of Grant Award forms for all non-NIH programs are computer-prepared in the Section, an Approval List Data File is established which contains the grant obligation data. After the awarding units sign and return the documents to DRG, the obligation data is validated, the Approval List Data File updated, and a transaction update tape created for HSA.

National Research Service Award (NRSA) Payback System. The NRSA Payback File became operational this year. This computer-based file contains payback service information on each fellow or trainee supported under a NRSA. The legislation governing payback obligations requires that each person supported under a NRSA must certify annually on his payback activities until his total payback obligation has been fulfilled. When an Annual Payback Activities Certification (APAC) form is received, the computer record on the payback obligation status of the fellow or trainee is updated. Forms are mailed annually until payback obligation is completed. A new computer-based Trainee Control File (TCF) was established this year. This file will assist BIDs in carrying out their accounting responsibilities.

Revised Notice of Grant Award Statement. Programming modifications were completed in the Section to accommodate a new version of the Notice of Grant Award statement. The new form contains the following changes:

- The activity code name has been added to the form in the "Type of Award" area.
- The United States Code (USC) and Federal Regulation numbers have been added to the form in the "Authorized by" area.
- A Letter of Credit Statement now appears in the "Remarks" area for those institutions participating in this payment plan and Letter of Credit mailing labels are supplied to the awarding units.
- A Departmental Federal Assistance Financing System (DFAS) statement has been preprinted on the back of the form.
- A "Terms of Acceptance" statement has been preprinted on the front of the form.
- Name of Recommending National Advisory Council or Committee has been dropped from the form.
- Form now provides for a breakdown in Personnel Costs between Salaries & Wages and Fringe Benefits.
- A new Cost Sharing Contribution block has been added to the form.

* Publication Costs have been dropped from the form.

* Grant Period dates have been dropped from the form, but Budget and Project Period dates have been retained.

Transition Quarter Files. Special IMPAC System files were established to record Transition Quarter (TQ) dollar activity on a grant-by-grant basis. These files were made available to the awarding units for reporting TQ activity. Creation of these files enabled IMPAC users to break down the dollar costs for twenty-five different dollar fields for the 12-month period ending June 30, 1976, or for the TQ period, July 1 - September 30, 1976, or for the 15-month period ending September 30, 1976.

TSO Query via Interactive Communications (QIC) System. A TSO Query via Interactive Communication (QIC) System has been developed that provides for selecting grant or research contract records based on up to 18 different IMPAC data items and provides summary and detailed information. The system was designed to be used on display terminals at the awarding unit level by persons with a limited automatic data processing background. After logging on TSO, and initiating the session, a programmed series of prompting messages appear on the screen and the user merely answers questions to obtain the desired information.

Revised Manpower Report Form. A major change in the revision of this form is that personal identifying information is no longer requested. Where the names of individuals had been listed, position and job titles only are requested. Information concerning other sources of income for individuals on the project is not requested in the revised form. Part II of the Manpower Report was revised in March 1974 and the item entitled "Personnel Performing Some Project Work During This Grant or Contract Budget Period for Which no Salary was Received," was deleted from the form.

Manpower Reporting System for Contracts. The manpower reporting system was expanded to include extramural contracts. A computer system was developed to distribute Manpower Report forms to contractors. The system will provide for a monthly listing of contracts for which reports are due for use in the distribution of forms; generating mailing labels; and listing overdue reports for follow-up. DPS will handle the distribution of the "report packets" monthly.

CRISP Redesigned. The system for Computer Retrieval of Information on Scientific Projects (CRISP) was redesigned this year. The redesign was necessitated by the large size of the basic files and increased reporting requirements being placed on the entire system. The new file organization and updating procedures are expected to shorten the time required to perform monthly maintenance of the basic files, produce better controls, reduce operator involvement, and simplify access to the files by users.

Multiple Virtual Storage (MVS). All IMPAC System and CRISP System computer programs were modified this year to work in the Multiple Virtual Storage (MVS) environment. Programming and procedural changes included modifications

to the method of closing some files, changes to SPOUT messages, and minor changes to all Job Control Language (JCL) cards.

3. Research Documentation Section (RDS).

The Section maintains a computerized disk storage and retrieval system, CRISP (Computer Retrieval of Information on Scientific Projects), containing scientific data on research grants and contracts supported by the Public Health Service, as well as NIH and NIMH intramural research. Through this medium, RDS services ad hoc and recurring requests for scientific information from Government administrators, scientists, and information personnel for purposes such as analysis and evaluation of research programs, specific scientific areas, and preparation of reports. In similar fashion, the Section responds to inquiries from grantee and non-grantee institutions and scientists, the news media, and other non-Government sources engaged in, concerned with, or reporting on medical research.

RDS publishes annually as a "spin off" of the CRISP file:

1) The Research Awards Index (formerly the Research Grants Index) prepared in two volumes. Volume I is a scientific subject index with associated project numbers and titles. Volume II contains three sections (a) project identification data (b) research contract identification data and (c) project investigator information.

2) The Medical and Health Related Sciences Thesaurus, the vocabulary authority list of subject headings used by the RDS indexing staff in indexing research projects.

CRISP has the query capability of (a) providing, in several optional formats, information ranging from a straightforward listing of research pertaining to a single scientific subject term to a compendium of projects relating to any number of terms, using a combination of Boolean search logic; (b) providing individual institutes with tapes or hard copy of their projects by subject, project (subproject), title or name of investigator, and (c) providing individual institution/institute listings of projects with indexing terms (Scientific Profiles). CRISP also has the query capability to limit subject searches or Scientific Profiles to certain program (R, M, N, P, S, Z) or IPF codes.

A specially designed CRISP subroutine can furnish grantee institutions or NIH institutes, possessing appropriate computer capabilities, with specially formatted tapes which they can use to search the scientific subject content of their own research grant and contract records. This subroutine called CESI (CRISP Extract System for Institutions/Institutes) is updated monthly and can furnish select tapes on an ad-hoc or recurring basis.

In addition, doing subject searches and producing Scientific Profiles or investigator listings of subprojects of program project, center, and other large grants is a unique feature of the CRISP System.

Intramural Research Projects. For the second year, the keyword indexing

of individual NIH and NIMH Intramural research project reports has been performed by the Section's professional staff and incorporated into the CRISP system data base, thereby providing a means for computer generation of uniform reports on intramural research. As with extramural research grants and contracts, machine generated abstracts from CRISP are available for these projects for DHEW use. The intramural data base also appears in published form as the NIH-NIMH Intramural Research Index - Fiscal Year 1976. This was made possible through Linotron tapes provided by the Section.

Research Awards Index. Linotron tapes for the fully automated printing of this 2-volume set were submitted to the Government Printing Office in February for publication in May 1977 (DHEW Publication No. (NIH) 77-200).

Medical and Health Related Sciences Thesaurus. In addition to its in-house use, the revised edition (DHEW Publication No. (NIH) 76-470) was distributed on a request basis to research analysts, information specialists, and other individuals who have responsibility for scientific communication systems.

CRISP Services. In addition to responding to hundreds of requests on a wide range of subjects, the Section prepared Linotron tapes used in the creation of extract Indexes for five institutes; provided Scientific Profile data reports and/or CESI tapes for numerous Grantee Institutions; furnished NIH-wide scientific area data to appropriate institutes; performed professional editing operations involving thousands of approved research grant and contract applications during the current fiscal year, and had a significant role in providing material to NIH and interagency coordinating committees relating to diabetes, arthritis, genetics, nutrition, recombinant DNA and other topics.

4. Reports, Analysis and Presentations Section.

The primary function of the Section is to satisfy the information requirements of NIH and PHS centralized extramural activities. In fulfilling this function, the Section utilizes the IMPAC system, as well as other data sources. Its responsibilities include: design, maintenance, and operation of computer reporting systems; training and technical assistance in data retrieval; planning and coordination of NIH responses to annual surveys covering Federal obligations for R and D; preparation of formal publications such as listings of NIH grants and awards and the NIH Basic Data booklet; statistical analysis to compile and present visual materials dealing with extramural trends or other topics; and the development and implementation of special evaluation projects. This Section also works closely with the Data Processing Section in maintaining and extending the IMPAC system, and has direct responsibility for establishing institution classifications and related computer files, and ensuring the accuracy of selected key data items for publication or reports.

Publications. The following volumes of listings of NIH extramural awards were issued:

- 1) National Institutes of Health Research Grants, FY 1976
(DHEW Publication No. (NIH) 77-1042)

- 2) National Institutes of Health Grants for Training, Construction, Medical Libraries, FY 1976 (DHEW Publication No. (NIH) 77-1043)
- 3) National Institutes of Health Research and Development Contracts, FY 1976 (DHEW Publication No. (NIH) 77-1044)

The following volumes of the annual multivolume series on PHS grants and awards were issued:

- 1) Public Health Services Grants and Awards, Part I, FY 1975. Research Grants (DHEW Publication No. (NIH) 76-1134)
- 2) Public Health Services Grants and Awards, Part II, FY 1975. Training, Health Manpower Education, Construction, Medical Libraries (DHEW Publication No. (NIH) 76-1134)
- 3) Public Health Services Grants and Awards, Part III, FY 1975. Health Planning and Health Services Grants (DHEW Publication No. (NIH) 76-1135)

Data for the pocket reference book, Basic Data Relating to the NIH-1976, were compiled in cooperation with the NIH Office of Program Planning and Evaluation. This publication presents information on the programs and resources of the NIH.

Special Statistical Presentations. The Section compiled and analyzed extramural program statistics for fiscal years 1967-1976, and participated with the Chief, Statistics and Analysis Branch, in developing a set of 35 mm slides illustrating key extramural trends. These slides were presented formally to the Director, NIH, and other officials in October 1976, and subsequently to various additional audiences. The data were also issued, with an accompanying analysis, in a chart-book entitled NIH Extramural Trends, Fiscal Years 1967-1976, prepared for administrative use.

Reporting Activities. The annual survey conducted by the National Science Foundation, entitled Federal Funds for Research, Development, and other Scientific Activities, is coordinated and prepared by this Section for the entire NIH. In general, the survey covers all the NIH intramural and extramural research activities for the past fiscal year along with the estimated obligations for the next 2 fiscal years, by performer, field of science, geographic area, basic and applied research and development, and combinations of the above. A segment of the report is also devoted to "Scientific and Technical Information Activities."

The CASE Report. The survey of DHEW obligations to institutions of higher education and other nonprofit organizations summarizes support to individual institutions. The NIH response to this survey is coordinated and prepared by this Section. It requires an institution-by-institution report of all NIH extramural support, by program, for most nonprofit organizations, with an individual report for each health professional school. In addition, data by field of science grouping and program are also requested for insti-

tutions of higher education.

The Section assisted other PHS agencies by compiling research and research training portions of their CASE reports as recorded in the IMPAC system.

Obligations for Medical and Health-Related Research and Training Activities is an annual survey of all Government-sponsored medical research and training. The NIH response to this survey is also coordinated and prepared by this Section and requires data on intramural and extramural research and development, by field of science, performer, programs, and state.

At the beginning of each review cycle for research and training applications, statistical reports are prepared which present data on the number and dollar value of applications received for review. The presentation is by institute, fiscal year of support, type of application, and IRG. Copies are distributed to each institute/division, and to the DRG Referral Branch. In addition, statistical tables showing summaries of initial review group actions on research and training grant applications are prepared twice during each review cycle for use by the Division of Financial Management and the institutes/divisions.

About 130 monthly reports were regularly prepared for the institutes and divisions covering data on grants and contracts currently active, and fiscal year awards made to date by geographic location, principal investigator, program class, grant number, and budget start date. These reports were distributed to about 150 individuals in the I/Ds of PHS. In addition, reports or computer tapes were provided to institutes on a weekly basis.

Listings and address labels were furnished to DFM, OD; ADAM; and FDA on a monthly basis, identifying the grants for which reports were overdue.

The Section supplies material each month for the NIH Management Book, published by the Associate Director for Administration to provide management with a comprehensive view of the resources, status, and trends of major programs and operations.

Inquiries. The Section responds to hundreds of requests for information each month from Federal agencies, NIH officials, other Government and Government organizations. These requests are primarily for statistical and analytical information concerning the NIH extramural programs and characteristics of grantee institutions contained in the IMPAC system. The response to these inquiries frequently requires analysis and compilation of historical data covering several years, design of special computer reporting systems, providing consultation services to requesters concerning available data, and assisting in developing specifications for the output. The Section is responsible for supplying magnetic tape extracts from the IMPAC system to several institutes and outside organizations for special research projects or as inputs to existing management information systems.

The Section has devoted considerable effort to the development of shelf

or reference listings, unpublished reports, and microfiche, to answer routine inquiries covering support to individual investigators or specific institutions. The Inquiry and Reporting System (a computer software facility) is the primary method for data extraction, manipulation, and hard-copy presentation requested. More than 18,500 computer runs were processed by the Section during fiscal year 1977 (including the TQ).

Institutional Research. The Section has the responsibility for establishing and maintaining the Institution Profile File (IPF). The IPF is the central registry of names, locations, geographic and other selected data for organizations participating in the Public Health Service extramural programs. This file is the single source for organizational information established to assure uniform reporting and to eliminate the necessity for storing similar information in individual grant and award files. In fiscal year 1977, approximately 1,200 new institutions were added to the IPF. The IPF now contains about 23,000 records on institutions that have participated in NIH and other PHS agency activities.

During the year a system was developed and implemented to provide IPF codes to the PHS Office of Administrative Management (OAM) for inclusion in the Grants Data System (GDS). Initially, all fiscal year 1976 GDS records were assigned IPF codes. Subsequently, under a cooperative arrangement between the Section and the OAM, a copy of the IPF will be transmitted monthly for OAM to determine institution codes for new GDS records and to update the GDS file. Information concerning GDS grantee organizations that cannot be coded will be transmitted to the Section, which will be responsible for the necessary research to identify, or to create, appropriate IPF records. It is expected that this system will speed up year-end publications on PHS grants and awards, and will improve the efficiency of the Section by spreading out the workload more evenly through the year.

Grants and Contracts Information Interface. The Section operates the "NIH/Institution Interface System," which provides information to grantee institutions on their awards and applications. The information, which is provided on either magnetic tape or in predesigned reports, is provided to the institution in exchange for feedback dealing with suggested changes to the IMPAC data.

The system was developed in cooperation with the American Association of Medical Colleges in response to requests from several grantee institutions.

The primary objectives of the System are to improve the integrity of the data in the IMPAC system; provide a cost-effective service to grantee institutions, and to promote systems compatibility through common items and definitions.

Research Grant Manpower Reports. The Section, with the aid of a contractor supported from evaluation set-aside funds, developed a system for creating fiscal year reporting files containing data submitted by principal investigators covering paid employment on NIH research grants. These data include occupational category, paid weeks worked, degrees, and salaries received from grant funds. Separate files are now available for fiscal years

1973-1975. Statistical tabulations for these years have been supplied to the National Academy of Sciences for their studies of biomedical research manpower needs under the NRSA, as well as to other users. In addition, a series of reports for use by NIH management is being prepared.

Research Grant Expenditures. A computerized data base of the Report of Expenditures (ROE's) for fiscal year 1973 NIH research grants was established, and similar data for fiscal year 1974 are being compiled.

Retrieval Methodology. Two basic courses on the IMPAC Inquiry and Reporting System (IRS) were offered during the year. Thirty-four persons attended. IRS is the primary instrument for extracting and reporting IMPAC data.

There are about six consultations each day for DRG and institute/division personnel to assist in debugging queries, developing advanced queries, and applying new techniques.

Retrieval Applications and Procedures. RAP was continued as an informal technical series to provide users with accurate information and instructions on how to apply new or more efficient retrieval procedures and to correct recurring IRS problems. Two issues were prepared containing information about "Better Reporting with the IPF" and "Microfiche Processing with IRS." About 70 copies of each issue were distributed to institute/division personnel responsible for compiling IMPAC data.

Graphic Arts. Approximately 2,900 pieces of graphic art work and photographs were completed by the illustrator in fiscal year 1977. In addition, he provided consultant services to various officials concerning visual communications projects. Other work involved designs, updates of the CRISP and Grants Associates brochures, charts, certificates, signs, slides, and vugraphs.

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***DIVISION
OF
RESEARCH
GRANTS***

ANNUAL REPORT

Fiscal Year 1978

*United States Federal Institute of Mental Health
Research Grant
Report of a grant activity*

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HIGHLIGHTS

Decisions by the Director, NIH, on recommendations of the Grant Peer Review Study Team were implemented by activation of a Review Procedures Revision Committee, and a Priority Score Committee. Committees were also activated to review the recommendations as they relate to business management practices and to develop appropriate mechanisms for publicizing the selection of initial review groups and advisory council and board members.

Notices describing the informal pre-award appeals process, and new procedures for notifying principal investigators of their priority scores were published in the NIH Guide for Grants and Contracts.

A subcommittee of the NIH Forms Committee has been working on an extensive revision of NIH Form 398.

Plans have been underway for additional study sections, staff, consultants, and space to provide a permanent solution to the work overload.

The flexitime experiment in the Project Control Section, Referral Branch, proved to be enormously successful.

A major change was made in the payment of stipends for individual fellowship awards.

The Notice of Research Fellowship Award form was revised.

Issuing the monthly listing of new grants and awards on a quarterly rather than monthly basis has resulted in considerable reductions in cost and man hours.

The NIH Extramural Central Data System was improved so that user services could be expanded.

A tracking system was installed within the IMPAC System to monitor research projects involving recombinant DNA molecules.

The Trainee Appointment file was redesigned to provide more current information on indirect trainees supported by PHS training grants.

The redesigned CRISP System was implemented to provide simpler, faster, and cheaper access to the files, reducing maintenance time and cost approximately 60 percent.

A special item was added to IMPAC System to identify applications received in response to the program announcement on studies of diabetes mellitus and related problems.

A computer system was established to store data on multiproject grant applications.

"Random Access for Institutes and Divisions (RAID) Routine" was established in the

IMPAC System.

A Variable Classification (VAC) System on Trans-NIH issues was developed which provides a flexible system whereby information on trans-NIH issues may be captured, processed, and presented.

Administrative responsibility for the new Extramural Associates Program was assigned to the Division in January 1978.

OFFICE OF THE DIRECTOR

The Director, Dr. Carl D. Douglass, spoke on NIH research funding at the 13th Midwest Regional Meeting of the American Chemical Society held at the University of Missouri in Rolla, Missouri, on November 4, 1977. On November 14, he presented the welcoming address to participants in the first Scientific Evaluation Workshop on Mechanisms of Localized Bone Loss in Washington, D.C., and participated in the 4th Annual Workshop on Proposal Development, Sources of Support, and Research Management at North Carolina State University in Raleigh, North Carolina, on February 7-8, 1978. Dr. Douglass presented the opening statement at the Workshop on the Biology of Aging held at NIH on March 7, and spoke at the Workshop on Proposal Preparation at Montana State University, Bozeman, Montana, on March 17. He discussed problems associated with the review of grant applications at the meetings of the AAMC Council of Academic Societies on March 22 and the AAMC Council of Deans on March 23, and on the same subject with the Councils of the Pharmacology Society, Physiology Society, Pathology Society, and the FASEB Board at the Atlantic City meetings of FASEB on April 9. On September 14-15, Dr. Douglass spoke on recent trends in NIH programs to the Association of Independent Research Institutes in San Antonio, Texas.

Dr. Douglass also attended meetings of the USDA Competitive Research Grants Office Policy Liaison Group.

The Associate Director for Scientific Review, Dr. Stephen S. Schiaffino, participated in a seminar on the extramural programs at the University of Maryland, Baltimore, Maryland, on December 8, 1977, and in a conference on NIH grants and contracts sponsored by the Chicago Area Grants Officers' Group in association with NIH in Chicago, March 28-29, 1978. On April 12, Dr. Schiaffino addressed the research staff of Henry Ford Hospital in Detroit, Michigan, on the grant review process. He spoke on grantsmanship to the Northeast Regional Society of Research Administrators in Washington, D.C., on April 26, and to the April 30-May 2 meeting of the Society of Chairmen of Academic Radiology Departments (SCARD) in San Antonio, Texas. Dr. Schiaffino also participated in a workshop on grantsmanship sponsored by West Virginia University in Morgantown, West Virginia, on May 22, and attended the annual meeting of STEP Committee at Airlie House, Warrenton, Virginia, on June 26. During July 20-22, Dr. Schiaffino gave presentations on grants processing to the National Academy of Clinical Biochemists at their Second Annual Meeting, San Francisco, California, and at the meeting of the business group of the Association of American Medical Colleges (AAMC) at Airlie House, Warrenton, Virginia, September 24-26.

Dr. Schiaffino is chairman of the NIH Forms Committee and the Executive Secretaries Review Activities Committee. He is a member of the NIH Executive Committee for Extramural Affairs, the ECEA Subcommittee on Research, the ECEA Subcommittee on Training, the NIH Task Force on Travel, an ad hoc Advisory Group on Diagnostic Radiology, the group to review applications for the new NIH Extramural Associates Program, the Long Range Planning Group on NIH Facilities, the Task Force on Extramural Facilities, the Coordinating Committee for NIH Minority and Women Research and Training and its

Subcommittee on Information, and the Implementing Committee for the Grants Peer Review Study Team.

Wide distribution has been given to the document, "Decisions by Director, NIH, on Recommendations of Grants Peer Review Study Team, February 8, 1978." The Implementing Committee chaired by Dr. Thomas E. Malone, Deputy Director, NIH, of which Dr. Douglass and Dr. Schiaffino are members, has reviewed all the GPRST recommendations approved by Dr. Donald S. Fredrickson, Director, NIH, and has assigned priorities for activation. The Division of Research Grants has an active role in the implementation activities. To date, notices have been issued in the NIH Guide for Grants and Contracts, one describing the Informal Pre-award Appeals Process (August 4, 1978), and another calling attention to the procedure whereby following September-October 1978 council/board meetings, and routinely after each subsequent round of council/board meetings, the summary statement, with priority score displayed will be sent to the principal investigator (August 18, 1978). Accompanying the summary statement will be an attachment describing the procedure for arriving at the raw and normalized priority score, and a brief comment on the factors that entered into the funding decision. In addition, the Division and ADERT activated a Review Procedures Revision Committee, co-chaired by two DRG executive secretaries, with the charge to revise and update initial review procedures and assure that relevant GPRST recommendations are incorporated, and a Priority Score Committee, chaired by a BID staff member, with the charge to study BID practices regarding the use of "raw" and "normalized" priority scores and make recommendations regarding a uniform NIH-wide convention for computing these scores. The Division and ADERT are also activating a committee to develop appropriate mechanisms for publicizing procedures for selection of initial review group and advisory council/board members, and have activated a committee, chaired by the Director, Division of Management Policy, charged to review GPRST recommendations relating to business management practices so that recommendations with which the Director concurred can be incorporated into revised or modified operating procedures.

The Division of Research Grants will continue its active role in the overview of implementation actions for which the Division and/or the Office of the Associate Director for Research and Training, NIH, has been assigned responsibility.

A subcommittee of the NIH Forms Committee, composed of representatives from the BIDs under the chairmanship of Dr. Asher A. Hyatt, has been working on an extensive revision of NIH Form 398. The subcommittee conducted a survey, initiated by OD/DRG, of all DRG study section members and executive secretaries for suggestions to improve the form. Over 600 responses were received to the 2-page questionnaire drawn up by the subcommittee.

The Division's formal employee training program continued throughout the year to meet the career development needs of the staff. Many employees were able to maintain their continuing education efforts under the Upward Mobility Program by attending classes at the University of the District of Columbia. In addition, over 300 employees enrolled in training courses designed to enhance their job performance under the provisions of the

Government Employees Training Act.

The Personnel Office continues to provide new employees an opportunity to attend the DRG Orientation Program and works closely with the Employee Advisory Committee on providing training programs of current interest to employees. An example of the cooperative effort was the presentation of the Consumer Education Program which was made available to all Westwood Building employees.

As a member of the NIH Division of Equal Opportunity Affirmative Action Plan Evaluation Criteria Task Force, the EEO Counselor met with the Director, DEO, and other Task Force members and developed identifications and definitions of seventeen basic items for consideration as criteria for evaluating NIH/BID Affirmative Action Plans. The EEO Counselor also served on an EEOC Committee to improve relations between the Division of Equal Opportunity and the EEO Council, and the EEOC Executive Board Special Study Committee on reorganization of the Council. He was chairman of the EEOC Committee on Counseling and represented this Committee on the EEOC Executive Board, of which he is also a member. In DRG, the Counselor chaired the Affirmative Action Plan Committee to develop the Division's 1979-1981 AAP, and also the Committee to draft the report covering the annual assessment of DRG/EEO/AAP activities. He is a member of the DRG Employee Advisory Committee (formerly The Opportunities Committee), and represented the Division for input/output of NIH/EEO data and related information. In addition to his counseling duties, the EEO Counselor participated in DRG employee orientation activities by providing new employees with information about the EEO program, attended regularly scheduled bi-weekly meetings of the EEOC, special EEO council meetings with the Director, NIH, and participated in relevant training courses.

The Opportunities Committee (TOP) became the Employees Advisory Committee (EAC) to reflect the broader scope of the Committee which now functions as an EEO advisory group in addition to its former responsibilities. The Women's Advisory Committee Delegate and the EEO Counselor were added to the EAC membership. The Committee will continue to serve in an advisory capacity to Dr. Douglass and will provide a channel through which a multiplicity of concerns will be conveyed to the Division's top management personnel for resolution. Among its accomplishments during 1978, the Committee restructured and refined the formal orientation program for new employees; arranged for a consumer education course to be made available in the Westwood Building, and for appointments at the Clinical Center for employees receiving routine allergy injections. The Committee is endeavoring to have counseling made available for employees and their supervisors on training. Arrangements were made for the National Automobile Dealers Association (NADA) blue books and the Federal Employees Almanac to be available to staff for perusal.

The NIH Women's Advisory Committee, formed in 1976 with 35 volunteer members representing the BIDs, has responsibility to represent all NIH women. It has a working charter and a mandate to advise the Federal Women's Program Coordinator (FWPC), to serve as an advocate group for women and a communication channel between women and management, and to identify problems and recommend solutions.

Although hampered by lack of training and time allotted to accomplish their goals, the delegates have sponsored seminars and films of interest to women, helped to develop affirmative action plans, circulated training information, and established a network for exchange of information between NIH women. Through subcommittees, problem areas and possible solutions have been explored. Important among these is an ongoing study to develop a volunteer advocacy program that will assist and represent employees involved in grievances. Efforts are also being directed towards getting WAC recognized as an official advocate group for women.

EXTRAMURAL ASSOCIATES PROGRAM

In November 1977, the NIH announced a new program under the Intergovernmental Personnel Act (IPA) (Public Law 91-648, 1970) to promote the entry and participation of ethnic minorities and women in NIH-supported research. The program developed out of the Extramural Residency Program for Women and Minorities which was renamed the NIH Extramural Associates Program.

The Division of Research Grants was assigned administrative responsibility for the new Program in January 1978.

On August 1, the first five Associates joined the Program. They are from St. Mary's University, San Antonio, Texas, Paine College, Augusta, Georgia, the University of Hawaii, Monoa, Chicago State University, Chicago, Illinois, and the University of Maine, Orono.

The Associates will receive 6 months of training in NIH and associated extramural programs before returning to their institutions.

GRANTS ASSOCIATES PROGRAM

Fifteen Grants Associates, of which three were women, and three minorities, participated in the Grants Associates Program this year. Three (20 percent) were from the NIH Intramural Programs and five (33 percent) were from other Federal non-PHS agencies. Five GAs graduated, each of whom assumed health scientist administrator positions at the NIH (one each in NIAID, NIA, NHLBI, NIGMS, FIC), bringing the total number of GA graduates to 122, of which 109 were males (89 percent); 13 were females (11 percent); and 14 were minorities (11 percent). Seventy-three percent (89 of the 122 graduates) are currently with the PHS (76 of these, or 62 percent, are with NIH); 6 percent (8) are with other Federal non-PHS agencies. (Fourteen are in other non-Government agencies or in universities, and 11 more are deceased or retired).

Last year's Affirmative Action Plan was evaluated. The slight increase in the pool of women and minority applicants for the Program was disappointing. This year, in addition to continuing to place a GA Program announcement in the various newsletters of scientific organizations composed primarily of women and minorities, announcements were also mailed out to over 200 colleges and universities whose enrollment is primarily women or minorities.

The Civil Service Commission requested Grants Associates Board input into the selection and rating criteria which the CSC panels of special examiners use in rating GA applications. This resulted in a mutual benefit. There was increased and improved communication and understanding between the GA Board and the Panels of Special Examiners regarding the qualities required in GA candidates. Further, the criteria suggested by the GA Board and accepted by the CSC has resulted in a firmer basis for the panelists' rating. Panelists are more comfortable with the rating procedures and ratings are more consistent.

The GA Board reviewed 15 GA candidates this fiscal year (through 8/78) and selected 4, each of whom has accepted.

The GA Board, through its Training Committee, reviewed contracted management training as well as other training in this area. Because of the varied experiences and backgrounds of GAs, no one packaged course in management could serve all GAs. Therefore, the Board recommended that training in management be offered to each GA through whatever means exist that would be most efficacious for that individual GA as determined by his/her preceptor. Hence, existing courses, assignments or other modes as individually meaningful and beneficial to the GA would be used for management training.

Collectively, GAs took 15 different formal courses for a combined total of 1432 hours of training (beyond the Seminar Series), an average of 3.25 work weeks of time. The Seminar Series consumed approximately 4.68 work weeks of each GA's year. Hence, the average time spent in formal training per GA in the GA year is just short of 8 work weeks or 16 percent of the GA year. The cost of this training (including travel and

tuition) was \$10,455, most of which was used for the four courses required of each GA).

This year every Board Member was provided with copies of all critiques of courses GAs have taken. This was not only to inform them of the existing courses (in addition to the course announcements and catalogs which are provided for preceptors and GAs) but also to provide a system of evaluating courses for the benefit of preceptors in their discussion of training with their respective GAs. It also provided a base for the Training Committee to make recommendations.

The Seminar Series is still the major source of formal training. Forty seminars were provided this year for a total of 187 hours of training for the GAs and the 20 non-GAs who were selected by Acting ADERT for participation in this year's series.

There are plans to issue a certificate to each GA upon completion of the GA Program and a separate certificate to GA Board members as their terms expire. Such certificates will be issued to former graduates of the Program and to former GA Board members. Plans are also in process for the publication of an annual directory of Grants Associates.

OFFICE OF GRANTS INQUIRIES

The number of telephone and written inquiries on NIH research and training support mechanisms, and research programs remained at the same level as in previous years.

During the year, OGI dealt with approximately 200 requests for data on NIH-supported research that entailed manual or computer runs on different research areas or disease entities.

The decision to prepare the monthly press release on new grants and awards as a quarterly rather than a monthly publication has resulted in saving of staff time and money. Whereas the printing cost in 1976 was \$7,665, the 1977 issues cost \$5,591, a saving of \$2,074 without allowance for inflation. The saving in mailing costs was over \$1,600. Although there is demand for the publication, there have been no repercussions from congressmen, the scientific community, or general public on the change in frequency.

The Office arranged for reprinting and dissemination of three new articles on the review process:

Bondurant, Stuart: Peer Review of Research Grants by NIH Study Sections, Clinical Research, Vol. 25, December 1977;

Grants: Fuel that Feeds Research, Bulletin of the American College of Physicians, Vol. 19, No. 1, January 1978, and

NIH Peer Review System: Facts and Figures on Study Sections Add Up To Trouble, Federation Proceedings 37, Public Affairs Insert (August) 1978.

The Office revised the pamphlet, NIH Support of Meetings—Special Information and Instructions, the flyer on Research Program—Project Grants, and updated publications such as the Scientific Directory and Annual Bibliography, the NIH Almanac, and documents submitted by non-Federal organizations and the Library of Congress.

The Office also assisted in the preparation and production of workshop reports, and provided editorial services to DRG staff members.

There continues to be a steady demand for documents disseminated by the Office: "NIH Advisory Groups", "Basic Data Relating to the NIH", and articles on the review process are the most frequently requested.

The Information Officer serves as the Division's Freedom of Information Officer and Privacy Act Coordinator. Eleven Freedom of Information Requests and 58 Privacy Act requests were coordinated during the year.

A senior staff member was appointed to the DRG Committee to prepare the Division's Affirmative Action Plan, and continues to represent the Division on the NIH Task Force

to Implement Regulations on Nondiscrimination on the Basis of Handicap.

The Information Officer attended a seminar on Conflict and Agreement and a member of the staff took three courses: Organization and Administration on Aging, Fundamentals of Financial Accounting, and Administrative Law.

OFFICE OF RESEARCH MANPOWER

The Office of Research Manpower (ORM), which is a small unit in the Office of the Director, DRG, works closely with the Research Manpower Office, OD, NIH, in directing and coordinating the NIH research training programs.

The Office had the leading role in developing the NIH training statistics needed by the National Academy of Sciences for their Annual Report on Personnel Needs and Training for Biomedical and Behavioral Research. This year the report was prepared entirely by computer, which led to a higher degree of uniformity and standardization, whereas last year the individual BIDs had to develop the tables themselves based on computer prepared listings. This year the BID's role was verification of data. The cooperation and communication between the awarding units and DRG led to the discovery of a missing factor in training statistics involving grants extended without additional funding. DRG is now in the process of remedying this which should result in more comprehensive reports in future years.

During the year, as a result of a report developed by a subcommittee of the Grants Management Advisory Committee (GMAC), a major change was made in the system of paying stipends for individual fellowship awards. Fellows are now paid through their institutions rather than directly by Treasury check. This change will reduce the cost of running the program at NIH and should foster a closer and better relationship between the fellow and the sponsoring institution.

Another GMAC subcommittee, chaired by the Program Analyst, ORM, with representation from SAB, dealt with problems associated with the Payback Provision of the National Research Service Award. The subcommittee's final report was submitted to the full GMAC committee in June.

Payback continues to be an active issue. ORM has been working all year to develop an NIH Manual Issuance on Payback for the guidance of staff in implementing payback. In addition several subcommittees of the NIH Extramural Training Advisory Committee (NETAC) have been working on payback issues. ORM has standing representation on these committees.

ORM also is involved in forms development and revision, including a revised NRSA Institutional Grant Application form and instructions which has now been submitted for comment to the NIH Extramural Forms Committee. The revision was developed by a subcommittee of NETAC on which the ORM representative served as executive secretary. The revisions propose a major restructure of the Detailed Training Proposal which is the core of the Institutional Grant Application.

ADMINISTRATIVE BRANCH

The Administrative Branch continued to provide the Division with administrative and financial management (including budget and scientific evaluation grants), property and supply control, space planning and assignment; to maintain supplies of publications and application forms used in the PHS extramural programs; and to be responsible for the efficient running of the components for effective coordination of procedures and services. The Branch has assumed responsibility for centralized distribution of application forms by the grantee institutions. A number of studies were conducted and/or directed by the Branch involving a number of management activities, the results of which may mean a reorganization or the application of new technology within the Division.

Financial Management Section: The Section assisted in administering about \$16 million for the Division's operations, of which \$12.2 million was from the NIH Management Fund, supplemented by \$3.8 million from the Institutes for the support of the Scientific Review and Evaluation Grants (SREG) awarded to study section chairmen. The Section monitored the expenditures from these SREG's through a computer data base system that also provides NIH management with up-to-date monthly cost analyses progress reports. Consultant costs were again paid almost entirely from the SREG's with consequent savings in both time and effort. The Section continues to report approximately 6,500 individual payments made to about 2,500 consultants who submitted 5,800 vouchers to the NIH-wide computer-based system for reporting consultants' income. In addition to the audit of the 5,800 consultants' vouchers, about 900 vouchers were audited by this Section for Division employees and others. The Section provided technical guidance in the preparation of time and leave reports and also provided management and technical review of all time and leave reports prior to their submission.

Office Services Section: The Section continued to review and approve requests for supplies and equipment needed by the Division; to provide property and supply control; to participate in space planning and assignment; to maintain the Division's mail room; to be responsible for wide distribution of PHS and NIH extramural forms and publications; to maintain liaison with other NIH service components for effective coordination of procedures and services; and the responsibility of maintaining the institutional application control.

The number of grant application kits assembled and handled continued to average around 10,000 a month, and about 9,500 miscellaneous packages were mailed each month. The Mail Unit received and processed approximately 35,000 grant applications of all types, and a large volume of supporting documents, letters and publications.

Reference Room: With the recent acquisition of additional shelves, the Reference Room has restored its journals to their proper place within the Reference Room thus making it more convenient to obtain needed material. Additionally, library

service has been extended to Executive Secretaries by personally obtaining books and xeroxed articles from the NIH Library when speed is essential.

The Reference Room recently updated its college and university catalogs, and continues to update its reference books and telephone directories. Recently it added travel material to its collection.

REFERRAL BRANCH

The number of applications assigned and processed by the Referral Branch in Fiscal Year 1978 exceeded the previous record year, Fiscal 1977. Competing and noncompeting applications reached 38,472, reflecting a 3.5 percent increase from the previous year's total of 37,161.

During the fiscal year the Branch responded to the receipt of applications resulting from 42 announcements to the scientific community reflecting special emphasis programs of the awarding units.

The Chief of the Branch, Dr. Luis Angelonez, participated in the "Annual Internal Research Conference" at Drexel University in January 1978. The Assistant Chief for Research, ^{Mr. Frederick G. Gutter} Dr. Alfred Hamel, gave a talk on April 18, 1978, to the Department of Psychiatry, State University of New York, Downstate Medical Center, Brooklyn, on "Public Health Service Support of Research and Training." In May 1978, he also participated in a "Workshop on Extramural Programs" for the Pharmacology Research Associates of NIGMS.

Evaluation of the flexitime experiment in the Project Control Section indicates no real problems incident to flexitime and that there has been marked improvement in employee morale. The Branch administration concludes that the flexitime experiment has been enormously successful and recommends its continuation.

There have been two changes in the Project Control Section of the Referral Branch. The cartridge microfilm machines have been replaced with machines for use with Microfiche. The files containing the renewal cards and award statements were eliminated. All of this material is on the Microfiche.

Training and development courses were supported by management for Branch personnel with seven participating in miscellaneous training courses. All training was job-related for the purpose of enhancing skills and better job performance. Two employees are enrolled in Upward Mobility College.

A table showing the distribution of applications processed in Fiscal Year 1978 is appended to this report.

APPLICATIONS PROCESSED BY REFERRAL BRANCH FOR FY 1978 COUNCILS

Council		Aug/Oct 1977	January 1978	May 1978	Total FY 78
		<u>COMPETING</u>			
Number of Applications (1)	New	6913	4961	7002	18876
	Renewal	1399	1985	1945	5329
	Supplement	197	105	169	571
	TOTAL	8509	7051	9116	24676
Distribution (percent)	NIH	83.9	84.5	78.3	
	ADAMHA	12.9	12.8	19.0	
	Other (2)	3.2	2.7	2.7	
		<u>NON-COMPETING</u>			
Type 5		7316	1883	3164	12363
Interim		534	501	398	1433
(Administrative)	TOTAL	7850	2384	3562	13796
COMPETING		8509	7051	9116	24676
NON-COMPETING		7850	2384	3562	13796
GRAND TOTAL		15359	9435	12678	38472

(1) Includes applications for regular research, program projects, centers, construction, training, fellowships, career awards, and minority programs.

(2) Includes FDA, HRA, OH

RESEARCH ANALYSIS AND EVALUATION BRANCH

The Research Analysis and Evaluation Branch's FY 1978 activities were primarily concerned with providing staff resources to the OD-NIH, OD-DRG, other NIH directorates and program officials in the analysis, evaluation, development and planning efforts in the extramural biomedical research program. The Branch prepared studies on diagnostic radiology, virology research, immunology, solar and ultraviolet radiation, research activities with components related to the physically handicapped, marine mammal research, radiology and radiation research, clinical biochemistry, health services research, medical devices, pharmacology, and epidemiology.

RAEB continued to be responsible for producing the NIH Annual Inventory of Clinical Trials through contacts with the various institutes. The NIH Inventory of Clinical Trials is a central repository of information on the hypotheses being tested, fiscal and administrative data, population characteristics of patients, experimental design data, and bibliographic data on clinical trials supported by NIH.

The staff undertook the following studies: The relation between sex and fellowship funding for the years FY 1971-1975; Characteristics of the sub-Principal Investigators; Support of New Principal Investigators by NIH: 1976-1977; A new and rapid method for estimating funding in various extramural program areas; Price evaluation of the Medical Science Training Program, and developed a computer-aided approach to eliminate double counting in computer retrieval of information on scientific program outputs when sub-categories are established, and the Division of Computer Research Technology's symbolic logic retrieval system for use with the committee member file.

The staff assisted or participated in the operation of the following committees: Grants Associates Board, Extramural Associates Review Panel, DHEW committee to coordinate toxicology and related programs, Nutrition Coordinating Committee, Technical Review Committee for National Research Council contract proposal, IMPAC Evaluation Subcommittee on Technical Data, the B/I/D Evaluation Working Group, the NIH-OD Evaluation Working Group, the NIH Behavioral Sciences Working Group, and the NIH Clinical Trials Committee.

The Branch worked closely with the NIH Office of Program Planning and Evaluation to prepare charts and other materials for an overview of each institute's activities in terms of science base, clinical applications, transfer and research training (SATT). The NIH Director used these analyses of institute programs by SATT and mechanism of support in his Forward Plan review sessions with each of the institutes, and the NIH composite of SATT in congressional hearings. The Branch assisted the NIH Budget Office in translating the activities into the categories used in a budget exercise along the same lines. The relationship between SATT and other broad R & D descriptions for national reporting systems was described in guidelines prepared in cooperation with the Division of Resources Analysis for the use of the institutes' OPPE staff.

SCIENTIFIC REVIEW BRANCH

Applications assigned to the Scientific Review Branch for review for scientific merit during fiscal year 1978 totalled 17,477. The heavy workload problems continue and plans for a permanent solution are being developed which will necessitate additional space, study sections, staff and consultants. It is expected that during fiscal year 1979 this will be accomplished. The Branch was allocated additional space for study sections and plans are in discussion stage for more space in 1979.

The name of the Social and Behavioral Sciences Review Section was changed to the Behavioral and Neurosciences Review Section. Also the following study section names were changed: (1) Medicinal Chemistry B to Bioanalytical and Metallobiochemistry, (2) Population to Social Sciences and Population, (3) Experimental Psychology to Bio-Psychology, (4) Developmental Behavioral to Human Development.

Training and development courses were again supported by management for Branch personnel with 69 (including employees taking more than one course) participating. Twenty-six employees attended Executive Management courses and STEP seminars; 43 attended miscellaneous courses. Two employees received BA degrees and one employee received an AA degree from Upward Mobility College. Five employees continued enrollment at Upward Mobility College.

Staff members participated in the following seminars:

Dr. Thomas M. Tarpley lectured on "Grantsmanship and the Peer Review System" for the American Academy of Oral Pathology, April 1978, and on "Salivary Glands - Development, Function and Swelling" at Georgetown University Dental School Graduate Program, April 1978.

Dr. Tarpley also participated in Project (REACH) Research Education, and Community Health - Utilizing the Communications Technology Satellite-subject-Oral Cancer, March 1978; Sialoadenopathies of Non-Neoplastic Origin - Annual U.S. Navy Short Course, January 1978, and "Peer Review and Grantsmanship" - The Ohio State University, August 1978.

Dr. Joseph A. Kaiser was a participant in the Advanced Scientific Writing Course at The Medical College of Pennsylvania, Philadelphia, December 6, 1977. Dr. Kaiser provided information on preparing and writing up grant proposals for submission to NIH for scientific review. As part of the joint program of the American Society for Pharmacology and Experimental Therapeutics and the Society of Toxicology during their annual meeting held at the University of Houston, on August 13, 1978, Dr. Kaiser conducted a graduate student workshop on the review of N.I.H. research grant applications, the peer review system, and the funding of approved applications.

The Pathobiological Chemistry and the Molecular Cytology Study Sections sponsored a workshop on "The Biology of Aging" on March 7, 1978, at Bethesda, Maryland. Co-

chairmen were Dr. Richard C. Adelman, PBC Study Section, and Dr. Vincent J. Cristofalo, CTY Study Section. Forty-three persons participated. As this is a relatively new and rapidly expanding area of research, it was thought important to present a current overview of problems that need to be attacked, and some recent findings and emerging concepts relating biochemical and cellular mechanisms to the aging process. Dr. Robert N. Butler, Director, National Institute on Aging, outlined some important problems in this research area such as the need for better experimental animal models, and the need to explore more thoroughly the related changes in biochemistry, pharmacology and nutritional needs. He also discussed the rapid growth of the institute and expectations of continued growth in the future. Dr. Richard C. Adelman, Institute on Aging, Temple University, discussed "Hormonal Regulation of Enzyme Activity During Aging." Results in this experimental area are complicated by both altered hormone production and altered response of various tissues to hormones during the aging process. Dr. George S. Roth, Gerontology Research Center, National Institute on Aging, discussed "Hormone Receptors and Aging." Some hormone receptor sites appear to be lost from target cells during aging. Dr. David Gershon, Roche Institute of Molecular Biology, spoke on "Accumulation and Turnover of Inactive Enzymes." He pointed out that some enzyme activities are decreased in older animals. Nevertheless, the lack of changes in molecular charge of certain enzymes purified from older animals refutes translational infidelity in aging. Dr. George Martin, Department of Pathology, University of Washington School of Medicine, spoke on "Genetics and Aging." He pointed out that hundreds of genes may be involved in the aging process and that changes may occur in gene regulation rather than in gene structure. Dr. Vincent J. Cristofalo, Wistar Institute, spoke on "Cellular Senescence." He discussed a large number of factors that have been found to change in correlation with the decline in proliferative capacity seen in cell culture from animals of increasing age, and Dr. Jerry Williams, Laboratory of Radiobiology, Department of Physiology, Harvard School of Public Health, discussed "DNA Damage and Repair During Aging." He pointed out, among other things, that the ability of cells to repair damage to DNA, for example that caused by ionizing radiation, varies during their life cycle.

The Toxicology Study Section sponsored a workshop at the Hyatt Regency Hotel, San Francisco, on March 13, 1978. Dr. Alarie of the University of Pittsburgh chaired the meeting and introduced the topic and the other speakers. Following the introduction of the workshop theme, "Basics of Inhalation Toxicology," Dr. Drew of Brookhaven National Laboratory spoke on "Problems of Exposure Technology." Dr. Menzel of Duke University Medical Center, spoke on "Problems with Exposure to Gases" and Dr. Morrow of the University of Rochester Medical Center, on "Problems With Exposures to Aerosols." The full presentation with questions and discussion required the full allotted time of 3 1/2 hours. The attendance exceeded 700. The proceedings were taped and will be accompanied by slides on loan from the Society of Toxicology.

The Immunobiology Study Section sponsored a workshop in Glacier National Park, Montana, on June 19-20, 1978. This, the Second McLaughlin Workshop, was on Immunology, Viruses and Cancer.

The purpose of the workshop was twofold: First, to provide to the Study Section detailed conceptual and technical information on scientific advances in disciplines which have been and will be increasingly central to immunobiology. The first day of the conference was devoted to this purpose and Dr. Purnell Choppin opened by describing the molecular mechanisms of enveloped virus attachment, penetration, and budding at the cell membrane. He highlighted new technologies and principles likely to be of interest to immunologists studying cell membrane receptors and ligands, discoursing primarily on influenza and parainfluenza models - viruses which are currently modish for the study of MHC-restricted T cell cytotoxicity. Then Dr. Walter Gilbert presented his revolutionary technique for DNA sequencing, and also described in detail progress and pitfalls in recombinant DNA technology. To prove the timeliness of his presentation, he went through the procedure he and his colleagues used to isolate and sequence the gene that codes for mouse alpha immunoglobulin chains. Dr. Leonard Herzenberg then apprised the group of efficient methodologies for the production, propagation, and assay of cloned antibody-secreting hybridomas of defined specificity. Finally, Dr. Michael Hunkepillar discussed the theory and practice of protein isolation, standard amino acid sequencing, and the exciting new techniques of microsequencing of femtomole quantities of proteins taken from acrylamide gel bands.

The second purpose of the workshop was to have the Study Section hold a mirror up to itself so that it could sense the type and quality of research each of the members practice. Sixteen 1/2-hour presentations provided a good sampling of the current state of the art in immunobiology and proved useful, and revealing, to the members. This was especially important for those who used this medium to begin new scientific dialogues, as members had tended in the past to isolate themselves somewhat by their own circumscribed scientific interests.

The Radiation Study Section sponsored a workshop in Bethesda, Maryland, June 14-15, 1978. There were approximately 70 participants. The aim of the workshop was to demonstrate to study section members and more broadly to the staff of the National Institutes of Health, as well as Federal agencies, that medical imaging is more than technology and indeed is becoming a definable science. Speakers explored the fundamental principles, image quantitation, observer performance and what future developments would contribute most to medical imaging. The complications of medical imaging and the rapid developments now taking place are so dramatic that the Study Section greatly benefited from such a workshop.

The Oral Biology and Medicine Study Section and the General Medicine B Study Section sponsored a workshop in Washington, D.C. on November 14-15, 1978, on recent progress in such diverse areas as immunology, microbiology, cell biology, anatomy and transplantation, cancer, and connective tissue studies that have revealed new mechanisms in the expression and regulation of bone cell activity. These findings are relevant to bone loss associated with inflammatory, neoplastic, and reactive states, as exemplified in periodontal disease, rheumatoid arthritis, osteosarcoma, Paget's disease and chronic osteomyelitis, as well as the localized osteoporosis of disuse. Therefore, a need was recognized to have the information from these diverse areas assembled with a focus on

possible pathogenic mechanisms operative in these bone lesions. It was intended that this assembly be distinct from those generalized metabolic bone diseases involved with mineral homeostasis. The purpose of this meeting was to survey the recent progress and current status of this expanding area, provide for an exchange of information between investigators in diverse areas and to improve the review capabilities of members of the two sponsoring groups. The proceedings of this meeting have been published and disseminated to the scientific community. It is anticipated that this publication will help define areas of fruitful investigation that will lead to therapeutic approaches for prevention and/or treatment regimens.

The conference program was developed through consultation with a number of leading investigators throughout the United States. During this process it became apparent that the fiscal mechanism available to support this conference would impose restraints. Further, recent progress in some areas such as chronic osteomyelitis are limited, while others such as cellular transplantation, macrophage-osteoclast and macrophage-bone relationships are mushrooming. Thus, an attempt was made to identify significant areas by focusing on functional as well as disease-related investigations in the expression of bone cell activity, thereby providing a balanced program. Omissions of relevant and fruitful investigation, therefore, should not be viewed as an oversight, but rather as the result of constraining influences.

Approximately 250 interested scientists attended this conference.

The following publications were prepared by staff:

Horton, John E., Tarpley, Thomas M., and Davis, William F. (Eds.): Mechanisms of Localized Bone Loss, Washington, D.C. and London, Information Retrieval Inc., 1978, 454 pp.

Bristow, J. D., Metcalfe, J., Krall, M. A., Welch, J. E., Black, J.A., and Dhindsa, D. S.: "Reduction of Blood Oxygen Affinity in Dogs by Infusion of Glycolytic Intermediates." Am. J. App. Physiol. 43: 102-106, 1977.

Brodie, A. M. H., Wu, J.-T., Marsh, D. A., and Brodie, H. J.: Aromatase Inhibitors III. Studies on the anti-fertility effects of 4-acetoxy-4-androstene-3,17-dione. Biol. Reprod. 18, 365-370, 1978.

Castro, A., Dhindsa, D. S., Hoversland, A. S., Malkus, H., and Metcalfe, J.: "Serum Biochemistry Values in Normal Pygmy Goats." Am. J. Vet. Res. 38: 2085-2086, 1977.

Castro, A., Dhindsa, D. S., Hoversland, A. S., Villa, L., and Metcalfe, J.: "Hematological Values in Normal Pygmy Goats." Am. J. Vet. Res. 38: 2089-2090, 1977.

Dhindsa, D. S., Metcalfe, J., and Hummels, D. H.: "Responses to Exercise in the

Pregnant Pygmy Goat." Respir. Physiol. 32: 299-312, 1978.

Murphy, W. S., Metcalfe, J., Dhindsa, D. S., and Hoversland, A. S.: "Respiratory Characteristics of Opossum (*Didelphis Virginiana*) During Chronic Anemia." Respir. Physiol. 32: 293-298, 1978.

Copeland, E. S.: "Mechanisms of Radioprotection - A Review." Photochem. Photobiol. (in press)

Archer, Ellen G., and Truitt, Edward B., Jr.: "Effects of Ethanol and Lithium on Rat Brain Adenosine Triphosphatase and Electrolyte Levels in Alcoholism and Affective Disorders." Goodwin, Donald and Erickson, Carlton, (Eds.): Spectrum Publishing Co., New York. (in press, 1978)

Stewart, Ileen E.: "Proceedings of Gait Research Workshop." DHEW-NIH: 78-199, 1978.

Snyder, H. R., Jr., Burrous, S. E., Freedman, R., and Hebert, T. J.: "S-(4-Chlorophenyl)3-Aryl-3-Hydroxypropanethioates as Antibacterial Agents." J. Pharm. Sci. 67: 413-5, 1978.

White, R. L., Burrous, S. E., and Schwan, T. J.: "Synthesis and Biological Activity of a Novel Analog of Nitrofuratoin," J. Pharm. Sci. 66: 277-8, 1977.

STATISTICS AND ANALYSIS BRANCH

The Statistics and Analysis Branch (SAB) is involved in almost every facet of NIH's extramural activities. Through its IMPAC System (a central data system on extramural activities) the Branch performs services at virtually every stage of application processing, from initial receipt through the final award. It assists the Referral Branch by providing a microfilm file every 2 weeks, containing information on all applications, awards, and contracts recorded in the system. It assists the Scientific Review Branch in the initial review function by providing various documents, such as the resume of IRG Actions and the Application Summary Statement (Pink Sheet). The SAB also assists the National Advisory Councils, as well as the awarding units, by providing such services and documents as the resume of Council Actions and the Notice of Award with accompanying Approval List.

While providing these services, the Branch is at the same time developing a data base on the extramural activities of the NIH. This data base is used to support all levels of NIH management and to provide a source from which NIH can meet its reporting obligations.

The SAB also operates a sophisticated computer disk storage and retrieval system, CRISP. CRISP (Computer Retrieval of Information on Scientific Projects) maintains scientific information, under approximately 7,900 subject headings, on all PHS-supported research projects by fiscal year back to FY 1971. CRISP generates the annually published two-volume Research Awards Index that lists every research project supported by the Public Health Service. Volume I provides a fully cross-referenced subject index of currently supported research. Volume II lists (1) project identification data (which include project number, title, and name and address of principal investigator), (2) a separate contract section, and (3) a final section listing project investigators alphabetically, followed by their associated project numbers.

Through its two major information systems, IMPAC and CRISP, and other smaller systems, the Branch provides information services on extramural programs to all levels of NIH management, other government agencies, and the public at large.

1. Office of Systems Planning

The Office of Systems Planning, in carrying out its assigned functions, increased its efforts to improve the NIH Extramural Central Data System and to expand services to its users. Major efforts during the year included the design and development of a system to identify and track applications and awards supporting the conduct of recombinant DNA research; the design and implementation of a system to record pre-award contract data at the time a Request for Contract/Project Plan is approved by the BIDS; the design and development of a system to identify and record subproject information on multiproject applications at time of the initial review of applications; and the conversion to a new system of payments of NRSA individual fellowship awards. All work was done in collaboration with the individual sections of SAB. New systems and applications are

discussed in the Section reports that follow.

2. Data Processing Section

DNA Tracking System. A tracking system was installed within the DRG IMPAC System to monitor research projects involving recombinant DNA Molecules. The system provides for monitoring all proposed DNA projects at various points in the review and approval process. IMPAC products modified for DNA purposes include the IRG Action Cards, Summary Statements, and Notice of Grant Awarded statements. DNA items stored in the IMPAC System are the DNA Code (DNA involved/not involved); Date of Latest Approved Memorandum of Understanding and Agreement; DNA Footnote Designator for Award Statements, and Physical Level of Containment Code.

Trainee Appointment File (TAF) Redesigned. The Trainee Appointment File (TAF) was redesigned this year to provide more current information on indirect trainees supported under NIH, ADAMHA, and other PHS awarding component training grants. Computer specifications call for an on-line, current, multifiscal year trainee file. Operational improvements of the system include easier source data capture; simplified method of making record ID changes; simplified method of creating trainee reappointment records; and discontinuance of the establishment of internal tables for training grant number and degree validations.

DRG/DFM Approval List Data System. Modifications were made during the year to the DRG/DFM Approval List Data System which provides direct tape input of grant obligation data from the DRG IMPAC System to the Division of Financial Management's Central Accounting System. Changes to the approval list data tape were made to incorporate accounting changes related to the award of scientific evaluation grants, fellowship supply grants, foreign grants, and grants made to Federal institutions.

NRSA Payback System. Payback services were expanded this year to include generation of a new report which identifies all fellows and trainees who have received support under the National Research Service Award (NRSA) program. The purpose of the report is to enable the NRSA processing offices in DRG and the awarding units to identify for appointment and payback purposes fellows and trainees who have received prior support under the NRSA program.

Computer Retrieval of Information on Scientific Projects (CRISP) System Conversion. The redesigned CRISP System was implemented this year. The redesigned system, in addition to supplying substantial maintenance benefits, features new file layouts and sequences, revised file organization, and simplified access routines. The immediate advantages of the new system are simpler, faster, and cheaper access to the files, and increased opportunities for future additions and user interaction. Maintenance costs of the system, both in computer time and dollars, have been reduced approximately 60 percent.

NIH Diabetes Program Announcement. A special item has been added to the IMPAC

System to identify research grant applications received in response to the program announcement entitled "Studies of Diabetes Mellitus and Related Problems." In the Request for Research Grant Application, eight NIH institutes have invited applications for research grants in this area.

Multiproject Grant Applications. A new computer system was established this year to store data on multiproject grant applications. Detailed information for each subproject and CORE element will be stored in the new computer file.

Revised Notice of Research Fellowship Award. Programming modifications were completed in the Section to accommodate to a new version of the Notice of Research Fellowship Award. The new form contains the following changes: Stipends and the Institutional Allowance are now combined in one award which is made directly to the sponsoring institution; the NRSA Area of Training (shortage area) and a Future Support Recommended block have been added to the form; Grant Payment Information now appears on the back of the form.

Normalized Priority Scores. The computer program that produces normalized priority scores was modified this year to include ad hoc study sections.

Random Access for Institutes and Divisions (RAID) Routine. The RAID routine became operational this year. RAID provides for the speedy retrieval of BID data from the IMPAC System's master file data bases (Open and Pending Files). This facility obviates the need to search every record in the on-line file until a specific institute is reached. Through RAID a user can go directly to the requested institute and immediately extract records.

Pre-Award Contract Data. A new subsystem was designed and implemented to record pre-award information pertaining to planned research and development contracts. Under the new system, information on planned contracts is furnished to IMPAC at the time that a Request for Contract/Project Plan is approved by the BIDs. Information recorded includes the proposed RFP number, anticipated start date of the contract, estimated duration, project title, the designated NIH Project Officer, and so on.

Research Contracts. The system whereby NCI research contract documents were routed directly to the IMPAC System's Control Point was expanded this year to include all BIDs. This direct communication link has greatly expedited the source data capture of research contract information.

3. Research Documentation Section (RDS)

The Section maintains a computerized disk storage and retrieval system, CRISP (Computer Retrieval of Information on Scientific Projects), containing scientific data on research grants and contracts supported by the Public Health Service and NIH and NIMH intramural research. Through this medium, RDS responds to ad hoc and recurring requests for scientific information from Government administrators, scientists, and information personnel for purposes such as analysis and evaluation of research programs, specific

scientific areas, and preparation of reports. Similarly, the Section responds to inquiries from grantee and nongrant institutions and scientists, the news media, and other non-Government sources engaged in, concerned with, or reporting on medical research.

RDS publishes annually as a "spin off" of the CRISP file:

- 1) The Research Awards Index prepared in two volumes. Volume I is a scientific subject index with associated project numbers and titles. Volume II contains three sections: (a) project identification data, (b) research contract identification data and (c) project investigator information.
- 2) The Medical and Health Related Sciences Thesaurus, the vocabulary authority list of subject headings used by the RDS indexing staff in indexing research projects.

CRISP has the query capability of (a) providing, in several optional formats, information ranging from a straightforward listing of research pertaining to a single scientific subject term to a compendium of projects relating to any number of terms, using a combination of Boolean search logic; (b) providing individual institutes with tapes or hard copy of their projects by subject, project (subproject), title or name of investigator, and (c) providing individual institution/institute listings of projects with indexing terms (Scientific Profiles). CRISP also has the query capability to limit subject searches or Scientific Profiles to certain program (R, M, N, P, S, Z) or IPF codes.

A specially designed CRISP subroutine can furnish grantee institutions or NIH institutions possessing appropriate computer capabilities, with specially formatted tapes which they can use to search the scientific subject content of their own research grant and contract records. This subroutine called CESI (CRISP Extract System for Institutions/Institutes) is updated monthly and can furnish select tapes on an ad hoc or recurring basis.

Subproject Information. A significant feature of the CRISP system is its capability of subdividing program projects, center, and other large projects into their individual research components thereby providing more detailed and accurate information on the research objectives of these large grants, in addition to the names of principal investigators conducting the research. Efforts are currently under way to incorporate fiscal data on subprojects into the IMPAC system. When this has been accomplished, the information will be transferred directly into CRISP, thus providing it with more accurate component budget estimates than are now available.

Intramural Research Projects. Keyword indexing of fiscal year 1977 individual NIH and NIMH intramural project reports was completed by the Section's professional staff, and incorporated into the CRISP system data base within a month of receipt of the last annual reports. Corresponding machine-generated abstracts of these projects are available for DHEW use through the CRISP project narrative file, which also contains similar data for extramural research grants and contracts. Through use of Linotron tapes provided by the Section, the third edition of the NIH - NIMH Intramural Research Index - Fiscal Year 1977 was published in the spring. In efforts to help avoid problems encountered in the past when

assigning numbers to new intramural projects, RDS provided each institute or other major division with a listing of numbers previously used. This procedure will also be continued on an annual basis in the future.

Research Awards Index. Linotron tapes for printing this two-volume set, now in its seventeenth edition, were submitted to the Government Printing Office in February for publication in April 1978 (DHEW Publication No. (NIH) 78-200).

Medical and Health Related Sciences Thesaurus. Primarily for in-house use, a limited number of copies of the revised edition (DHEW Publication No. (NIH) 77-199) were distributed outside DHEW on a request basis to research analysts, information specialists, and other individuals who have responsibility for scientific communication systems.

CRISP Services. In addition to responding to hundreds of requests on a wide range of subjects, the Section prepared Linotron tapes used in the creation of extract Indexes for five institutes; provided Scientific Profile data reports and/or CESI tapes for numerous grantee institutions; furnished NIH-wide scientific area data to appropriate institutes; performed professional editing operations involving thousands of approved research grant and contract applications during the current fiscal year, and had a significant role in providing material to NIH and interagency coordinating committees involved with trans-NIH issues such as diabetes, arthritis, genetics, nutrition, hematology, gastrointestinal diseases, and cystic fibrosis.

VAC System. In conjunction with the Office of Systems Planning, the Section has developed a Variable Classification (VAC) System on Trans-NIH issues. VAC offers a flexible system whereby information on trans-NIH issues may be captured, processed and presented. For each issue, it will accommodate a hierarchical classification structure up to four levels, and a decimal code representation (01-99) of the percentage of total project dollar involvement. Through direct links with IMPAC and CRISP, the System is capable of providing a cost-effective reporting service that can be utilized by any participating health research oriented group (Commission, Task Force, Coordinating Committee, and so on).

4. Reports, Analysis, and Presentations Section

The primary function of the Section is to satisfy the information requirements of NIH and PHS centralized extramural activities. In fulfilling this function, the Section utilizes the IMPAC system, and other data sources. Its responsibilities include: design, maintenance, and operation of computer reporting systems; training and technical assistance in data retrieval; planning and coordination of NIH responses to annual surveys covering Federal obligations for R and D; preparation of formal publications such as listings of NIH grants and awards and the NIH basic data booklet; statistical analysis to compile and present visual materials dealing with extramural trends or other topics; and the development and implementation of special evaluation projects. This Section also works closely with the Data Processing Section in maintaining and extending the IMPAC system, and has direct responsibility for establishing institution classifications and related computer files, and for ensuring the accuracy of selected key data items for publication or reports.

Publications. The following volumes of listings of NIH extramural awards were issued:

- 1) National Institutes of Health Research Grants, FY 1977 (DHEW Publication No. (NIH) 78-1042)
- 2) National Institutes of Health Grants for Training, Construction, Medical Libraries, FY 1977 (DHEW Publication No. (NIH) 78-1043)
- 3) National Institutes of Health Research and Development Contracts, FY 1977 (DHEW Publication No. (NIH) 78-1044)

The following volumes of the annual multivolume series on PHS grants and awards were issued:

- 1) Public Health Service Grants and Awards, Part I, FY 1976, and transition quarter - Research Grants (DHEW Publication No. (NIH) 77-1133)
- 2) Public Health Service Grants and Awards, Part II, FY 1976 and transition quarter - Training, Health Manpower Education, Construction, Medical Libraries (DHEW Publication No. (NIH) 77-1134)
- 3) Public Health Service Grants and Awards, Part III FY 1976 and transition quarter - Health Planning and Health Services Grants (DHEW Publication No. (NIH) 77-1135).

Data for the pocket reference book, Basic Data Relating to the National Institutes of Health 1978, were compiled in cooperation with the NIH Office of Program Planning and Evaluation. This publication presents information on the programs and resources of the NIH.

Special Statistical Presentations. The Section compiled and analyzed extramural program statistics for fiscal years 1968-1977, and participated with the Chief, Statistics and Analysis Branch, in developing a set of 35mm slides illustrating key extramural trends. These slides were presented formally to the Director, NIH, and other officials in November 1977, and subsequently to various additional audiences. The data were also issued, with an accompanying analysis, in a chart-book entitled NIH Extramural Trends, Fiscal Years 1968-1977.

Research and Development Activities. The annual survey conducted by the National Science Foundation, entitled Federal Funds for Research, Development, and Other Scientific Activities, is coordinated and prepared by this Section for the entire NIH. In general, the survey covers all the NIH intramural and extramural research activities for the past fiscal year together with the estimated obligations for the next 2 fiscal years, by performer, field of science, geographic area, basic and applied research and development, and combinations of the above.

Upon the request of the OD, the Section participated in a study on reclassifying Basic and Applied Research and Development. Lists of extramural research awards were prepared

for the BIDs showing a Basic, Applied, or Development (B/A/D) code for each grant or contract, based on the algorithm agreed to by OD/DRA/DRG many years ago. The BIDs were requested to provide to this Section any revisions in the B/A/D coding. The revised codes were recorded on special data files, and numerous tabulations were prepared for DRA/OD showing comparisons of the two methods of classifying B/A/D (total amount of agreement, 80 percent or more agreement, total disagreement, and so on), by BID and activity.

The CASE Report. The survey of DHEW obligations to institutions of higher education and other nonprofit organizations summarizes support to individual institutions. The NIH response to this survey is coordinated and prepared by this Section. It requires an institution-by-institution report of all NIH extramural support by activity for most nonprofit organizations, with an individual report for each health professional school. In addition, data by field of science grouping and activity are also requested for institutions of higher education.

The Section assisted other PHS agencies by compiling research and research training portions of the CASE reports as recorded in the IMPAC System.

Obligations for Medical and Health-Related Research. This is an annual survey of all Government-sponsored medical research. The NIH response to this survey is also coordinated and prepared by this Section and requires data on intramural and extramural research and development, by field of science, performer, programs, and state.

Statistical Reference Book of NIH International Activities, FY 1977. Nineteen computer tables were prepared for the Fogarty International Center publication showing trends in international biomedical activities.

NIH Competing Research Applications - Council Recommended and Award Rates. This report presented data on the number and amount of competing research applications reviewed, recommended for approval by council, and awarded, along with the council-recommended and award rates, by fiscal year, BID, activity, and type of grant, for the past 11 years. At the request of the Deputy Director of NIH, a presentation on this report was given to OD staff by the Chief, Statistics and Analysis Branch. The report was distributed to OD staff, NIH ECEA members, and other BID personnel.

R & D Contract Reporting for DHEW. A series of tabulations of R & D contracts are provided to DCG/OD quarterly, semi-annually, and annually, showing data by BID type of contractor, type of contract, competitive versus noncompetitive, contracts, dollar award interval, and so on. These data are required by DHEW.

Reports on Training for NAS. Thirty-three computer tables were prepared showing training awards by fiscal year, BID, activity, discipline grouping, academic level of awardee, and so on. (The data for previous years were manually prepared by the BIDs.) These tables were prepared in cooperation with the Office of Research Manpower, DRG, and the Research Manpower Officer, OD.

Other Recurring Reports. At the beginning of each review cycle for research and training applications, statistical reports are prepared which present data on the number and dollar value of applications received for review. The presentations are by institute, fiscal year of support, type of applications, activity, and IRG. Copies are distributed to each institute/division, and to SRB, DRG. In addition, statistical tables showing summaries of initial review group actions on research and training grant applications are prepared during each review cycle for use by the institutes/divisions.

About 115 monthly reports, 18 quarterly reports, and 24 annual reports were prepared regularly for the institutes and divisions covering data on grants and contracts currently active and fiscal year awards made to date, by geographic location, principal investigator, program class, grant number, budget start date, and so on. Fifty-five reports were prepared for the BIDs prior to the National Advisory Council meetings showing detail on the applications received, and 32 recurring reports were prepared for the BIDs, upon request, showing a variety of data. In addition, 25 computer tapes are provided to PHS BIDs: 7 on a weekly basis, 14 monthly, and 4 annually.

Listings and address labels were furnished to DFM, OD; ADAMHA: HRA; and FDA on a monthly basis, identifying the grants for which reports on expenditures are overdue.

The Section supplies material each month for the NIH Management Data Book, published by the Associate Director for Administration to provide top management with a comprehensive view of the resources, status, and trends of major programs and operations.

Inquiries. The Section responds to hundreds of requests for information each month from Federal agencies, NIH officials, other government and nongovernment organizations. These requests are primarily for statistical and analytical information concerning the NIH extramural programs and characteristics of grantee institutions contained in the IMPAC System. The response to these inquiries frequently requires analysis and compilation of historical data covering several years, design of special computer reporting files, providing consultation services to requesters concerning available data, and assisting in developing specifications for the output. The Section is responsible for supplying magnetic tape extracts from the IMPAC system to several institutes and outside organizations for special research projects, or as inputs to existing management information systems.

The Section has devoted considerable effort to the development of reference listings, unpublished reports, and microfiche, to answer routine inquiries covering support to individual investigators or specific institutions. The Inquiry and Reporting System (a computer software facility) is the primary method for data extraction, manipulation, and hard copy presentation requested. Almost 19,000 queries were processed by the Section during fiscal year 1978.

Institutional Research. The Section has the responsibility for establishing and maintaining the Institution Profile File (IPF). The IPF is the central registry of names, locations, geographic and other selected data for organizations participating in the Public Health Service extramural programs. This file is the single source for organizational information

established to assure uniform reporting and to eliminate the necessity for storing similar information in individual grant and award files. In fiscal year 1978, approximately 1,000 new institutions were added to the IPF. The IPF now contains about 23,000 records on institutions participating in NIH activities as well as the activities of other agencies of the Public Health Service.

In fiscal year 1978, the system that was developed the previous year to provide IPF codes to the ASH's Office of Administrative Management (OAM) for inclusion in the Grants Data System (GDS) was operational. This system reduced the coding to approximately 500 new records, compared to the assigning of codes for 7,300 records in FY 1976. This system improved the efficiency of the Section by spreading the workload throughout the year and speeding up the year-end coding completion date 8 months sooner than was the case in FY 1976.

Grants and Contracts Information Interface. DRG maintains an IMPAC system called NIH/Institution Interface Between NIH and Grantee Institutions that provides information to grantee institutions covering their awards and applications. The information, which is provided on either magnetic tape or in predesigned reports, is provided to the institution in exchange for feedback dealing with suggested changes to the IMPAC data.

The system was developed in cooperation with the American Association of Medical Colleges in response to requests from several grantee institutions. Its primary objectives are to improve the integrity of the IMPAC system, provide a cost-effective service to grantee institutions, and promote systems compatibility through common items and definitions.

Research Grant Manpower Reports. The Section has developed, with the aid of a contractor supported from evaluation set-aside funds, a system for creating fiscal year reporting files containing data submitted by principal investigators covering paid employment on NIH research grants. These data include occupational category, paid weeks worked, degrees, and salaries received from grant funds. Separate files are now available for fiscal years 1973-1976. Statistical tabulations for these years have been supplied to the National Academy of Sciences for their studies of biomedical research manpower needs under the NRSA, and to other users. The Section has published three reports on paid employment on NIH research grants. One pertains to employment on grants awarded with funds from fiscal years 1973 through 1975, and focuses on data by awarding institute. A second pertains to the same fiscal years, and focuses on trend data. A third deals with fiscal years 1973 through 1976, and focuses on a comparison of professional and academic doctorate employment. The Section has also published a report on the training supported by NIH research grants, fellowships, and training grants, fiscal years 1973 through 1975.

Research Contract Manpower Reports. The Section has started to develop a system for creating reporting files for contract data.

Research Grant Expenditures. A computerized data base of the Report of Expenditure (ROE's) for fiscal year 1974 NIH research grants was established, and similar data for

FY 1975 are being compiled.

Retrieval Methodology. Two basic IMPAC Inquiry and Reporting System (IRS) courses were offered by the Section. A total of 38 persons attended these courses. IRS is the primary instrument for extracting and reporting IMPAC data.

About six consultations are handled each day for DRG and institute/division personnel needing assistance in debugging queries, developing more advanced queries, and applying new techniques.

Retrieval Applications and Procedures. RAP was continued as an informal technical series to provide users with accurate information and instructions on how to apply new or more efficient retrieval procedures and to correct recurring IRS problems. One issue was prepared, containing information about "Calculating Approval and Award Rates." About 70 copies of this issue were distributed to DRG and institute/division personnel responsible for compiling IMPAC data.

Graphic Arts. Approximately 3,000 pieces of graphic art work and photographs were completed by the illustrator in FY 1978. In addition, approximately 2,000 other services were provided to various officials concerning visual communications projects. This other work involved designs, updates of the CRISP and Grants Associates brochures, charts, certificates, signs, slides, vu-graphs, operation of the computer terminal for data files, conferences, records of calls, ordering equipment, and operation of contracts.



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