ANNUAL REPORT - DEPARTMENT OF PHYSIOLOGY
UNIVERSITY OF KANSAS MEDICAL CENTER
July 1, 1965 - June 30, 1966

ACADEMIC STAFF

E. B. Brown, Jr., Ph. D., Professor and Chairman
Alan M. Thompson, Ph. D., Associate Professor
Norman Loofbourrow, Ph. D., Associate Professor
Lawrence Sullivan, Ph. D., Associate Professor
Donald Johnson, Ph. D., Associate Professor (Joint appointment, Ob-Gyn)
Kenneth Goetz, Ph. D., Assistant Professor
John Trank, Ph. D., Assistant Professor
A. Stark Wolkoff, M. D., Assistant Professor (Joint appointment, Ob-Gyn)

POSTDOCTORAL FELLOWS

Joseph McMullen, M. D., Department of Surgery
Keith Ashcraft, M. D., Department of Surgery
Takuma Hojo, M. D., Medical Fellow, Dept. of Surgery-Physiology
Darren Nelson, Ph. D., Ob-Gyn Fellow with Dr. Johnson
Tomi-O Hishida, D. Sc., Nagoya University, Fellow with Dr. Johnson
Woo Gyeum Kim, M. D., (International Atomic Energy Agency Fellowship), Seoul National University, Korea
Norberto Gonzalez, M. D., (Postdoctoral fellowship, Nat. Res. Council, Argentina)
Marjorie Gerbrandt, M. D., CV Training Grant

GRADUATE STUDENTS

Lilly Kung
Ray Cook
Larry Welling
Paul Hensleigh
Ruth McDaniels
Conrad Johanson
Aaron Davis
Barbara McDougal
Martin Kramen
Dennis Waring
Gary Bond

KAW VALLEY HEART STUDENTS (The Science Talent Search Program, summer 1965)

Conice Ladd
Delores Clawson
MEDICAL STUDENTS - (Summer Research Program)

Sam Steele
Bob Endberg
Hugh Dick
Ted Gnau
Wm. White
Garry Weaver
Clio Robertson
Victor Vorhees
Bob Gibbons
Bob Stephenson
Gordon Eller
Ira Cox
Richard Morrison
Cleve Howard
David Sneid (Res. Trainee on CV Research Training Grant)

TEACHING:

The medical school curriculum for freshman students was changed so that Gross Anatomy, Histology, and Neuroanatomy were taught in the fall quarter. Physiology and Biochemistry were taught during the Winter and Spring quarters, except for the last two weeks of the spring quarter when Endocrinology was taught. French Reading A was taught for the first time here on this campus beginning June 13. This is an eight-weeks' course, 4-1/2 qtr. hrs. credit, taught by Miss Devlin two days a week, Monday 9 to 12, Wednesday 9 to 11.

Graduate Courses taught during the past year were as follows:
Fall: Course #322, Physiology of the Nervous System (3 cr.), Dr. Loofbourrow
Winter: Course #310 - Transport and Permeability (2 cr.) Dr. Thompson
Spring: Course #315 - Renal Electrolyte Excretion (2 cr.) Dr. Sullivan

Graduate Seminars #351 offered during the year were:
Fall: Dr. Sullivan and Mr. Robt. Pendleton offered "Ion Transport Across Epithelial Cell Layers."
Winter: Seminar on Neurophysiology, Dr. Loofbourrow.
Winter: Dr. Brown's seminar on Regulation of Pulmonary Ventilation.
Spring: Topics in Biophysics - Dr. Trank

The integrated course in "Basic Human Biology" for nurses was again taught in the summer of 1965 by the combined departments of Biochemistry, Anatomy, and Physiology. Drs. Goetz and Johnson were the Senior Staff members from this department participating in this course. Medical students Stan Mosier, John Hiebert, Robert Alberti, and William George assisted in the course.
Faculty members participated in correlation course for Freshmen medical students on Saturday morning. Doctors Brown, Goetz, Loofbourrow and Thompson gave presentations on their research to students and teachers from colleges in the Kansas City Regional Council on two Saturdays in February and March.

New additions to this department's staff for the coming year are Drs. Goodridge and Rhodes.

In addition to the senior staff members, Dr. Virginia Tucker was responsible for a conference section of one group of students in the medical school physiology course. Postdoctoral fellows Kim, Gerbrandt, and Gonzalez also assisted with teaching this course, together with graduate students D. Ray Cook and Lilly Kung.

Mr. Dale Mayhew, who completed work for the M. A. degree in June 1965, received his degree this year (1966). Miss Lilly Kung completed work for the M. A. degree in this department on June 3, 1966. Mr. Robert Pendleton completed work for the Ph. D. degree this spring and he received the degree in June 1966. Mr. Pendleton was a graduate student in Pharmacology, although his thesis work was carried out in the Department of Physiology under Dr. L. P. Sullivan. Miss Kung is going home to San Francisco for the summer and will take a 12-week course for work in the Peace Corps and expects to be sent to Ghana with others of the Peace Corps in September. Dr. Pendleton is now employed by Smith, Kline, and French Laboratories in Philadelphia, Pennsylvania.

Many staff members of other departments here at KUMC gave Physiology Department Seminars.

VISITORS AND OUTSIDE SPEAKERS:
The following visiting professors presented lectures during the year:

10/18/65  Dr. Ralph Kitchell, Dean of Veterinary Med., Ks. St. Univ.  "Taste in Dogs."

10/25/65  Dr. Jerome Yochim, Asst. Prof., Dept. Comp. Biochem. and Physiol. University of Kansas at Lawrence.  "Hormonal Control of the Rat Uterus During the Progestational Phase."

12/6/65   Dr. Fred Grodins, Prof. of Physiol., Northwestern Univ., Chicago,  "Regulation of Pulmonary Ventilation."
12/20/65 Dr. Roger Fedde, Dept. of Physiol., Kansas State University. "Mechanisms of Respiratory Muscle Activity."

1/10/66 Dr. H. W. Shirer, Depts. Electrical Engr. and Comp. Biochem. and Physiol., Lawrence, Kansas (Univ. of Kansas) "Biotelemetry."


1/31/66 Dr. Otto H. Schmitt, Prof. Physics and Zoology, Univ. of Minnesota. Efforts toward making Vector-Electrocardiography Quantitative.

2/17/66 Dr. L. T. Rutledge, Dept. Physiology, Univ. of Michigan, Ann Arbor. "Associative Cortex: Converging input and integrative functions."

2/28/66 Dr. Nathan Lifson, Dept. Physiol., Univ. Minnesota, presented two seminars. "A Simple Diffusive-Convective model for Intestinal Absorption of Nonelectrolytes" was given as part of Dr. Thompson's Transport Course, and an open lecture on "Reconstruction of Fluid Circulation Theory for Intestinal Absorption."


5/9/66 Dr. Richard L. Malvin, Dept. of Physiol., Univ. of Michigan. "Renal Disease as Simulated by Intra-arterial Injections of Microspheres."

5/10/66 Dr. Malvin also talked on "Effect of Blood and Tubular Fluid Flow Rates on the Renal Countercurrent Mechanism."

ACTIVITIES OF STAFF:

Dr. E. B. Brown, Jr., Professor and Chairman
Modern Medicine
Member Am. Physiol. Soc. Finance Committee.
Kaw Valley Heart Board Member.

Taught a course on Acid-Base Balance (9 lectures) to Dr. James Elam's group in the Department of Anesthesiology, General Hospital, Kansas City, Missouri. Lectured to residents and staff of Department of Anesthesiology at KUMC (5 lectures). Presented a paper at the XXIII International Congress of Physiological Sciences in Tokyo, Japan, September 1965.


Lectured at the invitation of Dr. Daniel Simmons October 24-30, 1965, in Los Angeles as follows:
- Mt. Sinai Hospital Staff, "Respiratory Acidosis."
- Cedars of Lebanon Hospital Renal Conference, "Potassium Movement and the Donnan Equilibrium."
- UCLA Physiology Dept., Cardio-respiratory seminar. "CO₂ buffering of blood and tissues."

On 11-17-65 lectured at Emporia Junior High School to approximately 200 high school science students and their teachers. Subject: "How the body gets its oxygen."

Gave seminar to Biology Department students at Ottawa, University, in December.

Dr. J. D. Nelms from the University College of Rhodesia and Nyasaland, Salisbury, Rhodesia, South Africa, was hosted by Dr. Brown of this Department while Dr. Nelms visited here learning our techniques in teaching physiology (Jan. 25-31, 1966).

Offered an Elective Course #217 on Saturday mornings from 2/19/66 to 3/19/66, on "Physiology and Biochemistry of Acid-Base Balance."

Was the "external examiner" for the Ph. D. degree for graduate student Ken Ackles, and lectured to staff and graduate students of the Department of Physiology, University of Alberta, Edmonton, Alberta, Canada, in February. Subject: "Potassium Transport and the Donnan Equilibrium."
Dr. Brown was part of a site inspection group for NIH Grants Division (Drs. Roggensack of NIH and Hertzman of St. Louis) to visit the University of South Dakota, Department of Physiology (Vermillion) Sioux Falls, South Dakota.

Lecture to Students at Kansas State University, Manhattan, Kansas, on May 4 at the invitation of Dr. Roger Fedde.

To Groton, Connecticut, to attend a Symposium sponsored by Medical Education for National Defense. Topic of meeting: "Beneath the Sea."


Presented a paper at FASEB meeting April 11-14, 1966, in Atlantic City, New Jersey. Title: Increase in extracellular potassium concentration following expansion of extracellular volume.

Dr. Alan M. Thompson
Review Editor for papers submitted to Science magazine.
Member of KUMC Animal Care Committee.
Coauthor of paper presented by Clio Robertson, 3rd yr. medical student at Fall Meeting of APS in Los Angeles on a rat head perfusion technique. Thomas A. Bauer, 3rd yr. student, was also an author. Gave a seminar to the Department of Comparative Biochemistry and Physiology at Lawrence in January on Barium-soluble tissue CO₂. Sponsor of R. Clio Robertson, 3rd year student, for a paper given at KUMC Research Day, March 23, 1966, on Brain Tissue CO₂: Effect of Diamox and Hypercapnia.

Attended FASEB meetings April 11-16, 1966, and presented paper on Brain tissue CO₂ studies in the perfused rat head.

Lectured on Cerebral Blood Flow to Neurosurgery Course at KUMC. Attended MEND symposium in Groton, Connecticut, in May on underwater physiology.

Dr. Norman Loofbourrow
Was again active in the Neurology Section of the Department of Medicine, Division of Neurosurgery, and the Basic Science Departments, and gave a seminar on the Limbic System, May 19, 1966.

Principal advisor to Lilly Kung during work on her M.A. degree which was completed in June 1966.

Also continues to read manuscripts for Dr. E. Gellhorn, Professor Emeritus of Neurophysiology, University of Minnesota.
Dr. L. P. Sullivan

Principal advisor for Robert Pendleton who completed his work for the Ph. D. in Pharmacology. In addition, Dale Mayhew who completed his work for a M. S. degree in Physiology in June 1965 received his degree this year.


Seminar speaker on the Lawrence Campus, University of Kansas, Department of Comparative Biochemistry and Physiology, Fall of 1965.

Attended meeting of American Physiological Society in Los Angeles, September 1965. Mr. Robert Pendleton presented a paper at that meeting covering work done by Mr. Pendleton and Dr. Sullivan.

Attended meetings of FASEB in April 1966.

Attended NYAS symposium "Physiology of Diuretic Agents" in March, 1966.

Participated in clinical correlation conference for first year students.

Member of KUMC Research Committee

Member of University Committee on physical and chemical biology (one of the science development committees).

Promoted to Associate Professor, July 1, 1965.

Began first year of career development award, July 1, 1965.

Dr. Donald C. Johnson

May 12 to June 1, Dr. Johnson attended meetings in Venice, Italy, and in Milan, Italy. The Venice conference sponsored by the Ford Foundation Population Program was on the Physiology of Human Reproduction, and the 2nd International Congress of Hormonal Steroids was held in Milan.

Presented a lecture to Department of Zoology, Kansas State University, March 24, 1966, on "Role of Hormones in differentiation of physiologic sex."

To Chicago 6/20/66 attending meetings of Endocrinology Society.

Editor: Endocrinology

Participated in a joint program in Reproductive Physiology with various departments at Kansas State University and the Lawrence Campus which started in the summer of 1965. In October 1965 Kansas State hosted the group (Animal and Dairy Science). In February 1966, the Department of
Comparative Biochemistry and Physiology at Lawrence presented a program, while in June 1966 KUMC was again host. This program has been a great success. In each meeting about 40 to 50 students and staff have been present for two hours of lectures and discussion as well as a joint luncheon.

**Dr. Kenneth L. Goetz**

Attended the fall meetings of the American Physiological Society in Los Angeles, California, August 23-27, 1965.

In July and August 1965 Dr. Goetz gave a series of nine lectures to staff at Osawatomie State Hospital.

Attended the FASEB meetings in Atlantic City, New Jersey in April 1966.

Was the speaker at a meeting of the Cardiovascular Research group on May 10, 1966. Topic: Recording cardiovascular data from trained, unanesthetized dogs.

**Dr. John W. Trank**

Joined our staff August 1, 1964.

Gave a talk at Midwest Research Institute at Dr. Goodson's invitation on 7/15/65.


Lectured to Bioinstrumentation course at University of Kansas. Topic: Cardiovascular control.

Presented seminar at Kansas State University, Department of Physiology, Manhattan, Kansas. Topic: "Central nervous representation of cardiovascular control."

Lectured to Neurosurgeons on "Basic electricity and nerve membrane excitability."

Acted as consultant in Biomedical engineering to NASA and Midwest Research Institute.

**Dr. A. Stark Wolkoff**

Lectured to American College of Obstetricians and Gynecologists on "Effects of Anesthesia on the unborn fetus" at Gatlinburg, Tennessee, October 6, 1965.

Prepared and conducted program of Obstetrical and Gynecological Travel Club at the University of Kansas Medical Center, November 5, 1965.

Lectured on "Endotoxic shock" to Golden Belt Medical Society, Salina, Kansas, November 18, 1965.


Conducted two luncheon meetings on "Current research on the sheep fetus" at the American College of Obstetricians and Gynecologists meeting in Chicago, Illinois, May 2-3, 1966.

Lecture on "Fetal physiology" and lectures on "Digestion" May 1966.

Supervised animal lab for Group B freshman physiology all day Wednesday during winter and spring quarters.

Participated in tutorial seminars Tuesdays at 1:00 for Group B winter and spring quarters.

RESEARCH

Research grants which were active during the year were the following:


PHS Training Grant. Program Director: E. B. Brown, Jr. #5T1GM 1137-02. July 1, 1965 - June 30, 1966. $36,000.00.


PUBLICATIONS


Bawden, J. W. and Wolkoff, A. S. Fetal blood calcium responses to maternal calcium perfusion in sheep. To be published.