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RESEARCH

NEWS

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FEATURES

Dr. Heaslip: Atomic Radiation
Dean Grote: Appalachian Technical Institute

ARTICLES

Adult Basic Education Project Funded
Dr. Brumagen Receives Post Doctoral Fellowship
A Feature of ERIC
Graduate Assistants Named For 1968 - 69
News Briefs

CAMPUS RESEARCH PROJECTS
FEATURING DR. HEASLIP

EFFECTS OF RADIATION ON
DECIDUOUS TREE SEEDS AND SEEDLINGS

The increasing use of atomic energy for peaceful purposes in an area of growing concern for mankind. Morehead State University in cooperation with the Atomic Energy Commission, is sponsoring a research project in the Biology Division of the School of Science and Mathematics in an attempt to determine the long range effects of radiation on tree species. Under the direction of Dr. Margaret D. Heaslip, the project is designed and directed to determine the effects of gamma rays and fast neutrons on tree seeds and seedlings.

The Atomic Energy Commission has selected Morehead State University to conduct this research because of its strategic location in the foothills of the Daniel Boone National Forest and the continuing interest of the science faculty in research.

Tree seeds are more resistant to both gamma and fast neutron radiation than higher animals, but there is a great variation in radiosensitivity from species to species. Trees grown from irradiated seeds have been planted in permanent sites in the Daniel Boone Forest surrounding the University dam and at Oak Ridge, Tennessee by Dr. Heaslip. These trees are now bearing seeds that are being tested for relative radiosensitivity. Under the direction of Dr. Margaret Heaslip, species of trees, the underlying causes of the degree of the differences from specie to specie, and the degree transmittal of irradiation from one generation to another.

NUCLEAR WASTE DISPOSAL METHODS ARE STUDIED

Nuclear wastes are now being disposed at Maxey Flats by Nuclear Engineering Incorporated about 8 miles from Morehead. The Physics Department at Morehead State University and the directors of Nuclear Engineering Incorporated have designed and constructed a radiation chamber that is available for various research projects. Mr. Randy Falls, Assistant Professor of Physics, began to assist Dr. Heaslip with this project in 1966. Walnut Ash and White Oak were irradiated while dormant in the spring of 1967. Ash was found to be the most sensitive of all the species tested. The investigation found that dormant seedlings are more radioresistant than active seedlings of each species investigated.

The study found that radiation could be a selected population control mechanism for both flora and fauna.

The conifers exhibit greater radiosensitivity than deciduous trees. Three species of pine were thus planted over the nuclear waste disposal pits in November of 1966 as a biological check on the nuclear burial methods being employed in this area. The study will further evaluate the nuclear burial procedures being used today.

PROJECT SHEDS LIGHT ON RADIATION EFFECTS

Atomic research at the University will point to many answers that will help mankind's understanding of the peaceful uses of atomic energy. Morehead State University through the School of Science and Mathematics hopes to enlighten the knowledge that is known today of radiation and its effect on man. The project has been very successful thus far and has helped improve the position of our science staff, it has added to the knowledge of mankind and has assisted students in their achievement of an education.

Many of the students who have participated in this program have gone on to further their education and service to their communities. Keith Linville is now practicing medicine, Bill Boggs is doing biological research for IBM and Julius Malinowski is a chemist for Du Pont. Along with these students who have participated in the nuclear research program others have continued in their contributions and study of the science field.

Harry Fekkos is teaching high school biology, Philip Barker is teaching high school science and working toward a Ph. D. in Biology at Ohio State University, and Donley Hill, a Biology Instructor, has begun to work on his Ph. D. at V.I.P. Maurice Esham is an instructor of Physical Science at Morehead State University, and Ronald and Lavern Bevins are teaching high school mathematics and science. Mike Svec is teaching music, Craig Stevens is completing his Ph. D. in Entomology at North Carolina State University, and Roger Morehouse is at the University of Kentucky Medical School. Niel Fannin is doing research at the Kentucky Agricultural Experiment Station and graduate work at the University of Kentucky. Gene Samsel is at Florida State University working on his Ph. D. in Oceanography.

This research has not only added to our knowledge of atomic energy but has introduced and encouraged a number of outstanding undergraduates to the field of pure research. In this introduction, many have gone on to continue their study of the pure sciences.

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DR. DORAN ANNOUNCES PLANS FOR
APPALACHIAN TECHNICAL INSTITUTE

CAMPUS RESEARCH PROJECTS
FEATURING DR. GROTE

The School of Applied Sciences and Technology of Morehead State University has developed a two year technical institute to serve the needs of the Appalachian Region. "The technical programs will be relevant to the needs of high school graduates interested in a program that blends technical and general education experiences. An Associate Degree will be granted upon completion of a prescribed program of studies," stated Dr. Adron Doran, president.

The Technical Institute is a million dollar project with the construction of the physical plant located on the campus of Morehead State University. Under the direction of Dr. C. Nelson Grote, Dean of the School of Applied Sciences and Technology, consideration is being given to a proposed curricula that may encompass Instrumentation Technology, welding technology, Highway Engineering Technology, computer technology, horticulture, nursing, dental assistant and interior decoration. The curricula will represent the emerging occupations that are vital to the growth and well being of the Appalachian Region.

TECHNICIAN EMPLOYMENT SKY ROCKETING

Employment requirements for technicians are expected to double in the next decade. The University is keeping pace with the continued economic expansion by providing this Technical Institute to help satisfy the demand for highly trained technical personnel. "These new program developments are in keeping with the role of Kentucky's regional Universities as stated in the Legislation that created them," said Dean C. Nelson Grote of the School of Applied Sciences and Technology.

The physical plant site for the Appalachian Technical Institute is an area adjacent to the School of Applied Sciences and Technology. According to Dean C. Nelson Grote, "The Technical Institute will provide students with a physical plant equipped with the most modern equipment available for technical instruction. The faculty and staff shall be carefully selected to provide a high quality of instruction to compliment the physical facilities."

The funding for the project is a joint effort of Morehead State University and the Appalachian Regional Commission. A target area of the Technical Institute is the growth of employment demanding technical skills. Unemployment is traditionally a problem in Appalachia but skilled jobs requiring technical training remain unfilled.

Morehead State University will provide a program for students of Appalachia to prepare them for a productive role in society through a formal preparation in technology.

The facility should be ready in the Fall of 1970 and phase one of the Institute will be initiated at that time. The total program, with all Laboratories completely equipped, will be implemented by September 1971. The physical plant housing the Technical Institute will be integrated into a multi-million dollar expansion program for the School of Applied Sciences and Technology that is currently in the planning stage.

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ETOWAH COUNTY 6th DISTRICT SCHOOLS RECEIVES GRANT
FOR ADULT BASIC EDUCATION PROJECT

Etowah County, one of the smallest geographic counties in the state of Alabama has been granted \$14,800 to conduct an Adult Basic Education Project.

The Etowah County Project is a product of the planning of the Etowah County 6th District Schools, C.C. Davis, Superintendent; Mr. E.C. Wilson, Project Coordinator; the Alabama Department of Education, and the Appalachian Adult Basic Education Demonstration Center, located at Morehead State University, Morehead, Kentucky.

The Appalachian Adult Basic Education Demonstration Center (AABEDC) is a special coordinating center for demonstration projects in Appalachian States under the Adult Basic Education Act of 1966, Title III.

The State Officials in Alabama, as well as the local citizens and businesses acknowledge the need for this project that warrants high priority in consideration action, and aid.

This project means that modern and tested methods of teaching, with the aid of various teaching devices, will give people who can't read the opportunity to learn to read more rapidly and successfully now that they can combine the skills of hearing and seeing in unique ways.

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DR. DAVID BRUMAGEN RECEIVES
POST DOCTORAL FELLOWSHIP

The post-doctoral fellowship was granted to D.M. Brumagen for the summer period of 1969 by the University of Kentucky. The stipend is \$1000.00 per month. The research is concerned with certain phenolic substances found in cured tobacco which may be co-carcinogenic in nature. These phenols are thought to be carcinogenic only when combined with certain other substances yet indetermined -- neither of these substances are carcinogenic when not in combined form.

It is the purpose of this research to develop a substance which could be sprayed on the tobacco that would render the phenols inactive and thereby preventing the formation of carcinogenic substances.

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A SPECIAL INTRODUCTION TO ERIC

ERIC -- What It Is: ERIC is the name derived from the initials of Educational Resources Information Center. ERIC is a nationwide information storage and retrieval system. The system is marked by monthly catalogs containing indexes and abstracts, a central liaison system, nineteen clearinghouses for collecting specialized information in the field of education and a center for processing orders and dissemination of documents stored on microfilm cards (microfiche) or in paper copy.

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Kinds of Information Stored: Research papers, dissertations, special reports, curriculum studies, instructional methods outlines are the types of material used. The term "document" which is often applied to these papers is perhaps misleading or too formal. These papers are often not copyrighted with only a few copies in existence. If it were not for a system such as ERIC, a large amount of research in the field of education would go unorganized and remain largely unavailable.

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Who Will Benefit By Using ERIC: ERIC is of use to instructors, curriculum advisers, education specialists, graduate students in education, and education researchers, and interested lay men.

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Catalogs for Ordering Documents: The vocational-technical and junior college aspects of ERIC are given special attention. In brief, the way to find the documents you want in these areas is listed below:

1. Hereafter referred to as RIE, Research in Education, is the monthly abstract journal or catalog of the documents from all nineteen clearinghouses and other research done by the Office of Education. Some project reports listed are completed while others are still underway. RIE contains detailed abstracts and indexes by subject, author, and institution for all listings. Single issues are \$1; subscription for a year is \$11 in the United States. These monthly issues are compiled each year into two annual indexes; one listing completed reports (price \$3.25), and one listing still-to-be-completed projects (price \$1.50). A semi-annual index, January through June 1968, will be available shortly.
2. Two catalogs of material not listed in RIE (except in occasional instances) in the field of technical education may be obtained by researchers with special interests in the field. Both are published quarterly and often are used together. The formal titles for these catalogs are: Abstracts of Instructional Materials in Vocational and Technical Education (AIM), and Abstracts of Research and Related Materials in Vocational and Technical Education (ARM). Annual subscriptions for AIM are \$9; annual subscriptions for ARM are \$9.
3. The ERIC Clearinghouse for Junior College Information at U.C.L.A. publishes a brochure which describes the publications, monograph series, bibliographies, and other materials now in the ERIC system. The brochure is available free.

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ERIC CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION

Publications of the Clearinghouse: The Center for Vocational and Technical Education issues numerous publications which are available either from the center in printed form or from EDRS (ERIC Document Reproduction Service) in microfiche or hardcopy. The list of publications put out directly by the center is available on request from The Center for Vocational-Technical Education, 980 Kinnear Road, Columbus, Ohio 43212. Of particular interest are the two quarterly abstract publications, AIM and ARM. Any documents listed in AIM and ARM should generally be ordered from EDRS (see exceptions several paragraphs below).

AIM (Abstracts of Instructional Materials In Vocational and Technical Education): This is a quarterly listing of instructional aids, teaching methods, and curriculum guidelines. Some are available through the ERIC system in both microfiche and hardcopy. Other items

are available through other sources. AIM is of special interest to teachers and administrators interested in curriculum study.

ARM (Abstracts of Research and Related Materials in Vocational and Technical Education): This catalog is published quarterly as well. It acts as a container for research papers and reports in the field of vocational and technical education. Microfiche copy and hardcopy of some of the documents listed are available through ERIC.

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EXAMPLE FOR ORDERING:

1. In the spring 1968 issue of ARM you see a document you want titled: "Evaluation of Local Vocational Education Programs."
2. It has ED number: ED 010 791 and is available from EDRS. Use the number and order from EDRS.
3. You want microfiche because your library has a reader. Cost is \$.50 for 85 pages. Along with other documents you are ordering the cost is under \$3.
4. Mail order to ERIC Document Reproduction Service, NCR, 4936 Fairmont Avenue, Bethesda, Maryland 20014.
5. Wait two weeks for your copy of the report.

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THE EIGHTEEN ERIC CLEARINGHOUSES

<u>Subject</u>	<u>Where Center Located</u>	<u>ERIC Code</u>
Adult Education	Syracuse University	AC
Counseling & Personnel Services	Ann Arbor, Michigan	CG
Disadvantaged	Yeshiva University, N.Y., New York	UD
Early Childhood Education	U. of Ill., Urbana, Ill.	PS
Educational Administration	U. of Oregon, Eugene, Oreg.	EA
Educational Facilities	U. of Wisconsin, Madison, Wisconsin	EF

<u>Subject</u>	<u>Where Center Located</u>	<u>ERIC Code</u>
Educational Media and Technology	Stanford University, Stanford, California	EM
Exceptional Children	Council for Exceptional Children, Washington, D.C.	EC
English, Teaching of	NCTE, Champaign, Ill.	TE
Foreign Languages, Teaching of	Mod. Lang. Assoc. of Am., N.Y., New York	FL
Higher Education	George Washington University Washington, D.C.	HE
Junior Colleges	U.C.L.A.	JC
Library and Information Sciences	U. of Minnesota, Minneapolis, Minnesota	LI
Linguistics	Center for Applied Linguistics, Washington, D.C.	AL
Reading	Indiana University, Bloomington, Indiana	RE
Rural Education and Small Schools	New Mexico State University, Las Curces, New Mexico	RC
Science Education	Ohio State University, Columbus, Ohio	SE
Teacher Education	Amer. Assoc. of Colleges For Teacher Education, Wash., D.C.	VT
Vocational and Technical Education	Ohio State University, Columbus, Ohio	VT

ERIC DOCUMENT REPRODUCTION SERVICE

A Brief Description: ERIC Document Reproduction Service, or EDRS as it is usually called, is part of the ERIC system that enables readers to obtain the full text of documents cited in the report section of RIE and other ERIC publications. Acquisition is handled by each of the nineteen clearinghouses. After further processing by North American Rockwell, EDRS takes over. EDRS makes the master microfiche from which come standing orders, and other microfiche, and

hardcopy used in filling regular single ("on-demand") orders; and finally, seeing that documents in the system match up with those lists as available in RIE and AIM and ARM. From that point on the subscription department channels orders for specific documents and standing orders through reproduction and mailing to the customer. It takes approximately two weeks for an order to be filled, often including the mailing time as well.

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The Form Documents Come In: After the documents have been chosen suitable for reproduction, have been put on film and are available to the buyer in two forms, microfiche and hardcopy.

1. Microfiche: Microfiche are small cards of microfilm measuring 6" X 4". Rigid standards for size for the film and the image quality are maintained. This insures the usability of any microfiche reader manufactured according to government standards, and permits storage in a standard file drawer along with microfiche from other sources. One microfiche contains up to sixty pages of reduced material plus an eye-legible description of the contents and costs twenty-five cents. The advantages of microfiche are:

- (1) the fractional costs as compared to hardcopy, and
- (2) the ease of storage and duplication -- a factor that will be very important in the future.

The disadvantages of microfiche are:

- (1) mechanical readers cost over one hundred dollars, and
- (2) the average individual who wants several specialized studies and no more must either know a place where he can use a reader or must purchase one himself. However, there are collections of ERIC microfiche in many libraries throughout the country.

2. Hardcopy: Hardcopy books are made from the master microfiche. Hardcopy differs from microfiche in several significant ways:

- (1) It is a positive image resulting from reverse photo-enlargement from the master negative microfiche. On the other hand, microfiche for ERIC all project a negative image for reading -- that, white print on a black background.
- (2) Hardcopy may be read anywhere without a reader.
- (3) Hardcopy looks like an 8½" X 11" photoprint containing two pages of information.
- (4) Hardcopy is much more expensive than microfiche for documents of more than five pages. (See Example Below)

<u>Document Length</u>	<u>Hardcopy</u>	<u>Microfiche</u>
(32 pages)	\$1.36	\$.25
(76 pages)	3.12	.50
(216 pages)	8.72	1.00
(5 pages)	.28	.25

How to Order: When ordering an individual document from the ERIC system, fill in the EDRS simple order form always including the ED number and specifying whether microfiche or hardcopy is wanted, adding number of copies desired, and prepayment for any order under \$5.00 plus 50¢ handling charge for orders under \$3.00. Extra EDRS order blanks and instruction sheets should be kept on hand to ensure ease and accuracy in ordering. They may be obtained from EDRS, 4936 Fairmont Avenue, Bethesda, Maryland 20014.

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SOME GENERAL INFORMATION

Putting a Document into the System: The process of input takes approximately two months. Documents, after they are fully incorporated into ERIC, are then listed as available to the public. The appropriate clearinghouse after accepting the document generally follows this procedure: clearing copyright restrictions; assigning a number; indexing and cross-indexing; writing an abstract to appear in RIE, AIM or ARM, or the catalog writing of another clearinghouse as well as on the title page of the reproduced document; and then finally sending it to EDRS for reproduction and distribution. Documents are also received into the system through central ERIC. If in doubt about the proper clearinghouse, send your document to the central office at the following address:

ERIC
U.S. Office of Education
400 Maryland Avenue, S.W.
Washington, D.C. 20202

It is important that ERIC have input. And you, the reader, are responsible for this. Because ERIC is involved mainly in controlling the information system, little time can be devoted to soliciting potential documents. Therefore, if ERIC is to grow into a major source of fresh material, education, writers and researchers should contribute papers.

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A REVIEW GLOSSARY

- ERIC -- Educational Resources Information Center, a nationwide system for collecting and disseminating papers, reports etc., in the field of education.
- Central ERIC -- The main coordinating office of ERIC, located in Washington, D.C. at the U.S. Office of Education.
- Clearinghouses -- Any of eighteen offices handling research information pertaining to a given fact of education.
- Document -- Research papers, studies, dissertations, curriculum studies, etc. that have been put into the ERIC system.
- Hardcopy -- Documents printed on paper, large enough for easy reading, collated with a cover.
- Microfiche -- Microfilm cards measuring 6" X 4", containing up to sixty pages of information per microfiche.
- EDRS -- ERIC Document Reproduction Service, a specialized branch of National Cash Register Company which makes microfiche and hardcopy to meet requests.
- ED order number -- the designation number always used for ordering documents from EDRS.
- RIE -- Research in Education, the main catalog of ERIC documents, issued monthly.
- AIM and ARM -- Two quarterly catalogs often used together when looking for information in vocational and technical education.
- Abstract -- The substantial summary accompanying each document in RIE or AIM and ARM, and appearing in the first page of each document.
- Descriptors -- Cross-reference terms included in entries about each document and used for extensive indexing purposes.
- Thesaurus -- A collection of descriptors published by Central ERIC; to be used as an authority when storing and searching for documents; arranged alphabetically by subject; available from the U.S. Government Printing Office (two issues so far, \$2.50 and \$2.00).
- On-demand orders -- Single requests for documents, handled individually.
- Standing orders -- Subscriptions for various collections.
- Input -- The incorporation of documents into the system -- encouraged by ERIC.

Reader -- A projector for transforming microfiche into readable material.

Reader-printer -- A projector that also can print a photocopy.

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NEWS BRIEFS

New Deadlines Issued for Science Programs

The National Science Foundation has released deadlines for applications for its graduate and postdoctoral fellowship programs and proposals for in-service institutes. The submission date for graduate fellowships is December 6; postdoctoral fellowships, December 9; and institutes, December 15.

The National Research Council is sponsoring research associateships in the natural sciences for 1969. The deadline is February 15 for awards to be made April 1.

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NSF Funds Appropriated

A \$14.5-Billion appropriation bill has been passed by Congress to operate the National Science Foundation and a group of other Federal Agencies. The NSF share, \$400 million, is \$100 million below the fiscal year 1968 appropriation. The bill contains an anti-riot amendment similar to that of the Higher Education Amendments of 1968.

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New 4-Year Institutions Open

Nine four-year institutions have opened this fall: Merrill College, University of California, Santa Cruz; Federal City College, Washington, D.C.; Florida Technological University, Orlando; Palm Beach Atlantic College (Florida); Mid-American Nazarene College, Olathe, Kansas; Eisenhower College, Seneca Falls, New York; Kirkland College, Clinton, New York; SUNY College at Old Westbury; University of Wisconsin at Parkside.

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All-Day Counseling by Telephone

At the University of Texas trained counselors offer immediate counseling service on educational, vocational, and personal problems 24 hours a day by telephone. During the first year of the service 12,827 calls were received, most of them "informational," but over 1,000 of them classified as counseling calls. Men used the telephone service more often than women to ask for information, but nearly twice as many counseling calls come from women as from men. All calls are confidential, and students need not identify themselves unless they wish to.

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New GI Bill Amendments Sent to President

H.R. 16025, a bill to expand and extend GI Bill benefits for veterans, has been sent to the President. The final form of the legislation would permit 48 months of benefits under more than one law and permit all GI's to have one and one-half months of schooling for every month in service. This means draftees could have four years of schooling -- 36 months -- paid by the government.

Other features would extend educational benefits to widows of veterans and wives of disabled ex-servicemen.

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Adult Education Funding of \$450 Million Asked

Appropriation of \$450 million for adult basic education in the fiscal years 1970 - 1972 have been recommended by the National Advisory Committee on Adult Basic Education in its first annual Report to the President. In addition, a special immediate appropriation of \$20 million for programs in urban slums was urged.

Appropriation of \$5 million, \$10 million and \$15 million in the period for training teachers and administrators and of \$20 million, \$30 million and \$40 million for demonstration projects were proposed. The report, "Adult Basic Education -- Meeting the Challenge of the 1970's," is available from the Office of Education, Washington, D.C. 20202.

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COSTS OF ATTENDING COLLEGEPublic Colleges

1958 - 59	\$ 932.00 per year
1968 - 69	1,092.00
1978 - 79	1,264.00

Private Colleges

1958 - 59	\$1,687.00 per year
1968 - 69	2,326.00
1978 - 79	2,988.00

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Proposal Deadline Dates

Community Service and Education Programs
for
Title I Higher Education Act of 1968

Areas for proposals:

1. Educational Assistance to Local Governments
2. Proposal Development to Increase Recreational and Cultural Opportunities
3. Improvement of Community Health and Welfare Programs

Contact Person:

Miss Carole Carte has announced that February 1, 1969 is the deadline for proposals in this area. If anyone has a question concerning this please call extensions 277, 278 or 281.

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GRADUATE ASSISTANTS NAMED
FOR 1968 - 69 YEARSCHOOL OF HUMANITIES

Blakefield, Bonita
Depta, Mary

SCHOOL OF APPLIED SCIENCE
AND TECHNOLOGY

Colahan, David F.

SCHOOL OF HUMANITIES (cont.)

Flippin, Russell Jay
 Hardyman, Joyce W.
 Hays, Anthea (1st Semester)
 Hubbs, Fleeta
 Rogers, Henry (1st Semester)
 Stev, Sharon Towler
 Swaffer, Michael G.
 Weakley, Jerry Len
 Wilson, June C.

SCHOOL OF SOCIAL SCIENCE

Drahl, Michael J.
 Gillum, Charlotte Watkins
 Hawkins, Morris
 Kelley, Warren Ray
 Koch, Doris Lynn
 McCoy, Michael Woods

SCHOOL OF EDUCATION

Caskey, Alma (Alps)
 Clark, Wendy
 Durham, Sharon
 Hutchinson, Jerry (Dr. Tant)
 Ramey, Judy (1st Semester)
 Maddox, Harold
 Moore, Billy Tom
 Stein, Ellen
 Stepp, George
 Stepp, Sylvia (Admissions)
 Wright, Stephen A.

SCHOOL OF APPLIED SCIENCE
AND TECHNOLOGY (cont.)

Crawford, Thomas R.
 Donovan, Sandra E.
 Kahn, Susan Soloff
 Salisbury, Ada L.

SCHOOL OF SCIENCE AND
MATHEMATICS

Drake, John C.
 Jones, William R.
 Kennard, Larry
 Rogers, James G.
 Schmidt, Herbert E.
 Schneider, Harley J.

* This does not include other "graduate assistants" appointed by other offices or for special programs.

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RESEARCH NEWS

The Research News is the official publication of the Research and Development Center of Morehead State University. Content of the Research News is designed to inform the staff of the University concerning stories, events and announcements relevant to higher education and research.

Morris L. Norfleet, Vice President
Research and Development

Research News
Editor: George Stevens