Harry F. Harlow: professor of psychology.

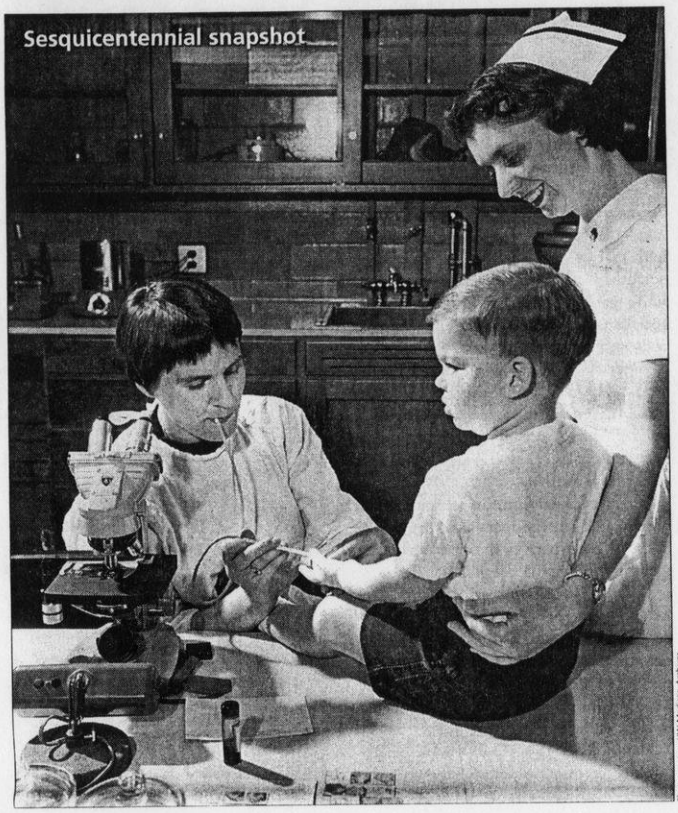

Photo courtesy UW-Madison Archives

A young boy undergoes an examination at UW Hospital in 1958. Over the years, the hospital has advanced health care for children in many ways. In one of the most significant developments, pediatrician and biochemist Harry Waisman helped kick-start the fight against mental retardation in the mid-1950s by identifying a way to combat phenylketonuria (PKU), a condition suspected of causing mental retardation through the inability of some infants in the first days of life to effectively metabolize essential proteins in food. The effort led to mandatory screening for PKU at birth throughout the country. This and other work became a springboard for studies of mental development continued today at UW-Madison.

Wisconsin ideas

La Follette Institute revives brainstorming between legislators and faculty

A great tradition was revived this month as part of the Chancellor's Initiative.

The La Follette Institute Policy Forums returned March 3 when a small group of faculty, staff and students met over dinner with interested legislators to discuss information technology policy, including issues of electronic commerce, archival retrieval and privacy.

Legislators attending were Sens. Jon Erpenbach, Brian Rude, Kim Plache and Bob Jauch; and Reps. Marlin Schneider, Dave Hutchison and Phil Montgomery. Faculty were Dennis Dresang from political science and the La Follette Institute; Louise Robbins, director of the School of Library and Information Studies (SLIS); Douglas Zweizig, also of SLIS; and Raj Veeramani of engineering and the Consortium for Global Electronic Commerce. La Follette staff and one student also attended.

The informal dinners and discussions were a major link between the Capitol and the university in the late 1980s, but were interrupted by changing priorities at the Legislature and on campus. Chancellor David Ward revived them as part of his new legislative outreach initiative.

"The dinners are an attempt not just to discuss government, but to discuss policy and the public good," says Kettl. "They help remind us that politics, as Aristotle believed, was humankind's highest calling and focused on one thing: the improvement of society."

Kettl says other similar forums and their topics are being planned.

The forums are part of Chancellor Ward's effort to strengthen the Wisconsin Idea by having the university expand and redefine its service to the state.

Other parts of the Chancellor's Initiative, assisted by the La Follette Institute, have included:

- Orienting newly elected legislators in January.
- Sponsoring a brown-bag series on ethics in February and March held downtown for legislative and agency staff.
- Issuing a series of papers and research on major topics facing the university in the next 20 years.

Kettl presented one of those papers at a recent Roundtable discussion and condensed it for publication as a column published in state newspapers.

The initiative is also looking for innovative ways to serve the Legislature, Kettl says. For example, he says the La Follette Institute is pairing legislators with faculty and staff throughout the university, following a survey of all legislative committee chairs on vital concerns and issues.

And the institute is looking into ways to prepare audiotapes and compact discs on important issues for legislators to use on their trips across the state. ■

Sesquicentennial Events

Public events and exhibits

March

23 Tuesday

ROUNDTABLE
"From Renewal to Revolution: The History of the University: 1946-1971." E. David Cronon, professor emeritus, history and John Jenkins, researcher, UW History Project. Tripp Commons, Memorial Union, 11:45 a.m.

LANDSCAPE FOR LEARNING
"The Campus as Classroom and Laboratory." David Eagan, Institute for Environmental Studies; Evelyn Howell, Department of Landscape Architecture and Ann McLain, Center for Limnology. Union South (TITU), noon.

27 Saturday

HEBREW AND SEMITIC STUDIES
"The Formation of Jewish National Identity: The Role of Hebrew Literature." Also March 28. Pyle Center. For a complete schedule, call 262-3204.

April

6 Tuesday

LANDSCAPE FOR LEARNING
"Campus Management and the Environment." David Drummond, Safety Department and Daniel Einstein, Environmental Management Program. Union South (TITU), noon.

10 Saturday

FRENCH AND ITALIAN PRESENCE IN WISCONSIN
A conference focusing on French and Italian culture in the history of Wisconsin and the University of Wisconsin. State Historical Society. Information: 262-3941.

13 Tuesday

LANDSCAPE FOR LEARNING
"Visions of the Built Campus." Bruce Braun, Facilities Planning and Management; John Harrod, Physical Plant; and Lori Kay, Transportation Services. Union South (TITU), noon.

20 Tuesday

LANDSCAPE FOR LEARNING
"Visions of the Natural Campus." Greg Armstrong, Arboretum; Cathie Bruner, Campus Natural Areas; Robert Hendricks, Campus Planning; and Robert Ray, Campus Natural Areas Subcommittee. Union South (TITU), noon.

11TH ANNUAL INSTITUTE ON AGING COLLOQUIUM
Sessions presented by UW-Madison faculty and researchers on a wide variety of recent aging studies. The Pyle Center. Information: 262-1818.

DIVERSITY IN TEACHING LAW
A symposium celebrating the 25th anniversary of the William H. Hastie Program, which provides fellowships and academic support to talented minority lawyers planning to teach law. April 23-24. Information: 265-2804, or e-mail: psholl en@facstaff.wisc.edu.

LANDSCAPE FOR LEARNING
"The Campus as a Learning Environment." Daniel Einstein, Environmental Management Program; Evelyn Howell, Department of Landscape Architecture; and Thomas Yuill, Institute for Environmental Studies. Union South (TITU), noon.

FLASHBACK

HISTORICAL HIGHLIGHT
Memorial Union opened in 1928 and quickly developed into the campus's "living room," a gathering place for students, faculty, staff and alumni. It was the first campus union to offer a craft shop (1930), the first to serve beer following Prohibition (1933), and the first to feature a cultural center when Union Theater opened in 1939. Its terrace view, overlooking Lake Mendota, might be the best in academia. Recognizing how the Union complements the classroom, UW's regents designated it in 1935 as the Division of Social Education.

PEOPLE FROM OUR PAST
In 1930, **Harry Harlow** began a remarkable quest to explore intelligence and emotion in nonhuman primates. The first to show us that monkeys could learn how to learn, Harlow demonstrated that monkeys are driven to explore, manipulate and experience affection. He was also able to illustrate through his monkey subjects that there is a biological basis of attachment between mother and infant — findings that earned Harlow the National Medal of Science, the nation's highest scientific honor.

Biochemist **Edwin Bret Hart** came up with the idea of iodized salt. In the 1920s, Hart found that iodine could prevent endemic goiter. His development of a method to stabilize iodine in salt, which resulted in the now-familiar table salt, effectively eliminated the disease in humans and livestock.

FACULTY MEMORIES
"I came to the university from Brooklyn, Wis., just 15 minutes away from Madison. There were 13 students in my graduating class and I didn't have the opportunity to study a foreign language because the only electives were typing, shorthand and agriculture. When my advisor recommended Spanish, I agreed and was placed in an experimental program that consisted of two hours daily, four days a week. My first two teachers were **Lloyd Kasten** and **Luis Crespo**, a Peruvian who spoke no English. It was wartime and there were 14 young "ladies" in the class. Because of that situation, some of us are still friends today, more than 50 years later.

"Mr. Kasten was a patient teacher in our classroom in the basement of Bascom Hall. We had no textbook for the first six weeks, and my roommate made fun of my attempts to learn the language. I went to Mr. Kasten in tears and asked him if he could explain the infinitive to me. After 10 minutes a whole new world of language was revealed, which I have since told thousands of students about. After just four semesters of studying Spanish I was asked to be the undergraduate assistant in the Foreign Languages department — an experience that changed my life.

"I completed a master's degree in Spanish and a Ph.D. in education and Spanish, taught high school for two years, one year on the island of Aruba teaching for Standard Oil, 20 years at UW-Madison, and finally, 31 more at UW-Eau Claire. Best of all, two sons and a daughter-in-law (a Spaniard) are Spanish professors in the UW System, and we are all in contact with Professor Kasten on a regular basis!

— Roma Hoff

uw news

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Release: Immediately 8/4/87

CONTACT: Charles Snowdon (608) 262-3974/262-3168

EDITORS/NEWS DIRECTORS: A partial list of topics and papers to be presented at the conference is attached to this story.

INTERNATIONAL ANIMAL BEHAVIOR CONFERENCE SCHEDULED

MADISON--Animal behavior ranging from sibling rivalry in pigs to culturally-transmitted foraging behavior in pigeons is on the agenda as more than 600 scientists gather for the 20th biennial International Ethological Conference starting Friday (Aug. 7) at University of Wisconsin-Madison.

Researchers from more than 30 countries are expected to attend the conference, which runs through Aug. 16. This marks only the second time the conference has been held in the United States.

Ethology involves the study of the natural behavior of animals, often focusing on behavior exhibited by individual members of a species.

UW-Madison psychology Professor and conference coordinator Charles Snowdon said the origins of ethology were in Europe in the field of zoology. Ethology gained recognition this century through the work of European primatologists Konrad Lorenz, Niko Tinbergen and Karl von Frisch, co-recipients of the 1973 Nobel Prize for medicine.

The first mention of ethology in North America was made by former University of Wisconsin President John Bascom in a book he published in the 1880s, Snowdon said.

Four prominent UW-Madison scientists will be recognized for their contributions to the field during a morning session the first full day of the

-more-

conference Saturday, Aug. 8. They are:

-- Geneticist Sewall Wright, winner of a National Medal of Science in 1966 and the prestigious international Balzan Prize in 1984. Wright, 97, came to UW-Madison in 1954 from the University of Chicago following his mandatory retirement there at age 65. He became a UW emeritus professor in 1960.

Regarded as one of the most influential evolution theorists of the 20th century, Wright published more than 200 scientific papers during his 75-year career and, in his retirement, published the four-volume series "Evolution and the Genetics of Population."

-- Limnologist Arthur D. Hasler, 80, founder of the UW-Madison Limnology Lab. Hasler is a leading researcher of orientation behavior in animals, having developed and proven the theory that salmon return to spawn in streams where they hatched by remembering the streams' unique smells. By imprinting fish to a chemical odor when they are very young, he has been able to draw them back as adults by adding the imprinting chemical to the water.

Hasler's work has been a major factor in improving Lake Michigan salmon fishing. His most recent effort, "Salmon for Peace," is an attempt to bring Chinese and Soviet scientists to UW-Madison to learn how to stock and imprint salmon.

-- Zoologist John T. Emlen, a UW-Madison faculty member for 40 years. Emlen, 78, served as an affiliate scientist with the Wisconsin Primate Center, studying Japanese monkeys and African gorillas. He also is known for research on birds of the Antarctic, Africa and the United States, as well as for studies of the South African rhinoceros.

Among Emlen's many students was George Schaller, world-renowned for his studies of African mountain gorillas and giant pandas.

-- Late psychologist Harry F. Harlow. Harlow founded the Harlow Primate Lab and served as director of the Wisconsin Primate Research Center. He is known in particular for his work showing monkeys' ability to learn complex tasks and for mother-surrogate research demonstrating the importance of contact comfort and infant attachment to mothers.

He was honored with numerous awards, among them the National Medal of Science in 1967. In 1972, the American Psychological Association jointly awarded Harlow and his wife Margaret the G. Stanley Hall Medal in recognition of a long, continued record of scientific and scholarly achievement.

Emlen, Wright and Hasler are expected to attend the honorary session.

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-- Patrick Dorn (608) 262-2650

MEMORIAL RESOLUTION OF THE FACULTY OF THE UNIVERSITY OF WISCONSIN

ON THE DEATH OF EMERITUS PROFESSOR HARRY F. HARLOW

Harry F. Harlow, Emeritus Professor of Psychology, died on December 6, 1981, in Tucson, Arizona, at the age of 76. He is survived by his wife, Clara Mears, three sons, Robert, Rick, and Jonathan, and a daughter, Pamela.

Born in Fairfield, Iowa, on October 31, 1905, Professor Harlow attended Reed College and Stanford University as an undergraduate and received his Ph.D. degree in psychology from Stanford in 1930. He was appointed to the University of Wisconsin faculty in that same year, and spent his entire academic career at Madison up to his semiretirement in 1974. In his last 19 years at Wisconsin, he held the title of George Cary Comstock Research Professor of Psychology.

Soon after his arrival here in 1930, Professor Harlow set to work studying learning abilities in monkeys at Vilas Park Zoo, and in 1932 he established a laboratory for more controlled experiments with monkeys in a small building on the engineering campus. During more than two decades in these modest facilities, he and his students carried out over fifty studies of learning and brain lesions in rhesus monkeys. This work laid down many of the standard procedures of laboratory primate learning research, and earned wide reputations for both the "Wisconsin Primate Laboratory" and the "Wisconsin General Test Apparatus," the latter being a multi-purpose device developed by Harlow for studying cognitive abilities.

By the early 1950s Professor Harlow's research contributions, particularly his discovery of the formation of learning sets, had brought him a great deal of professional recognition. In 1951 he was elected to the National Academy of Sciences and named to a twelve-year term as editor of the Journal of Comparative and Physiological Psychology. Later that decade he was elected President of the American Psychological Association and received that organization's Distinguished Scientific Contribution Award. Incredibly, it was not until <u>after</u> these achievements and honors--for which most academics would be willing to settle in a whole life's work--that Professor Harlow's best-known accomplishments came.

The burgeoning Primate Laboratory activities found a larger home in an abandoned cheese factory near Regent Street in 1952, and this facility tripled in size as funds from the Wisconsin Alumni Research Foundation and federal grant support increased. The expansion led to Harlow's establishment of the first laboratory breeding and infant-care programs for rhesus monkeys, which in turn spawned collaborations with his campus colleagues in reproductive physiology, pediatrics, neurophysiology, and pathology. The Madison campus then became a natural choice by the National Institutes of Health for the construction of one of the seven interdisciplinary Regional Primate Research Centers. From 1961 to 1971, Professor Harlow was Director of both the Center and the Psychology Department's Primate Laboratory, presiding over facilities that extended over eleven floors of three buildings, a combined colony of 1,200 monkeys, and a staff of over 200 employees.

The development of the infant monkey nursery in the previous decade marked a transition in his research interests from nonsocial to social behaviors, and triggered his best-remembered work--the surrogate mother studies. These studies showed that a baby monkey's strong attachment to its mother is based much more upon tactile sensations ("contact comfort") provided by the mother than upon the mother's

(continued)

association with the satisfaction of biological drives such as hunger. This conclusion contradicted prevailing beliefs by learning theorists and Freudians about the formation of affectional bonds but was no surprise to human mothers around the world, who became well-acquainted with Harlow's wire-and-terry-cloth artificial mothers through countless magazine articles and television presentations.

The mother-surrogate research was more important to Professor Harlow himself as the key that unlocked the door to a vast realm of primate affectional (love) systems waiting to be experimentally dissected. Equally aware of the additional possibilities in this realm was his second wife, Dr. Margaret Kuenne Harlow, who joined him fully in these social behavior studies and who contributed immensely to their planning, execution, and publication until her death in 1971. From artificial mothers the Harlows went on to real monkey mothers and a detailed analysis of maternal behaviors, and to a long sequence of additional studies involving peer interactions and play in young monkeys, adult heterosexual behavior, nuclear family groups and paternal behavior, and the severe psychological impairments which result from social deprivations and separations. Over two more decades, these pioneering ventures led to major programs, currently in progress, involving monkey models of human depression and psychotherapy. By the end of his Wisconsin years, Professor Harlow had over 300 articles in print on topics as wide-ranging as psychology itself. He continued his writings in Tucson in the later 1970s, greatly assisted by Clara Mears; among other valuable contributions, their collaboration produced a retrospective volume (The Human Model: Primate Perspectives, 1979) providing excellent overviews and updated reflections on his major research findings.

These accomplishments represent a series of factual discoveries and generalizations that are simply remarkable in number, scope, and impact, demanding the attention of anthropologists, sociologists, and psychiatrists, as well as psychologists. Soon after President Johnson awarded him the National Medal of Science in 1967, Professor Harlow was rated by the membership of the American Psychological Association as one of the five most influential psychologists of the 1950s and 1960s. Of all the honors in his domain of science, only the Nobel Prize eluded his grasp.

He became world-famous as "the father of the mother surrogate," but literally thousands of Wisconsin alumni remember him better as "my Intro Psych prof," a role he maintained for nearly forty years. And like the audiences he addressed in almost a thousand speeches, his undergraduate students remember his sharp wit, cheerful exuberance, and novel--often dramatic--ways of making behavioral science sensible to the layman. His graduate students remember not only the myriad avenues of investigation he opened for them and the inspiration he gave them to pursue these, but also his considerable help in launching their careers. His older colleagues remember his surprising skills elsewhere--at the bridge table (he earned many master points in duplicate tourneys) and on the tennis court (he nearly won both the singles and double championships in Madison's 1943 municipal tournament). His readers remember that it was not just in science that he evidenced a blazing creativity: often his articles were sprinkled with poetry, as was his life.

Harry F. Harlow has already secured a lofty status in the history of psychology. He will occupy a niche in our university's history that is no less esteemed.

MEMORIAL COMMITTEE:

Robert M. Bock
Robert E. Bowman
John W. Davenport, Chair
Robert W. Goy
Stephen J. Suomi
Willard R. Thurlow

uw news

From the University of Wisconsin-Madison / News Service, Bascom Hall, 500 Lincoln Drive, Madison 53706 / Telephone: 608/262-3571

Release: Immediately 2/19/81 jfn

UNIVERSITY RANKS HIGH IN EMINENT SOCIAL SCIENTISTS

MADISON--A new peer-selected roster of the world's most eminent social scientists of this generation places the University of Wisconsin-Madison among the nation's top 10 university faculties in these fields of knowledge.

The recently-published biographical volume of the International Encyclopedia of the Social Sciences honors four UW-Madison emeritus professors--historian Merle Curti, political scientist David Fellman, psychologist Harry Harlow and human biologist Sewall Wright. Thirteen other scholars listed are Wisconsin alumni or former faculty members.

The 215 distinguished social scientists selected include historian Arnold Toynbee, philosopher Bertrand Russell, anthropologist Margaret Mead, psychologists Anna Freud and Jean Piaget, economists John Kenneth Galbraith and Arthur Burns, and political scientists George Kennan and Harold Lasswell. Former UW-Madison visiting professor Gunnar Myrdal was cited in three fields--demography, economics and sociology.

Harvard University leads the biographical selections with 19 while the University of Chicago is runnerup with 16. Wisconsin, University of California-Berkeley and University of Pennsylvania are tied for seventh with four selections apiece. Panels of scholars in 14 fields of social science made the selections.

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Chosen to write the biographies were 215 scholars in 13 nations, including six UW-Madison faculty members. Historian Curti, the only honored scholar who also was selected to write a biography, contributed the Richard Shryock profile. Other UW-Madison contributors are economist Glen G. Cain, who wrote about Paul H. Douglas; geneticist James F. Crow, author of the Sewall Wright article; psychologist John W. Davenport, who wrote of Harry Harlow; anthropologist Richard H. Osborne, who contributed the William H. Sheldon article, and historian Peter H. Smith, author of the Lewis Hauke tribute. A former faculty member, political scientist Austin Ranney, wrote of Pendleton Herring.

Yale University and Chicago supplied the most contributors with Harvard, Princeton and Columbia tied for runnerup. Wisconsin, Pennsylvania, Stanford and Virginia tied for sixth with six contributors. No other Big Ten university provided more than two contributors. UW-Madison social work Professor Alfred Kadushin also served the publication in an advisory capacity.

The thirteen Wisconsin alumni or former faculty members listed as most eminent in their field included:

Psychologist John Dollard, historian John K. Fairbank, anthropologists E. Adamson Hoebel and William W. Howells, psychologist Abraham H. Maslow, psychologist Carl R. Rogers, political scientist Elmer E. Schattschneider, mathematical statistician Henry Scheffe, agricultural economist Theodore W. Schultz, psychologist William H. Sheldon, political scientists Harold and Margaret Sprout, and anthropologist Sol Tax.

The encyclopedia was published by The Free Press, a Division of Macmillan Co.

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news

From the University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: 608/262-3571

Release: Immediately 11/12/74 gf

W.J.BROGDEN PSYCHOLOGY BUILDING DEDICATION SET FOR FRIDAY

MADISON--Dedication of the W. J. Brogden Psychology Building at the University of Wisconsin-Madison Friday will be highlighted by the return to campus of Prof. Harry Harlow.

Harlow retired this summer from UW teaching duties and has since been conducting research at the University of Arizona. He achieved world-wide recognition while at the UW for his primate research.

Prof. Harlow will open the public program at 10 a.m. at the facility, 1202 W. Johnson st. Following Harlow's remarks, Prof. Clifford Morgen, University of Texas will give recollections of Wilfred J. Brogden, long-time UW faculty member to whom the building is being dedicated.

Brogden, who died in Feb., 1973, joined the UW faculty in 1939 and served as a psychology professor, researcher, and administrator.

Although construction of the $3 million psychology facility was completed and partially occupied in 1964, this will be the first formal dedication.

Afternoon dedication activities include a 1:30 p.m. address by Harvard University Prof. Richard Thompson, and a talk by Ohio State University Prof. Delos Wickens

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research news

From the University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone (608) 262-3571

Release: Immediately 5/25/73

UIR SCIENCE WRITING DIVISION
University-Industry Research Program
(608-263-2876)

ISOLATED MONKEYS RETURN TO NORMAL WITH AID OF MONKEY "THERAPISTS" AT UW-MADISON

By HANNAH PAVLIK
UW Science Writer

Madison, Wis., --Can six month old rhesus monkeys raised in total isolatio ever be normal again?

Yes, but with the help of monkey "therapists," says Stephen J. Suomi, research associate in the Primate Laboratories at the University of Wisconsin-Madison.

Suomi is referring to a recent study conducted with Harry F. Harlow and William T. McKinney Jr. in which monkeys deprived of all early visual and physical contact with fellow monkeys later recovered normal social behavior.

Behavioral abnormalities caused by isolation rearing are still considered irreversible by many scientists. So far, efforts to rehabilitate isolated monkeys by exposing them to their socially normal peers have been largely unsuccessful.

In the Wisconsin study, four male monkeys housed in total isolation for six months after birth were allowed contact with four normal females. The females were three months younger -- too young to be aggressive as peers, or to show behavior more complex than clinging and simple playing.

The prediction, as later confirmed, was that exposing the males to "therapist" monkeys who would provide acceptance rather than aggressive attack might reverse the effects of social isolation.

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Add one--Monkeys

The monkeys were allowed to interact in pairs for two hours, three days a week, within specially designed cages. Also included in the "therapy" were meetings in groups of four for two days a week in a playroom.

At first, the males showed typical disturbance behavior: frequent self-clasping, self-mouthing, huddling and rocking. The therapists' first response was to approach and cling to the isolates.

After a week in the cages and two weeks in the playroom, the isolates began to return the clinging. They later copied the therapists' elementary playing and began to initiate play behavior themselves. Disturbance activities gradually decreased to the point where the isolates could no longer be easily distinguished from the therapists.

The isolates, now two years old, show virtually complete recovery. The early playing has led to more mature social activities such as grooming and sexual mounting. They cannot, however, be considered completely normal until they become old enough to mate.

The research finding suggests the intellectual capability for learning social tasks is not restricted to limited time periods during early development. If adult social performance is affected by early social experiences, the potential for recovery remains as long as an appropriately designed teaching method is available to tap this potential.

# # #

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From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 10/9/72 jw

MADISON--Prof. Harry F. Harlow and the late Margaret K. Harlow of the University of Wisconsin-Madison Primate Laboratory have been awarded the G. Stanley Hall Medal of the American Psychological Association.

The award cites the Harlows' "distinctive contributions" to developmental psychology.

Prof. Harlow is director of the psychology department's Primate Laboratory. Mrs. Harlow was professor of educational psychology until her death 14 months ago.

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From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 11/28/72 mcg/jb

MADISON--Dr. P. J. Perry of the University of Canterbury, Christchurch, New Zealand, will lecture on "Research in British Agricultural History and Historical Geography" at 3:30 p.m. Wednesday in Room 315 Science Hall.

The public is invited to attend by the University of Wisconsin-Madison departments of geography and history and the student Geography Club, sponsors of the lecture.

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MADISON--"The 18th Century Italian Comic Intermezzo" will be discussed by Prof. Gordana Lazarevitch of Barnard College in a public lecture at the University of Wisconsin-Madison at 7:30 p.m. Monday in 210 Wisconsin Center.

The UW School of Music is sponsoring the lecture.

- o -

MADISON--Two honors came to Prof. Harry F. Harlow, director of the University of Wisconsin-Madison Primate Laboratory, this week.

Harlow, the UW's George C. Comstock professor of psychology, was named an honorary fellow of the British Psychological Association, and also received the Martin E. Rehfuss award for distinguished service to medicine from Jefferson Medical College, Philadelphia.

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From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 8/10/73 jb/meb

NEWS BRIEFS FROM THE UW-MADISON CAMPUS

MADISON--Elm Drive Dormitory C will be named in honor of Scott H. Goodnight, the first dean of men on the University of Wisconsin-Madison campus.

The late dean, who held the office from 1916 to 1945 when he retired, died Aug. 15, 1972. He also served as dean of summer sessions for 32 years and as teacher of German. He joined the faculty in 1901.

Located at the west end of the campus as part of the Elm Drive complex, the C dormitory was converted to use in part by the Water Resources Center and the department of communicative disorders when the demand for dormitory space lessened last fall.

- o -

MADISON--Prof. Alfred Kadushin of the University of Wisconsin-Madison School of Social Work has been named a fellow of the Center for Advanced Study of the Behavioral Sciences at Palo Alto, Calif. He will use the year to compile research and write a book for social work supervisors.

About 40 fellows are nominated from all the social sciences each year to participate in the program at the Center which uses the facilities of Stanford University. Dr. Kadushin is the second social worker to receive an appointment.

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MADISON--Harry F. Harlow, psychology professor and director of the UW-Madison Primate Laboratory, has been chosen to receive the 1973 Gold Medal Award of the American Psychological Foundation. This award, one of the highest in American psychology, is given annually "in recognition of a distinguished and long-continued record of scientific and scholarly accomplishments."

Dr. Harlow, whose classic studies on monkey behavior have earned him worldwide renown, will receive the award at the annual meeting of the American Psychological Association in Montreal on Aug. 28.

- o -

MADISON--A University of Wisconsin-Madison professor of metallurgical and mining engineering, Dr. James A. Clum, will be on a year's leave of absence as a resident fellow for the American Society for Engineering Education.

Prof. Clum will join the steel division of the Ford Motor Co., Dearborn, Mich., to gain operating experience in iron and steel making for further teaching and research in this area.

Prof. Clum also serves as associate director of Industrial Research on the Madison campus.

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From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 5/7/73 jo

EDITORS: Contact Joan Oleck (608) 262-3571 for further information

"HEREDITARIANISM" IS RACISM CLAIM MADE--MOVE UNDERWAY TO DISPUTE RESEARCH CLAIMS THAT MINORITIES INTELLECTUALLY INFERIOR DUE TO HEREDITY

MADISON, Wis.--Research claims that blacks and other minority groups may be intellectually inferior due to heredity are being disputed in a resolution circulating on the University of Wisconsin-Madison campus.

Local coordinator of the drive, called the Committee on Racism (CAR), is Prof. Finley C. Campbell, acting chairman of the Afro-American studies department.

A national group organized in New York last January, CAR is acting to counter theories of some nationally recognized psychologists who say heredity plays as great if not a greater role than environment in determining human abilities.

"Historically, black people have always looked to education," Campbell explains, "but if people support these hereditary theories, there'll be an end to education, scholarships, Upward Bound, and all programs that assume if you improve the environment, you improve learning ability."

The UW chapter of CAR has begun a drive for faculty support of its "Resolution Against Racism." If unsuccessful this spring in placing the item on an already full Faculty Senate agenda, CAR hopes to utilize the summer in publicizing and developing its position. Included are plans for national symposium May 19 at the University of Chicago.

In the fall, through a series of teach-ins, Campbell hopes to make the possible extent of racism on campus as big an issue as the antiwar movement once was.

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Specifically, CAR attacks a statement which appeared in last July's American Psychologist. Signed by 48 supporters, the ad defended the academic right to investigate the "possible role of inheritance in human abilities" and emphasized the signers' belief that "such hereditary influences are very strong."

One of the signers was UW-Madison Prof. Harry S. Harlow, renowned for his primate research. In explaining his stance, Harlow said, "Comparative intelligence is by no sense a given factor...The relative importance of heredity as opposed to environment has been underestimated for many years."

However, research involving differences in intelligence among different human groups is bringing cries of "racist" from some quarters and is fuel for blatant prejudice in other quarters, according to Campbell.

Does Harlow think that, perhaps, he is "playing with fire"?

"I'm not playing with fire, I'm playing with monkeys," he replies.

Among other social scientists who signed the ad were Arthur R. Jensen, a University of California-Berkeley psychologist, and Richard Herrnstein, Harvard.

After the 1966 Coleman Report on schools concluded that the educational deficiencies of minority group children could not be blamed on any measurable differences between their schools but rather on their social environments, Jensen rocked the education world by his own deficiency theory.

A 1969 Harvard Educational Review article tentatively concluded that more of the black-white I.Q. differential was due to heredity than to environment. Herrnstein agreed, two years later in the Atlantic Monthly, stating:

"There are scraps of evidence for a genetic component in the black-white difference" and predicted a future aristocracy composed of only the highest I.Q.'s.

His and Jensen's theories were joined by those of Stanford University's William Shockley quoted in the Boston Globe as saying, "Nature has color-coded groups of individuals so that statistically reliable predictions of their adaptability to intellectually rewarding and effective lives can easily be made and profitably used by the pragmatic man on the street."

The inheritance argument has since been dubbed "hereditarianism."

Its foes are arguing forcefully and emotionally that hereditarianism is nothing more than racism thinly disguised by the veil of academic respectability.

"My colleagues are not going to argue an Archie Bunker racism. They're going to argue academic freedom," Campbell states.

Campbell stresses that CAR's stance is not a defensive one.

"If the University is willing to have the flat theory of the earth open to debate and if they wish to allow the teaching of the geocentric theory of the solar system as open to debate," he says, "then the genetic basis of human ability in the area of intelligence is also open to debate."

CAR sees little academic value in arguing a doctrine it finds "unscientific," "socially vicious," and not far-removed from theories of American slavery and the Nazis' "super race." Theories of racial inferiority, says CAR's resolution, are "untenable" because in the course of human history, advanced civilizations have appeared all over the world, in Asia and Africa as well as elsewhere. With this constant shift, "it is nonsense to suppose genetic superiority wandering about the world."

UW Genetics Prof. Carter L. Denniston takes issue with this statement:

"What they (CAR) seem to be assuming and denying is that there's a demonstrable correlation between the average I.Q. of a population and the complexity of that population's society." In other words, civilization is a far more complex issue than what CAR seems to imply.

Denniston's colleague, Prof. James F. Crow, supports this, differentiating between intelligence itself and the admittedly imperfect I.Q. tests with which it is measured. These tests, he says however, "have a high repeatability and are useful predictors." He points to widely accepted studies of identical twins raised in separate households. The I.Q. of the twins in these situations remains very similar

despite differing environments. What is important is that the persons in these studies have all been white; and, as Crow says, "The evidence for individual genetic differences in whites' intelligence is very strong." But science has not yet made any definitive statement about blacks.

And Denniston adds, "All we know is that there's a (I.Q.) number you can attach to a person, and if you consider that number an attribute of the person, that attribute has a high genetic component."

Above all, the scientists demand the academic freedom to pursue such studies.

While it does not wholly object to the teaching of Jensen's and Shockley's theories as theories, CAR's resolution calls for a stop to the dissemination of these ideas as scientific fact with statistical basis. The resolution lists the classroom, scholarly journals, and academic departments as potential settings for "racial oppression."

The spread of hereditarianism outside academia can have tangible, dangerous effects, say its foes. Translating the doctrine to "slums don't make niggers--niggers make slums" could, predicts Harvard's Alvin Poussaint, eventually build resistance to integrated education, reinforce the flight of whites to segregated suburbs, and leave, "by the wayside," rehabilitation, remedial, and compensatory (Headstart, Upward Bound) programs.

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uw
news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: Immediately 7/1/71 mcg

MADISON--University of Wisconsin Prof. Harry F. Harlow, retiring director of the Wisconsin Regional Primate Research Center, will discuss some of his discoveries in primate emotions at 7 p.m. Monday in Wisconsin Center auditorium.

His lecture, titled "Love and Hate," is the second in the annual summer eight-weeks University Forum on the Contemporary Scene. A one-credit course for UW juniors and seniors, the forum is open to the public.

Introduced by Prof. Frederick W. Haberman, forum moderator, Dr. Harlow will lecture for 50 minutes, then conduct a discussion period.

Dr. Harlow has devoted 35 years to his study of learning, motivation, and physiological psychology. He has written more than 200 articles for scholarly journals and edited the Journal of Comparative and Physiological Psychology for 12 years.

Among other speakers scheduled to address the forum are Madison Mayor William D. Dyke, whose topic is "The Cities: Can They Survive?"; Dr. Kathryn Clarenbach, UW specialist in the status of women; and Dr. Benjamin H. Glover, UW department of psychiatry, whose title is "Changes in Neurotic Problems." All lectures are on Monday at 7 p.m. in the Center.

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uw news

From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release: ADVANCE FOR TUESDAY, DEC. 28, PM's 12/23/71

By JOHN WOLF

PHILADELPHIA, Pa.--(Advance for Tuesday, Dec. 28, pm's)--Aggression is a trait that primates, probably including humans, do not need to learn--it is inborn.

This is the conclusion reached after years of experiments on monkeys raised in isolation at the Wisconsin Regional Primate Research Center on the Madison campus of the University of Wisconsin.

Reviewing the results of these experiments at the 138th meeting of the American Association for the Advancement of Science in Philadelphia this week, Prof. Harry F. Harlow and Allyn C. Deets concluded, "Aggression most likely remains in man as a solid component of his biological heritage as a primate."

Harlow and Deets cautioned, however, that the nature of primate aggression is modified by learning and other life experiences.

Harlow is a psychology professor at Wisconsin. Deets is now at the University of Pittsburgh Laboratory of Clinical Science.

The two researchers theorize that aggression toward members of the same species may be an important factor in allowing some primates to adapt to changing environments. "The relatively aggressive rhesus monkey has been able to adapt to environments ranging from remote forest areas to overcrowded urban ghettos," they point out.

Gorillas, however, which display little aggression toward one another, "are now threatened with extinction, being unable to cope with man's encroachment upon their traditional habitat."

- more -

Add one--primates

In one of the aggression experiments at the Wisconsin primate facility, monkeys were raised from birth under conditions that allowed them to see and hear other monkeys but did not allow any contact with other animals.

When these isolated monkeys were "threatened" by experimenters waving black gloves, the young primates first were frightened. Later the same monkeys began showing hostility toward the humans, and finally they showed physical aggression toward the only available targets--their own bodies--by biting themselves and throwing themselves against their cages.

Thus, these isolated monkeys, which never had a chance to be "taught" aggression, nevertheless displayed strange but definite aggression, Harlow and Deets noted.

In another experiment, young monkeys were raised normally until they had developed a natural fear of strange objects but before they had shown any aggression. Then they were placed in isolation. When released six months later, these monkeys were not fearful of other monkeys but were very aggressive toward their peers.

Harlow and Deets believe that if aggression develops while a young monkey does not have contact with other monkeys of his age, he does not learn to control his newly found aggression. As a result he becomes outwardly more aggressive than normal.

The fact that emotions like fear and aggression develop in definite stages plays a vital role in preventing normal primate group structures from breaking apart, Harlow and Deets feel.

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news

From The University of Wisconsin-Madison / University News and Publications Service, Bascom Hall, Madison 53706 / Telephone: (608) 262-3571

Release: Immediately 12/13/71

University-Industry Science Writing Program
(263-2811, 263-2876)

By Thomas Burroughs
UW Science Writer

MADISON, Wis.--By watching young monkeys play, University of Wisconsin-Madison scientists have found genetic differences in social behavior between males and females.

"Although monkeys are not little people, they have enough physical and behavioral similarities to suggest that the findings apply to humans as well," says Stephen J. Suomi, researcher at the Wisconsin Regional Primate Research Center.

The major difference in behavior is in type of play, Suomi says. Since young monkeys spend most of their time playing, play is a catch-all term for general social behavior. Play is important, he adds, because it teaches patterns for later behavior.

Males play more aggressively and prefer rough-and-tumble games with much physical contact, he explains. Wrestling, rolling and sham-biting are common.

Females usually play with little physical contact, often chasing each other back and forth with frequent role reversals, he says.

"A human example of this type of difference can often be seen at grade school picnics where boys play football and girls sit under a tree and talk," notes Primate Laboratory Director Harry F. Harlow, who also participated in the study. "Certainly this behavior is culturally related to a large extent, but it does have some genetic basis."

Play differences in normal monkeys begin appearing at three to four months and are well pronounced by six or seven months, Suomi says. Many of these

-more-

genetic traits will carry over into adult behavior, though some will be modified by learning.

To learn if differences are actually genetic in origin, the scientists studied male monkeys raised in total isolation for the first six months of life. This isolation completely destroys the development of normal social behavior.

The male isolates were then paired with normal three-month female "therapist" monkeys, and within two weeks were responding to simple play, Suomi says. As the isolates matured, their play became more sophisticated and sex differences appeared.

"Even though the isolates had no exposure to other males and therefore no way to learn male behavior, their play was typically male," he explains. "Thus even when social development is retarded, when it finally appears the genetic differences are there."

This study is now being repeated with female as well as male monkeys, Suomi says. Preliminary results indicate that female social behavior is also genetically influenced, with the isolates developing in typically female fashion.

Work with monkeys at the Primate Center, funded by the National Institutes of Health and Mental Health, has pointed out several other genetic behavioral differences, Suomi notes. Both young and adult female monkeys tend to groom themselves more, are generally less aggressive and are better able to tolerate isolation.

"Though the monkeys clearly demonstrated that there are some genetic differences in social behavior, this in no way indicates that men and women should not be treated as equal," Suomi stresses. "Genetic differences in humans should not be ignored, but neither should they serve to condemn anyone because of their sex."

# # #

BROADCASTERS: Suomi is pronounced SOO'-mee

uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: AM's of WEDNESDAY, MAY 5 4/30/71

Wisconsin Regional Primate Research Center (608-262-3844)

By ELIZABETH M. MARTIN

WASHINGTON, D.C.--(Advance for am's of Wednesday, May 5)--As any mother can tell you, boys and girls do play differently. But are these differences due to the environment or are they genetic in origin?

Current research with monkeys at the Wisconsin Regional Primate Research Center gives further support to the existence of inborn differences between the sexes in quality of play--with males being more aggressive and preferring rough-and-tumble play while females play almost exclusively in a noncontact way.

"Somewhat to our surprise," reported Dr. Stephen J. Suomi to the annual meeting of the American Psychiatric Association, "the type of play appears to be sex specific to a large extent. Although monkeys are not men, our research suggests that genetic differences are equally or more important than environmental influences in determining play behavior.

This finding was part of a larger study conducted by Suomi, a center researcher; Dr. Harry F. Harlow, director of the center, and psychiatrist William T. McKinney in which rhesus monkeys with severe behavioral abnormalities were rehabilitated.

Male monkeys were raised in total social isolation for the first six months of life. This procedure completely destroys their capacity for normal social behavior. Instead of exploring and engaging in play, these isolates huddle in corners,

- more -

rock, and avoid all contact with other monkeys. Previous attempts at rehabilitation have not been successful and isolates have never reached normal levels of sexual or social development.

The current study, supported by the Animal Resources Branch of the National Institutes of Health and the National Institute of Mental Health, paired isolate males with normal female "therapists" shortly after removal from six months of total isolation. The therapists were three months younger than the isolates and were in the clinging and elementary play stage of development.

The first response of the monkey therapists was to approach and cling to the isolates. Within a week the isolates were reciprocating the clinging. Next the therapists initiated simple play with the isolates and within two weeks the isolates responded.

As the animals matured their play became more sophisticated and sex differences appeared. Males are usually more aggressive and seek more physical contact in their play than females. In a monkey game resembling the human version of tag, the male more often initiates the game and chase while the female is more often chased. Although the isolates had no exposure to other males, their play was typically "male," indicating innate differences.

The isolates are now two years old and are essentially normal, social animals at least when interacting with their therapists.

"We feel that the use of monkeys as subjects in a controlled study of psychopathology and rehabilitation has merit," stated Suomi. "Lesser degrees of isolation and debilitation are common in humans. Our therapists monkeys were able to provide a non-threatening atmosphere of warmth and close contact essential for the recovery of our isolates.

"The need for this type of environment is not unfamiliar to human psychotherapists who recognize the key roles played by significant people outside the therapeutic hours."

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NEWS OF THE UNIVERSITY OF WISCONSIN

From the University's Statewide Communications Service, 1752 Van Hise Hall, Madison 53706

Release

Immediately 3/12/71 mcg

PERSONNEL

MADISON--The internationally-known Primate Research Center on the University of Wisconsin Madison campus will have a new director July 1 as the result of Board of Regent approval Friday of the appointment of Dr. Robert W. Goy.

A member of the University of Oregon faculty for eight years, Dr. Goy will replace Dr. Harry F. Harlow as director and hold the additional title of professor of psychology. Dr. Harlow is retiring.

Since 1964, Dr. Goy has been associated with the Oregon Regional Primate Center at Beaverton, and has served as chairman of the department of reproductive physiology and behavior. His salary at Wisconsin will be paid entirely by the National Institutes of Health, which supply more than $1 million a year to the UW center.

A graduate of the University of Michigan, Dr. Goy earned the Ph.D. in psychology at the University of Chicago in 1953. He taught at the University of Kansas before joining the Oregon faculty.

In other personnel actions, the regents named Dr. Robert L. Clodius as University Professor, Madison campus, professor of economics and professor of agricultural economics, and project administrator of the Midwest Universities Consortium for International Activities in higher education in Indonesia. Dr. Clodius resigned this week as vice president of the University.

- more -

Add one--personnel

The regents approved a change of status for Jules M. Rosenthal, specialist in the Instructional Materials Center, School of Education, Madison, naming him program administrator and director of communications at the Mental Retardation Center in the Graduate School. His salary will be paid by extramural funds.

Regents also approved the appointment of William D. McGuire, a former administrative assistant at University Hospitals, as assistant superintendent beginning March 15, his salary to be paid by Hospitals revolving funds. A graduate of Notre Dame University, he holds the master of hospital administration degree from the University of Michigan.

The resignation of Jan K.E. Hirshfield, associate professor in medicine and genetics, who has been offered a position in Sweden, was accepted.

A leave of absence for James P. Gilligan, director of the Recreational Resources Center, division of economic and environmental development, University Extension, and professor of forestry, College of Agricultural and Life Sciences, was granted. He has been asked to serve as deputy assistant secretary of the Air Force for reserve affairs and education.

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uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: SUNDAY A.M., DEC. 27 12/23/70

Wisconsin Regional Primate Research Center (262-3844)

By ELIZABETH M. MARTIN

CHICAGO, Ill.--(Advance for Sunday a.m., Dec. 27)--Over 15 million people in the United States suffer from mental disorders in which depression plays a significant role.

By using a wide variety of separation procedures, scientists at the University of Wisconsin Regional Primate Research Center in Madison have now produced various degrees of such depression in rhesus monkeys.

Dr. William T. McKinney, psychiatrist at the University Medical Center, along with Prof. Harry F. Harlow, Primate Center director, and graduate student, Stephen J. Suomi, reported that the severity of this depressive reaction to separation depends on a number of variables -- age at time of separation, social environment from which the animal is removed, and the situation during the separation period.

Speaking at a symposium on "Clinical and Research Aspects of Separation and Depression" at the annual convention of the American Association for the Advancement of Science Sunday, they stressed the need to identify and study these variables before connections between separation and depression can be clearly understood. Depression may not be the only reaction to separation and may only occur under specific conditions.

"By using the monkey," said McKinney, "we have the ability to precisely control the variables considered important in separation, and hopefully these

- more -

studies will contribute to an understanding of the effects of separation on personality development in humans."

Like human children, infant monkeys go through distinct stages when separated from mothers and peers. The first few days are characterized by intense protest at separation. The infant then "gives up" and enters a despair stage which includes huddling, self-mouthing, and self-clasping behaviors. When reunited, there is increased clinging to another animal.

On the other hand, three-year-old animals show increases in locomotion and environmental exploration throughout the separation period and no signs of despair. After reunion the animals' behavior returns to normal levels, only to revert upon further separations.

When separation is combined with a period of isolation, a younger animal becomes withdrawn and remains this way even after return to the original environment. By contrast, the older animal seeks immediate contact with others and there are increases in clinging behavior as opposed to self-directed actions of younger animals.

These studies, supported by the Animal Resources Branch of the National Institutes of Health and the National Institute of Mental Health, confirm clinical observations which indicate that age and prior experiences are important variables in determining one's response to separation. "We do not believe that experiences during certain critical developmental stages necessarily have specific, inevitable, and irreversible consequence," stated McKinney. "However, many basic behavior patterns are determined early in life and with sufficiently rich social experiences, more stress is required to produce psychopathology."

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From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release:

THURSDAY, MAY 14 A.M. 5/11/70

By ELIZABETH M. MARTIN

SAN FRANCISCO, CALIF.--Multiple techniques for producing depression in rhesus monkeys were revealed Thursday by scientists at the University of Wisconsin Regional Primate Research Center.

Dr. William T. McKinney, psychiatrist at the UW Medical School, along with Stephen J. Suomi, graduate student, and Prof. Harry F. Harlow, director of the Primate Center,described numerous studies using behavioral manipulations and drugs which have produced a consistent, stable pattern of depression in monkeys.

In these studies, supported by the National Institutes of Health, monkeys were either separated or isolated at different ages and for varying lengths of time. Other monkeys were given medication designed to induce depression.

All animals showed varying degrees of depression depending upon the experimental manipulation and independent of prior rearing experience. These behavioral changes included increases in huddling, rocking, and self-clasping along with decreases in exploratory and play behaviors.

In an address to the American Psychiatric Association, the investigators pointed out that depression is not caused by one single factor. They stressed the need for any overall program in which social and biological factors thought to be important in causing depression can be studied in a controlled and systematic way.

"It seems likely," said McKinney, "that one can produce a depression syndrome in nonhuman primates comparable to that in humans. Such studies should contribute to an understanding of the causes and cures of depression in people."

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From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: TUESDAY, APRIL 28, A.M. 4/27/70

Wisconsin Regional Primate Research Center (262-3844)

By ELIZABETH M. MARTIN

WASHINGTON, D.C.--Psychologists at the Wisconsin Regional Primate Research Center revealed yesterday to the National Academy of Sciences a new approach to social rehabilitation of rhesus monkeys with severe behavioral abnormalities.

Prof. Harry F. Harlow, director of the Primate Center, and Stephen J. Suomi, graduate student, reported dramatic changes in the socialization of abnormal monkeys when paired with specially-selected, nonaggressive monkey "therapists."

Raising monkeys from birth to 6 months of age in total social isolation completely destroys the capacity for normal social behavior. Previous attempts at rehabilitation have been unsuccessful and isolates have never attained normal levels of social or sexual behavior.

Isolates typically huddle in corners, clasp themselves, rock, and avoid all contact with other monkeys.

The current study, supported by the National Institutes of Health, paired isolate males with normal female "therapists" shortly after removal from 6 months of total social isolation. These therapists were three months younger than the isolates and were in the clinging and elementary play stage of development.

- more -

The first response of the therapists was to approach and cling to the isolates. Within a week the isolates were also clinging. The therapists tried to initiate simple play with the isolates, and within two weeks the isolates responded with play behavior.

After five months of therapy it appears that the isolates have become essentially normal, social monkeys, at least when interacting with the "therapists."

It remains to be seen whether the isolates will develop normal sexual behavior patterns, according to Harlow and Suomi. Previously no male isolates have been observed to inseminate females, regardless of the number of opportunities.

"What's intriguing," commented Dr. William McKinney, a psychiatrist in primate research at Wisconsin, "is the apparent successful therapy of a social isolate by a monkey who is chronologically younger, but at the same developmental stage as the one being treated.

"Although total social isolation is rare in humans, lesser degrees of relative social isolation and debilitation are common," continued McKinney. "The basic ingredients of therapy for many of these people are warmth and close contact in addition to professional help."

"We have known for some time about the existence of therapists who seem inhuman," pointed out Harlow and Suomi. "However, it is encouraging to discover that it is also possible to have nonhumans who are therapists."

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uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: Immediately 3/31/70 mcg

EAU CLAIRE--Dr. Harry F. Harlow, professor of psychology and director of the Primate Laboratory at the University of Wisconsin, Madison, will be guest speaker for Eau Claire area alumni when they hold the annual Founders Day dinner April 23.

Cocktails at 6 p.m. and dinner at 7 are scheduled for Eau Claire Country Club. Reservations at $5 each may be made with Jack Bartingale, 813 N. Oxford ave.

A former chairman of the UW psychology department, Dr. Harlow has served as consultant to the National Institutes of Health, the Army, Air Force, and Navy, Department of Defense, and Army Scientific Advisory Panel. From 1950 to 1952 he was chief of Human Resources Research for the Army General Staff, Washington, D.C.

His record also shows service as chairman of the American Psychological Association policy and planning board in 1954-55, and APA president in 1957-58. In 1964-65 he served as president of the division of comparative and physiological psychology of the same association.

In April, 1956, Dr. Harlow was awarded one of the highest honors in his field, the Howard Crosby Warren Medal of the Society of Experimental Psychologists, based on his research in learning of primates. In August of 1964, he and his scientist-wife, Dr. Margaret K. Harlow, presented papers at the First International Congress of Social Psychiatry in London. In 1965 he was named to deliver the

- more -

annual Sigma Xi lectures at 11 eastern colleges, and appointed to the editorial board of Elsevier Publishing Co., London, Amsterdam, and New York.

Dr. Harlow is a member of the National Academy of Sciences, National Academy of Arts and Sciences, National Society of Sigma Xi, and Phi Kappa Phi.

He has lectured in England and Italy, and in all parts of the U.S.A. He was called to Washington, D.C. by Pres. Johnson to witness the signing of the Health Research Facilities Amendments of 1965.

A fellow of the American Academy of Arts and Sciences, Dr. Harlow was elected vice president of Section J (psychology) of the British Association for the Advancement of Science in 1964. On Feb. 13, 1968, he was awarded the National Medal of Science by Pres. Lyndon B. Johnson in a White House ceremony.

Dr. Harlow's international reputation has been established by his studies of primate learning, brain function, motivation, and social development. His research on primates has led to a greater understanding of the psychology of mankind.

Founders Day is marked by UW alumni around the world as a memorial to the first class in 1849.

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uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: **Immediately** **10/22/68 jb**

MADISON--Dr. Harry F. Harlow, director of the University of Wisconsin regional primate center at Madison, is one of 15 scientists cited this week by World Who's Who in Science.

Dr. Harlow, professor of psychology, was honored for his development of new hypotheses in neurophysiology, love, and motivation. After 35 years of experiments with rhesus monkeys, he showed the importance of mothering and the peer group in development and growth as well as the multiplicity of affectional bonds forming the basis of animal and human societies.

The World Who's Who in Science is a biographical dictionary of major scientists and their achievements covering all fields of endeavor from antiquity to the present day.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

2/12/68

RELEASE: Advance for use, Tuesday, Feb. 13

UIR Science Writing Division (262-5984)

Harlow/feature backgrounder - Photos available

By MARLETTE SWENSON

MADISON, Wis.--In awarding a National Medal of Science to famed psychologist Harry F. Harlow, the nation is honoring a scientist whose more than 35 years of research on primates has led to a greater understanding of the psychology of mankind.

Harlow, professor of psychology at the University of Wisconsin and director of the Primate Laboratory and the Wisconsin Regional Primate Research Center, has established an international reputation for his studies of primate learning, brain function, motivation, and social development. He is the undisputed authority on the development of affectional systems--in other words, love.

"Certainly monkeys are not people," Prof. Harlow explains, "but they are the highest form of animal life except for the apes and humans. One great advantage of monkeys as subjects is that we can control and manipulate their environment with more freedom than we can that of human subjects.

"For example," he continues, "we can put monkeys into isolation as they develop, and we can add to or take away from the satisfaction of their basic emotional needs. And as we learn more about the basic emotions of monkeys, we can find leads to aid us in our search to find out more about ourselves and the world we live in."

From his studies with monkeys the Wisconsin psychologist has named and described five affectional systems common to both the lower primates and man. These five different types of affection or love are important as both binding and

- more -

disruptive social mechanisms. Development of the five affectional systems in an individual--be he man or monkey--are essential for later "normal" social behavior and organization, Harlow found.

The five different kinds of love Prof. Harlow has defined are mother-to-infant, infant-to-mother, infant-to-infant (playmates), heterosexual, and paternal.

Two of the most interesting aspects of Prof. Harlow's studies are his findings on what makes a good mother and the effects of social deprivation on infants.

Young monkeys and children possessing normal mothers have an excellent chance of developing normally themselves. Prof. Harlow found that normal mothering alone isn't enough to insure normal development, however; young monkeys need plenty of opportunity to play with other youngsters. An overly-extended period of mother love may, on the other hand, impair baby monkeys' abilities to form friendly relationships with their age-mates.

Development of infant-to-infant affection through play is perhaps one of the most important keys to lifelong happiness and social adjustment in Prof. Harlow's monkeys. Studies of groups of motherless monkeys--infant raised without their mothers--indicate that their affectional relationships with other infants largely compensate for their lack of mothering.

But infant monkeys raised in total isolation from birth are the most socially retarded of all.

"Case studies of children reared in impersonal institutions or in homes with indifferent mothers or nurses show a frightening comparability," Prof. Harlow points out. "The child may remain relatively unharmed through the first six or eight months of life. But from this time on the damage is progressive and cumulative. By one year of age he may sustain enduring emotional scars, and by two years many children have reached the point of no return."

The Wisconsin researcher is perhaps most widely known for developing a substitute "surrogate" monkey mother and raising infants with one of these terry

cloth covered, substitute mothers. When deprived of normal mothers, the infant monkeys form strong emotional attachments to the artifical mothers.

In studies of surrogate mothers, Prof. Harlow discovered that mother love in infant monkeys depends considerably on close body contact, not primarily on nursing as was thought previously. The mother's body gives her infant comfort and reassurance as well as self-assurance when in strange surroundings.

Margaret K. Harlow, a lecturer in the department of educational psychology, has participated in many of the primate studies with her husband. Their names appear as co-authors on many scientific papers.

The husband-and-wife team are currently initiating research on the fifth affectional system in primates, paternal love. This project may take five years to complete, but when it is finished the Wisconsin psychologists will have added greatly to our understanding and knowledge of another vital process of socialization.

Although one cannot generalize from monkey to man, there are many parallels in the socialization processes of each, the Harlows explain.

Monkeys deprived of social contacts in the first six to twelve months of life have extreme difficulty in adjusting to their social group later. These animals do not initiate positive social action, do not groom or play with other monkeys, and show totally inadequate or no heterosexual behavior, the Harlows point out.

"These monkeys that had lived unloved and in isolation were totally unloving, distressed, disturbed and delinquent," Prof. Harlow explains.

Their counterparts at the human level are the children and adults who were deprived of mothering in the early years or peer experience in childhood.

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From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: Advance for use Tuesday, February 13 2/12/68

UIR Science Writing Division (262-5984)

By MARLETTE SWENSON

WASHINGTON, D. C.--Prof. Harry F. Harlow of the University of Wisconsin was one of 12 scientists to receive the National Medal of Science today (Feb. 13) from President Lyndon B. Johnson.

The medals, highest tribute of the federal government for distinguished scientific and engineering achievement, were awarded in a White House ceremony. This is the eighth year the awards have been made.

Prof. Harlow, director of the Wisconsin Regional Primate Research Center and Primate Laboratory, is internationally known for his work on primate learning, motivation, cortical localization, and the development of the affectional systems.

In 1956 he was awarded one of the highest honors in the field of psychology, the Howard Crosby Warren Medal of the Society of Experimental Psychologists, based on his primate researches in learning and motivation. The American Psychological Association presented him the Distinguished Scientific Contribution Award in 1960 in recognition of his pioneering research in the areas of learning, motivation, exploration and manipulation, and love.

He presented the James Arthur Lecture of the American Museum of National History in 1951, the Alvarenga Prize Lecture of the College of Physicians of Philadelphia in 1956, the Thomas William Salmon Lectures in Psychiatry in 1960, and the Messenger Lectures at Cornell University in 1961. He was also National

- more -

Sigma Xi Lecturer for the Northeast Area in 1959 and the Mid-Atlantic Area in 1965-1966.

Soon after his arrival at the University of Wisconsin in 1930, he founded the University's Department of Psychology Primate Laboratory and has been its only director. He has also been director of the Wisconsin Regional Primate Center since its establishment in 1961.

A former chairman of the Wisconsin psychology department, he served as editor of the Journal of Comparative and Physiological Psychology from 1950 through 1962. He was Chief Psychologist for the U.S. Army from 1950 to 1952 and was a member of the Army Scientific Advisory Panel from 1954 to 1964. He has also served as a consultant to the National Institutes of Health and the Air Force.

Prof. Harlow is a member of the National Academy of Sciences, American Academy of Arts and Sciences, American Philosophical Society, National Society of Sigma Xi, and Phi Kappa Phi. He was elected vice-president of the Division of Psychology of the British Association for the Advancement of Science in 1964. In 1947-48 he was president of the Midwestern Psychological Association, and in 1949-50 the president of the Division of Experimental Psychology of the American Psychological Association. He served as president of the American Psychological Association in 1957-58, and as president of the Division of Comparative and Physiological Psychology of that association in 1964-65.

He has lectured throughout the United States and in many foreign countries including England, Germany, Switzerland, Denmark, Sweden, Italy, Argentina, Brazil and Mexico. He is the author of over two hundred scholarly articles and an editor of several books.

A native of Fairfield, Iowa, Prof. Harlow obtained both his B.S. and Ph.D. degrees from Stanford University.

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uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: Immediately 1/2/68 rt

MADISON, Wis.--Four of the 12 winners of the National Medal of Science announced Sunday by Pres. Lyndon B. Johnson have University of Wisconsin backgrounds, UW Emer. Pres. E. B. Fred pointed out Tuesday.

Prof. Harry Harlow, director of the UW Primate Laboratory, is the only one still on the Wisconsin faculty. He joined the Madison campus staff as an assistant professor of psychology in 1930, and has remained to establish an international reputation in his field.

Dr. Gregory Breit, now professor of physics at Yale, was at Wisconsin in 1934-47 and received the Wisconsin honorary Doctor of Science degree in 1954.

Dr. Jesse W. Beams, professor of physics at the University of Virginia, received the Master of Arts degree from Wisconsin in 1922.

Dr. Alfred H. Sturtevant, California Institute of Technology zoologist, was a visiting professor at the University of Wisconsin in 1964.

A fifth scientist in the group honored by Pres. Johnson has a less direct connection with the Madison campus. Dr. Michael Heidelberger, of New York University, is the father of Dr. Charles Heidelberger who was awarded the Nobel Prize for his work in genetics at Wisconsin before he left to join the Stanford faculty.

###

Recipients of the National Medal of Science for 1967

Biological Sciences

KENNETH S. COLE

SENIOR RESEARCH BIOPHYSICIST, NATIONAL INSTITUTES OF HEALTH

For highly original experimental and theoretical investigations of the electrical properties of biological membranes that have led to a deep understanding of the functioning of nerves.

HARRY F. HARLOW

PROFESSOR OF PSYCHOLOGY, UNIVERSITY OF WISCONSIN

For original and ingenious contributions to comparative and experimental psychology, particularly in the controlled study of learning and motivations, the determinants of animal behavior, and development of affectional behavior.

ALFRED H. STURTEVANT

PROFESSOR OF BIOLOGY, EMERITUS, CALIFORNIA INSTITUTE OF TECHNOLOGY

For a long and distinguished career in genetics during which he discovered and interpreted a number of important genetic phenomena in Drosophila and other organisms.

MICHAEL HEIDELBERGER

PROFESSOR OF IMMUNOCHEMISTRY, NEW YORK UNIVERSITY

For placing the science of immunology on a quantitative chemical basis, and for showing its power to reveal the structure of molecules found in the living organism.

Engineering Sciences

EDWIN H. LAND

PRESIDENT, POLAROID CORPORATION

For many discoveries and inventions in the field of polarized light, rapid photography, including quick processing of the final photograph, for the development of a unique theory of color vision, and for contributions to national defense.

The National Medal of Science was established by Act of Congress in 1959, "to provide recognition for individuals who make outstanding contributions in the physical, biological, mathematical, and engineering sciences."

Presentation of

The National Medal of Science

February 13, 1968

THE WHITE HOUSE

uw news

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706 • Telephone: (608) 262-3571

Release: **Immediately** 4/20/67 jb

MADISON--Both Prof. Harry F. Harlow and Mrs. M. K. Harlow of the University of Wisconsin's Primate Laboratory in Madison will present papers at a scientific symposium in Italy early next month.

Prof. Harlow, director of the laboratory and the regional Primate Research Center, will lecture on "Learning and Memory in Primates" at the University of Sassari, Sardinia, May 3. His wife, a project associate in psychology at the laboratory, will speak on "Performance of Monkeys and Children in Comparable Learning Tasks" at the Academy of Lincei in Rome May 5.

The two-city symposium, devoted to "Recent Advances on Learning and Retention," is sponsored by the academy and the Italian Council for National Research. It is intended to stress the interest for animal research in the behavioral experimentation in Italy.

Prof. Harlow will return to the U.S.A. to address the Western Psychological Association in San Francisco May 5. His topic is "The Affectional Systems in Primates."

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ISTITUTO DI FARMACOLOGIA
DELL'UNIVERSITÀ DI SASSARI
VIA ROLANDO N. 1 - TELEF. 22.0.68

file

Rome, 29 Dec. 1966

Dr. Harry F. Harlow
Department of Psychology
University of Wisconsin
Madison, Wis. USA

Dear Dr. Harlow:

I am sorry that during the period I spent as visiting professor in the B.R.I. in Los Angeles I did not get a chance of meeting you. A common friend, Dr. Leon Schmidt of the Primate Center in Davis, gave me recent news about your department. I hope that the next summer I will be able to visit your laboratory.

Accademia

I am writing to inform you of a Symposium on 'Recent advances on Learning and Retention' which will be held on May 2nd and 3rd 1967 at the University of Sassari (40 minutes flight from Rome) and the 5th and 6th in Rome. This symposium will be sponsored by the Accademia dei Lincei and the Italian Consiglio Nazionale delle Ricerche. Academy OF
Consul ~~Center~~ National of Research

The purpose of this Symposium is to emphasize the interest for the animal research in the behavioral experimentation in this country. Your partecipation could increase the meaning of the meeting and enlarge the limits of the discussion. I would be therefore very happy if you could take part in the symposium by giving a paper during the session on 'Animal behavioral research' on the studies concerning learning and memory in primates.

Your partecipation will also be requested for a round table which will be held on the problem:'Impact of the studies on animal behavior on the psychological and human sciences'.

The Accademia dei Lincei will later send you a formal invitation together with the program. Your travel fair and living expenses will be reimbursed from the Accademia.

With my best personal regards.

Sincerely yours,

Daniel Bovet

Daniel Bovet

Western Psychol. Assn.
SF 5/5
262-2094

Rossi
Jacilla

TRANSLATION OF THE OFFICIAL INVITATION OF THE

"ACCADEMIA DEI LINCEI"

Dear Professor,

Our Academy is extremely honoured that you have accepted to take part in the Meeting on "Recent Advances on Learning and Ritention (Attuali orientamenti della ricerca sull'apprendimento e la memoria)", sponsored by our Institute and the National Council of Research.

You will find hereby attached a provisional program of the Meeting which will take place at the University of Sassari from May 2nd, to May 3rd, and at our Institute in Rome from May 5th to May 6th. Moreover we would like to inform you that the Organizi- Secretariat, A.I.S.C. - Via G.B. Martini,6 ROME - will provide a return - ticket from your residence to Rome and Alghero (airport of Sassari) and will tell you about your hotel reservations in Sassari and in Rome.

Would you please be so kind to answer us as soon as possible, returning the attached form within March 15th to the Organizing Secretariat, so that it will be easy to find a place on one of the planes from Rome to Alghero as this route is always rather overcrowded.

We are looking forward to welcoming you in Rome.

Very sincerely yours

ACCADEMIA NAZIONALE DEI LINCEI

IL PRESIDENTE

Roma, 28 febbraio 1967.

Illustre Dr. Harry F. HARLOW
Regional Primate Research Center
The University of Wisconsin
1223 Capitol Court
MADISON, Wisc. 53706 (U.S.

Illustre Professore,

questa Accademia ha preso atto con vivo compiacimento della assicurazione da Lei data circa la Sua partecipazione ai lavori del Convegno su "Attuali Orientamenti della ricerca sull'apprendimento e la memoria", promosso dal nostro Istituto e dal Consiglio Nazionale delle Ricerche.

Nel ringraziarLa sentitamente Le invio un programma provvisorio della manifestazione che avrà luogo, come Ella sa, nei giorni 2-3 maggio a Sassari presso l'Università, e il 5-6 maggio a Roma, presso la sede del nostro Istituto.

La informiamo che la Segreteria Organizzativa, A.I.S.C., Via G.B. Martini n.6, provvederà ad inviarLe i biglietti aerei di andata e ritorno dalla Sua sede per Roma ed Alghero (aeroporto di Sassari), nonché a comunicarLe presso quale albergo è stata riservata la stanza per il Suo soggiorno a Sassari e a Roma.

Data la scarsa disponibilità dei posti sui voli di linea fra Roma ed Alghero, Ella è pregata di rispondere con cortese sollecitudine ritornando alla Segreteria Organizzativa l'acclusa scheda entro il 15 marzo p.v.

In attesa di avere il piacere di incontrarLa a Roma, Le porgo, illustre Professore, i più cordiali saluti.

A. Monteverdi

(Angelo Monteverdi)

Learning and Memory in Primates

Harry F. Harlow

ABSTRACT

It is possible that all kinds of learning and retention are dependent upon some unitary biochemical or anatomical mechanism. However, at the present time this remains an untested hypothesis. If one conducts research designed to correlate the effects of enzymes, drugs, and lesions upon learning and retention, one must first ask the nature of the task to be learned and to be retained. Agents and operations which produce no loss, or even apparent gain, on simple learning tasks produce devastating and destructive effects on more complex types of learning.

The complexity of a learning task can be deduced on logical grounds within great limitations. The only meaningful way to determine the complexity of a learning task is the technique worked out to determine human mental age. Thus, on any species to be investigated one must find the earliest age at which various kinds of problems can be mastered and the minimal age at which they can be mastered with maximal adult facility. We have conducted such experiments on monkeys, and in terms of "monkey mental age" we can rate, in terms of difficulty, the conventional learning tasks of conditioned responses, spatial discrimination, object discrimination, discrimination reversal, learning set, and various kinds of concept formation. Without this kind of basic behavioral information, studies which attempt to assay the effects of drugs, enzymes, deficient diets, and cortical lesions have only limited meaning.

Performance of Monkeys and Children on Comparable Learning Tasks

Margaret K. Harlow

ABSTRACT

The basic learning and concept techniques developed and standardized at the Wisconsin Primate Laboratories for assaying learning ability in monkeys have been used in testing the learning capacities of large groups of age-dated normal children and large groups of human children suffering from various intellectual defects ranging from mongolism and assumed brain damage to various levels of mental subnormalities. Since the apparatus and methods have been relatively well standardized, reasonable comparisons can be made concerning the intellectual capabilities of monkeys and human beings. Although there are differences from study to study, depending upon procedural variations, it would appear that the rhesus monkey has a human mental age level of approximately 2-3 years. Thus, as measured by human types of intellectual assessment, the rhesus monkey stands approximately at the level of the human idiot or low-grade human imbecile.

ACCADEMIA NAZIONALE DEI LINCEI

CONSIGLIO NAZIONALE DELLE RICERCHE

CONVEGNO INTERNAZIONALE SU:

ATTUALI ORIENTAMENTI DELLA RICERCA SULL'APPRENDIMENTO E LA MEMORIA

RECENT ADVANCES ON LEARNING AND RETENTION

ORIENTATIONS ACTUELLES DES ETUDES SUR L'APPRENTISSAGE ET LA MEMOIRE

PROGRAMMA PROVVISORIO
PROVISIONAL PROGRAMME
PROGRAMME PROVISOIRE

UNIVERSITÀ DI SASSARI
2–3 maggio 1967
2nd–3rd May 1967

ROMA – PALAZZO CORSINI
5–6 maggio 1967
5th–6th May 1967

COMITATO D'ONORE
HONORARY COMMITTEE

ANGELO MONTEVERDI
Presidente dell'Accademia Nazionale dei Lincei

VINCENZO CAGLIOTI
Presidente del Consiglio Nazionale delle Ricerche

GAETANO MARTINO
Rettore dell'Università di Roma

SERGIO COSTA
Rettore dell'Università di Sassari

BENIAMINO SEGRE
Presidente della Classe di Scienze Fisiche, Matematiche e Naturali dell'Accademia Nazionale dei Lincei

LUIGI CALIFANO
Presidente del Comitato Biologia e Medicina del Consiglio Nazionale delle Ricerche

PRESIDENTI
CHAIRMEN

DANIELE BOVET

MARCELLO CESA-BIANCHI

JAMES L. McGAUGH

Segreteria Scientifica: Istituto di Farmacologia
Università di Sassari – Via Rolando

Scientific Secretariat: *Pharmacology Institute*
University of Sassari – Via Rolando

Organizzazione Tecnica: A.I.S.C.
Assistenza Integrata Servizi di Congresso
Via G. B. Martini n. 6 – Roma

Technical Organization: *A.I.S.C.*
Integrated Assistance Services to Congress
Via G. B. Martini n. 6 – Rome

INFORMAZIONI GENERALI
GENERAL INFORMATION

SEDE DEL CONVEGNO

Le riunioni scientifiche avranno luogo i giorni 2 e 3 maggio a Sassari presso l'Università, e i giorni 5 e 6 a Roma presso l'Accademia dei Lincei, Palazzo Corsini, Via della Lungara n. 10.

PREMISES

The scientific meetings will be held in Sassari on the 2nd and 3rd May at the University. In Rome, on the 5th and 6th May, at the Accademia dei Lincei, Palazzo Corsini, Via della Lungara n. 10.

SEGRETERIA

In entrambe le sedi funzionerà un ufficio di segreteria:
Sassari 1–4 maggio
Roma 4–6 maggio

SECRETARIAT

The office will be open in:
Sassari 1st–4th May
Rome 4th–6th May

LINGUE

Funzionerà un servizio di traduzione simultanea in italiano, francese e inglese.

LANGUAGES

Simultaneous translation from and into Italian, French and English will be provided.

MARTEDÌ 2 MAGGIO 1967
TUESDAY, MAY 2nd 1967

UNIVERSITÀ DI SASSARI

INTRODUZIONE - *INTRODUCTION*

J. L. MCGAUGH (Irvine): A multi-trace view of memory storage processe

I. Le basi organiche della memoria - *Organic basis of memory*

J. BARBIZET (Paris): La notion de Codage et son acception dans Sciences neurologiques.

M. R. ROSENZWEIG (Berkeley): Effect of experience on brain chemistry and b anatomy.

V. G. LONGO (Roma): Metodi elettrofisiologici nello studio dei meccan dell'apprendimento.

II. Il comportamento innato ed acquisito - *Inherited and acquired behav*

E. A. ASRATYAN (Mosca): (Titolo non pervenuto).

S. A. BARNETT (Glasgow): The interaction of heredity and environmen development of behaviour.

MERCOLEDÌ 3 MAGGIO 1967
WEDNESDAY, MAY 3rd 1967

UNIVERSITÀ DI SASSARI

III. Psicobiologia dell'apprendimento e della memoria - *Psychobiology of learning and memory*

G. CANZIANI (Palermo):	Dal condizionamento classico al condizionamento operante.
	Discussione: E. ALTEA (Cagliari).
H. F. HARLOW (Madison):	Learning and memory in Primates.
E. BECCARI (Torino):	Velocità operative ed apprendimento.
F. BOVET–NITTI (Sassari):	L'acquisizione e la retenzione del condizionamento nella shuttle-box.
A. OLIVERIO (Sassari):	Inhibitory and facilitating factors in learning.
J. L. MCGAUGH (Irvine):	Biological problems in the kinetics of memory storage.

VENERDÌ 5 MAGGIO 1967
FRIDAY, MAY 5th 1967

ACCADEMIA DEI LINCEI – ROMA

Apprendimento e Memoria nell'uomo - *Learning and Memory in Men*

M. CESA–BIANCHI (Milano):	I problemi metodologici.
G. OLERON (Paris):	La réactivation des associations en mémoire à terme.
J. PIAGET (Genève):	Mémoire, apprentissage et connaissance.
B. INHELDER (Genève):	Discussion.
M. K. H. F. HARLOW (Madison):	Performance of Monkeys and Children on comparable learning tasks

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TAVOLA ROTONDA

«Il contributo dello studio del comportamento animale alla psicologia ed sviluppo delle scienze umane».

ROUND TABLE

« Impact of the studies on animal behaviour on the phychological and hu sciences ».

SABATO 6 MAGGIO 1967

SATURDAY, MAY 6th 1967

ACCADEMIA DEI LINCEI – ROMA

Apprendimento e Memoria nell'uomo - *Learning and Memory in Men*

R. CEPPELLINI (Torino): Studi genetici.

E. DE RENZI (Milano): Patologia della Memoria.

Discussione: C. FAZIO (Genova).
F. GILBERTI (Genova).
C. LOEB (Sassari).

E. CARACCIOLO (Milano): Apprendimento e Memoria nell'età scolastica.

G. A. KIMBLE (Durham): A theoretical analysis of verbal learning and retention.

Ore 12.00: D. BOVET (Sassari): Conclusione del Simposio.

PROGRAMMA SOCIALE

Martedì 2 maggio – Ricevimento offerto dal Rettore dell'Università e dal President della Provincia di Sassari.

Giovedì 4 maggio – Mattina: Cavalcata Sarda.
Pomeriggio: Partenza per Roma.

Venerdì 5 maggio – Ricevimento offerto dall'Accademia Nazionale dei Lincei.

SOCIAL EVENTS

Tuesday May 2nd – Reception offered by the President of the University and th President of the Province of Sassari.

Thursday May 4th – Morning: Sardinian folkloristic horse-ride show. Afternoon Departure to Rome.

Friday May 5th – Reception offered by the Accademia Nazionale dei Lincei.

ROMA, 1967 — Dott. G. Bardi, Tipografo dell'Accademia Nazionale dei Lincei

ISTITUTO DI FARMACOLOGIA
DELL'UNIVERSITÀ DI SASSARI
VIA ROLANDO N. 1 - TELEF. 22.0.68

Provisional Program

RECENT ADVANCES ON LEARNING AND RETENTION

Tuesday May 2nd, 1967 Sassari

Introduction: DUAL HYPOTHESIS OF MEMORY STORAGE

First Session - Organic basis of memory
Anatomical, Neurophysiological and Biochemical approach

The President of the University and the Mayor of Sassari will give reception.

Wednesday May 3rd Sassari

Second session - Animal behavioral research.
Conditioning and instrumental learning - Inherited and acquired behavior - Methodological problems in animal psychology - Pharmacological aspects - Short and long term memory.

Visit to the Neuropharmacological Center of the CNR in the Institut of Pharmacology of the University of Sassari.

Thursday May 4th Sassari

Morning: Sardinian folkloristic horse-ride show

Afternoon: The participants will fly to Rome.

Friday May 5th Rome Accademia Lincei

Third session: Learning and memory in Men.
Methodologica l problems - Genetic studies - Inborn and a quired factors - Learning and knowledge - Pathology of memory.

Round-table: IMPACT OF THE STUDIES ON ANIMAL BEHAVIOR ON THE PSYCHOLOGICAL AND HUMAN SCIENCES.

The President of the Accademia dei Lincei will give a reception.

Saturda y May 6th Rome Accademia Lincei

Fourth Session: A theoretic approach to learning and memory.

Conclusion of the Symposium

Invitations have been sent to:

J.de Ajuriaguerra (Genève)
E.A.Astratian (Moscow)
J.Barbizet (Paris)
A.Buzzati-Traverso (Naples)
M.Cesa Bianchi (Milan)
P.Fraisse (Paris)
H.F.Harlow (Madison)
E.R.Hilgard (Palo Alto)
B.Hydén (Goteborg)
M.Jarvik (New York)
G.Martino (Roma)
J.L.Mac Gaugh (Irvine)
G.Moruzzi (Pisa)
J.Piaget (Genève)
M.Rosenzweig (Berkeley)
A.Rossi Fanelli (Roma)
N.Tinbergen (Oxford)
etc.

The Oceanic Institute
Makapuu Point, Oahu

June 29, 1966

TO: University of Wisconsin Public Relations Dept.

An authority in primate behavior from the University of Wisconsin is visiting with Oceanic Institute researchers to gain some insights into the world of the porpoise.

Dr. Harry F. Harlow, head of the Wisconsin Regional Primate Center and Research Professor of Psychology at the University of Wisconsin, has been meeting with the Oceanic Institute's Professor Gregory Bateson.

Dr. Harlow, who arrived on June 20, is visiting Hawaii under the auspices of the Brittingham Foundation. The Foundation has been sponsoring a visiting professor program involving the University of Wisconsin, the Oceanic Institute, and the University of Hawaii.

Professor Bateson has been briefing Dr. Harlow on the long-range research program on porpoise behavior and communication now underway at the Institute under Bateson's leadership.

Accompanying Dr. Harlow on his two-week visit here is his wife, Dr. Margaret Harlow, project associate at the University of Wisconsin Primate Laboratory and lecturer in human development at the University's School of Education. The Harlow children, Pamela, age 15, and Jonathan, age 12, are also with their parents in Hawaii.

(MORE)

Dr. Harlow is presenting a seminar at the Oceanic Institute on Thursday evening (June 30, 8:30 p.m.) for the local scientific community. The title of his talk is "The Effect of Early Experience on Social Behavior." He'll also be speaking at 1:00 p.m. on the same day at the University of Hawaii.

Dr. Harlow, who will end his Hawaii stay on July 4, received his Ph.D. degree from Stanford University. He has since been associated with the University of Wisconsin, specializing in research on the behavior of the primates -- the most highly developed order of animals.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately
3/1/66 jb

The British Broadcasting Company has invited Dr. Harry F. Harlow of the University of Wisconsin to come to London and prepare a television program for its "Life" series.

Dr. Harlow, director of the Regional Primate Research Center at Madison, will work with Dr. Desmond Morris, scientific director of London's Regent Park Zoo, on the program in March

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S. Lee Burns, assistant director of the University of Wisconsin Division of Residence Halls, is the author of an article on on-the-job training of personnel for the halls. The article appears in the February 1966 issue of College and University Business.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

RELEASE:

2/9/66 ns

Immediately

Dr. Harry F. Harlow, director of the Primate Research Center at the University of Wisconsin, will present a series of lectures at Harvard University and the Massachusetts Institute of Technology Feb. 17-23. Dr. Harlow will speak on "Social Deprivation in Primates" and "Age Effects of Cortical Lesions." Sponsor of the series is Educational Testing Service Inc., Princeton, N.J.

-0-

A selection of the latest paintings by Aaron Bohrod, artist-in-residence at the University of Wisconsin, Madison, will be on view through Feb. 18 at the Agra Gallery, 921--17th St. N.W., Washington, D.C.

-0-

Prof. Bruce Benward, musicologist of the University of Wisconsin at Madison, will read a paper during the regional meeting of the Music Teachers National Association in Cleveland, Ohio, Feb. 20-23.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately
11/29/65 jb

MADISON, Wis.--Prof. Harry F. Harlow, director of the Primate Research Center at the University of Wisconsin in Madison, has been invited to present the Alvarenga Prize Lecture at Philadelphia Wednesday (Dec. 1).

Prof. Harlow, who will address the College of Physicians of Philadelphia, will speak on "Social Deprivation in Monkeys."

The lecture series has been presented annually since 1890 under terms of a bequest made by a college fellow, Dr. Pedro F. da Costa Alvarenga, in 1888.

- 0 -

MADISON, Wis.--Prof. Emily Chervenik, coordinator of placement services of the University of Wisconsin at Madison, is one of 25 college and university placement officials and representatives of industry invited to participate in a conference at Wellesley College, near Boston, Mass., Dec. 3-4.

The national conference will consider "Career Development and Placement of College Graduates: Comparison of Theories and Practices." The conference is sponsored by the Center for Research in Careers and the Placement Office of Wellesley College.

# # #

U.W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

4/16/64 jb

RELEASE: Immediately

MADISON, Wis.--A series of scientific meetings will mark the official opening of the University of Wisconsin's new Regional Primate Research Center in Madison April 27-28.

Completed several months ago, the center, the second in the country financed by U.S. Public Health Service grants, makes possible a broad range of interdisciplinary research, entering into such University departments as medicine, psychology, pathology, biochemistry, and endocrinology.

The structure, located at the corner of North Orchard Street and Capitol Court, is a four-story windowless brick research tower with a two-story glass and precast decorative concrete panel administration wing. It cost $1.2 million to build.

The first day will be given over to a tour of the new facilities and to two programs, one devoted to the center's behavioral research efforts, the other to its biomedical work and studies.

Participants, all members of the UW faculty, will include Profs. Harry F. Harlow, center director; Harry A. Waisman, pediatrics; James R. Allen and Julian L. Van Lancker, pathology; Richard C. Wolf, physiology; and project associates John W. Davenport, Vincent J. Polidora, and Robert E. Bowman.

Meetings of the Primate Research Study section, the Primate Center Directors' group, and the Wisconsin Regional Primate Research Center external advisory committee have been arranged for April 28. All meetings will be held at the Wisconsin Center.

-more-

Guests at the opening will include these National Institutes of Health (NIH) officials: Drs. Frederick Stone, chief of the division of research facilities and resources; Willard H. Eyestone, chief of the animal resources branch; and Joe R. Held, animal resources office.

The research center is a short block away from the University's Primate Laboratory, the first of its kind in the country when begun in 1940. Together the buildings house 700 rhesus monkeys available for research purposes. A Vilas Park holding facility is expected to be completed before July 1, this to expand the primate population by another 160.

The NIH also provided the first center, erected at the University of Oregon two years ago.

In the process of construction are additional regional primate centers at the University of Washington, Emory University, Tulane University, Harvard University, and the University of California at Davis. All are expected to be in operation by 1965.

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NEWS RELEASE

Marquis - Who's Who, Inc.
200 East Ohio Street
Chicago, Illinois 60611
SUperior 7-2008

file
Dr. Harry
F. Harlow

FROM THE PUBLISHER OF WHO'S WHO IN AMERICA

See p. 5 — Harlow receives award from these people.

October 15, 1968

FOR IMMEDIATE RELEASE

CHICAGO, ILL.--The A. N. Marquis Company, publishers of WHO'S WHO IN AMERICA, today announces the publication of WORLD WHO'S WHO IN SCIENCE, a biographical dictionary of the world's major scientists and their scientific achievements covering all fields of scientific endeavor from antiquity to the present day.

The result of over a half million dollars and four years of intensive research, WORLD WHO'S WHO IN SCIENCE contains in a single volume over 32,000 names presented in the concise and familiar style associated with WHO'S WHO IN AMERICA.

15

Prepared under the editorship of Allen G. Debus, professor of the hisory of science at the University of Chicago, WORLD WHO'S WHO IN SCIENCE traces, in alphabetical order, the development of science from Imhotep, the first human medical figure known in history by name and who was later deified as the Egyptian god of medicine, to today's transplanters of vital human organs. All branches of science are fittingly represented: physics, chemistry, mathematics, astronomy, earth sciences, life sciences, social sciences, philosophy and the numerous sub-classifications and combinations of each of these.

--more--

Included in the 1855 pages of biographies are the giants of previous centuries whose names are familiar to us all: Aristotle and Euclid, Darwin and Freud, Newton and Kepler, Leonardo Da Vinci and Galileo, Robert Hooke, Joseph Priestley, James Watt, Allessandro Volta, and Georg Simon Ohm, St. Thomas Aquinas, John Calvin, Jean Jacques Rousseau, Socrates, Plato, Voltaire, Thomas Hobbes, David Hume, and John Stuart Mill. Interspersed among these giants are today's most famous scientists: Max Born, Hans Bethe, Linus Pauling, Jonas Salk, Glenn Seaborg, George Wells Beadle, Christiaan Barnard, Harold Urey, Louis de Broglie.

Lesser known but equally important names are also included. Men whose work played a vital part in the development of science and technology, but whose names are not as familiar to us although their achievements have influenced the development of our civilization. Praxagoras of Cos who distinguished between veins and arteries in the 4th century B.C. and who recognized the connection between the brain and the spinal cord. Alfred Grotjahn who founded the science of social hygiene. Joseph Dixon who opened the way for the practical development of the pencil with his recognition of the value of mineral graphite. Peter F. Salisbury who invented the heart-lung machine and who implanted the first artificial kidney into a live animal and made the first prototypes of artificial hearts and kidneys. Seleucos the Babylonian who placed the sun at the center of the earth's orbit some 1200 years before Copernicus. Charles Van Depoele who demonstrated the feasibility of electric transportation by both overhead and underground conductors in 1874, and who was granted the first patent on electric railways. Archigenes who originated a theory of the pulse which was later used by Galen. Niccolo Aggiunti who made the first recorded observations of capillary action.

--more--

Thomas B. Osborne who discovered vitamins A and B in cod liver oil. All of these are included in WORLD WHO'S WHO IN SCIENCE along with many others whose contributions in some way played a significant part in the larger development of science as we know it today.

Recognizing the importance of the contributions made by the scientific community to today's society, the editors of WORLD WHO'S WHO IN SCIENCE have chosen to award special citations to scientists who have distinguished themselves and their fields through their work. The recipients of the first annual awards for notable achievement in a scientific field are:

ANTHROPOLOGY

Claude Levi-Strauss, professor of social anthropology at the College de France, Paris, for his development of a structural theory of the functioning of the human mind. Based on research into the thought of primitive man, Levi-Strauss demonstrated that the savage and the civilized man use the same intellectual approach to the problems that confront them.

ASTROPHYSICS

Subrahmanyan Chandrasekhar, Morton D. Hill Distinguished Service professor at the University of Chicago, for his development of the theory of white dwarf stars which explains the last phases of stellar evolution.

CHEMISTRY

Melvin Calvin, professor of chemistry at the University of California, Berkeley, and associate director of the Lawrence Radiation Laboratory, for his application of

molecular chemistry to some of the fundamental problems of biology, especially the tracing of carbon's path in photosynthesis.

Nikolai Nikolaevich Semenov, director of the Institute of Chemical Physics, Moscow, for his development of the theory of branched-chain reactions, the first quantitative theory of thermal explosion, and the theory of collective interaction in the mechanisms of chemical reactions.

ETHOLOGY

Konrad Zacharias Lorenz, former director of the Max Planck Institute for the Physiology of Behavior, Germany, for his foundation of the modern study of animal behavior and his elucidation in biological terms of the various kinds of human behavior.

GENETICS

James Frederick Bonner, professor of biology at the California Institute of Technology, for his development of methods for the isolation of cell particles, which made a more detailed study of gene activity and development possible and opened the way to later discoveries such as the synthesis of chromosomal RNA.

Guido P. A. Pontecorvo, professor of genetics at the University of Glasgow, for his discovery of the parasexual process of gene combination and for his fundamental work on the structure of the genes.

GEOLOGY

Philip Henry Kuenen, professor of geology and mineralogy at the State University of Groningen, Netherlands, for his experimental demonstration of the role of turbidity currents in depositing sediment formations on the ocean floor.

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MATHEMATICS

William Feller, Eugene Higgins professor of mathematics and statistics at Princeton University, for his pioneering work in the development of probability theory as a mathematical discipline.

PHYSICS

Charles Hard Townes, professor of physics at the University of California, Berkeley, for pioneering work in quantum electronics leading to his invention of the maser (Molecular Amplification by Stimulated Emission of Radiation).

Arthur L. Schawlow, professor of physics at Stanford University, for his work with Townes in the application of the concept of the maser to the optical frequency range resulting in the optical maser or laser (Light Amplification by Stimulated Emission of Radiation).

PSYCHOLOGY

Harry F. Harlow, professor of psychology and director of the regional primate center at the University of Wisconsin, Madison, for his development of new hypotheses in neurophysiology, love and motivation. Based on some 35 years of experiments with rhesus monkeys, Harlow showed the importance of mothering and the peer group in development and showed the multiplicity of affectional bonds that are the basis of animal and human societies.

SURGERY

Christiaan Neethling Barnard, head of the cardiothoracic surgical unit at Groote Schuur Hospital, Cape Town, South Africa, for his pioneer work in organ transplants with the first transplantation of a human heart, December 3, 1967.

Denton A. Cooley, professor of surgery at Baylor University College of Medicine and chief of the cardiovascular surgery service at St. Luke's Texas Children's Hospital, for leadership in the development of heart transplant operations in the United States with his heading of a team that has performed several heart transplants since May 1968.

Michael Ellis DeBakey, professor of surgery and chairman of the department at Baylor University College of Medicine, for his work on the development of an artificial heart and the surgical techniques involved in substituting it for the damaged organ.

WORLD WHO'S WHO IN SCIENCE compresses into one volume of 1871 pages the biographical and scientific information which could otherwise be found only through an exhaustive and time consuming search of numerous other reference works. Never before has a volume of this scope and depth been amassed covering the scientific community. It will be valuable to the professional scientist for keeping in touch with his colleagues and for learning the background and current activities of the scientists in his field. For the historian of science, it is invaluable for its depth of coverage of lesser known names as well as the giants in the field. For the student, it brings to his fingertips the most comprehensive coverage of scientists and their achievements ever contained in a single reference work. For the general public, WORLD WHO'S WHO IN SCIENCE presents scientific contributions of the past and present in terms largely understandable to the layman, and thus brings to light an important chapter in the development of our current scientifically oriented world.

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THE UNIVERSITY OF WISCONSIN
MADISON 53706

REGIONAL PRIMATE RESEARCH CENTER
1223 CAPITOL COURT

November 23, 1965

Mr. Jack Burke
U.W. News and Publications
14 Bascom Hall

Dear Mr. Burke:

On December 1, 1965, Dr. Harry F. Harlow will deliver the Alvarenga Prize Lecture in Philadelphia at the invitation of the College of ~~Physicians of Philadelphia~~,

Enclosed are copies of the initial invitation and background material explaining the Alvarenga Prize Lecture.

We hope this will be of interest to your department.

Sincerely,

Helen E. Lauersdorf

(Mrs.) Helen E. Lauersdorf
Secretary to Dr. H. F. Harlow

Enc.

JEFFERSON MEDICAL COLLEGE HOSPITAL

DEPARTMENT OF RADIOLOGY

11TH AND WALNUT STREETS
PHILADELPHIA, PA., 19107

WALNUT 3-0292

ROENTGEN DIAGNOSIS

ROY R. GREENING, M.D.
GERALD D. DODD, M.D.
JACK EDEIKEN, M.D.
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SIDNEY WALLACE, M.D.

J. BARNETT FINKELSTEIN, M.D.
ARNOLD M. GOLDMAN, M.D.
MARVIN S. PODOLNICK, M.D.
CLIFFORD T. ROTZ, M.D.
DOUGLAS SHEFT, M.D.

PHILIP J. HODES, M.D.
CHAIRMAN

WALNUT 3-1100

RADIATION THERAPY

SIMON KRAMER, M.D.
MARTHA SOUTHARD, M.D.
CARL MANSFIELD, M.D.

RADIATION BIOLOGY

ROBERT L. BRENT, M.D., PH.D.
BOOKER BOLDEN, M.A.

RADIOLOGIC PHYSICS

ROBERT OWEN GORSON, M.S.
BENJAMIN M. GALKIN, M.S.
YONG JUN SHIN, B.S.
DOROTHY H. DRISCOLL, M.A.

DAVID B. KUSNER, B.A.

27 May 1965

Harry Harlow, M.D.
Institute for Behavior Science
University of Wisconsin
Madison, Wisconsin

Dear Doctor Harlow:

It is my distinct privilege as Chairman of the Alvarenga Prize Committee of the College of Physicians of Philadelphia to invite you to be the Alvarenga Lecturer for 1965.

This Lectureship derives from a bequest to the College of Physicians made by one of its foreign Associate Fellows, Doctor Pedro Francisco da Costa Alvarenga. Under the terms of the legacy received in 1888, the College awards an annual Alvarenga Prize to the author of the best published or unpublished work on any medical subject that is deemed worthy of the prize.

I am directed by those whom I represent to invite you to be our Alvarenga Prize Lecturer for the year 1965, said lecture to be given on December 1, 1965 at 5:30 p.m. at the College of Physicians of Philadelphia.

If you can accept this responsibility, we should like for you to talk about "Social Deprivation in Monkeys" or a topic intimately related with same. I am instructed further to inform you that a typescript for publication in the "Transactions" of the College must be delivered to the Secretary on the date of the Lecture. This Lectureship carries an honorarium which varies between $200-$300 depending upon income from securities.

I do hope, Doctor Harlow, you are in a position to accept this honor.

Very sincerely yours,

Philip J. Hodes, M.D.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA
(Founded 1787)

THE ALVARENGA PRIZE AND LECTURESHIP
1890-

The Premio Alvarenga do Piauhy derives from a bequest to the College made by one of its Foreign Associate Fellows, Dr. Pedro Francisco da Costa Alvarenga. Born in Piauhy, Brazil, 1826, Dr. Alvarenga obtained his medical degree in Brussels, 1850, and subsequently settled in Lisbon, where he became a royal physician, professor at the medical school, physician to the Hospital de San Jose and the Casa da Misericordia, and director and chief editor of the Gazeta Medica de Lisboa The first two series of the Index-catalogue indicate the wide range and large number of his publications, many of them appearing in French translation and many of them available in the library of the College. Most notable perhaps is his interest in hospital ventilation, epidemiology and pharmacology (both with a laboratory orientation), cardiology, medical statistics and clinical thermometry. Dr. Alvarenga was elected a Foreign Associate Fellow of the College in 1869, during the presidency of Dr. George B. Wood, co-founder of the Dispensatory of the United States of America. He was a member also of a large number of distinguished European scientific societies.

Though the College archives seem not to document further Dr.Alvarenga's connections with the College during his lifetime, it became clear at his death, in 1883, that he had welcomed this association with his Philadelphia colleagues. Through his specific bequests, the following scientific societies were accorded the opportunity of annually awarding the Alvarenga Prize: Academia das Ciencias de Lisboa; Academia de Medicina do Rio de Janiero; Académie de Médecine de Paris; Société Médico-Chirurgicale de Bruxelles; Societas Medicorum Svecana, Stockholm; Gesellschaft der Aerzte,Wien; Societas Medica Chirurgica Hufelandiana, Berlin; College of Physicians of Philadelphia.

Under the terms of its legacy, received in 1888, the College is to award an Alvarenga Prize annually, on the anniversary of Dr.Alvarenga's death (14 July 1883), to the author of the best published or unpublished work, on any medical subject, that is deemed worthy of the prize. An announcement of the award is regularly sent by the College on this date to the leading medical journals of Europe and the Americas.

The first prize was awarded in 1890. Until 1938, awards were made on the basis of original essays submitted in competition. Thirty-two prizes were awarded in this manner. Since 1938, a broader basis of selection has been obtained by elimination of the factors of competition and lack of prior publication. Now, the award is made, on nomination of the Alvarenga Committee (composed of five Fellows of the College), as approved by the Council of the College, to the author of the best work known to the Committee and Council that is deemed worthy of the prize. To make the work so honored more generally known to the Fellows of the College and to other readers of the College's Transactions & Studies, the Alvarenga Lectureship was established, in 1940, in conjunction with the prize, the Alvarenga Lecturer being, of course, the current recipient of the award.

ALVARENGA PRIZE AWARDS

1890-1936 (1)

1890	R. W. Philip	1915	J. W. Sweet
1891	L. Duncan Bulkley	1917	Wilburt C. Davison
1892	R. H. L. Bibb	1921	John W. Churchman
1894	G. E. de Schweinitz	1923	E. P. Heller
1895	Guy Hinsdale	1924	Gordon Cameron
1897	Joseph Collins	1925	Raphael Isaacs
1898	S. A. Knopf	1926	P. S. Pelouze and Frederick S. Schofield
1899	Robert Lee Randolph		
1900	David De Beck	1927	Emil Bogen
1901	George W. Crile	1928	J. Rodman Paul and William U. McClenahan
1903	William S. Carter		
1905	D. Chalmers Watson	1929	George M. Dorrance
1907	W. Louis Chapman	1930	Henry A. Harris
1908	William T. Shoemaker	1931	Edgar S. J. King
1910	Moritz Katzenstein	1933	Harry Shay and J. Gershon-Cohen
1911	Francis D. Patterson		
1914	Herman B. Sheffield	1934	Ernst Gellhorn
	1936 Harry Eagle		

1938-1939

1938	Richard E. Shope	1939	Harry Goldblatt

ALVARENGA PRIZE AND LECTURESHIP

1940- (2)

1940	(1941) Ernest W. Goodpasture	1952	Norbert Wiener
1941	John J. Bittner	1953	Francis D. Moore
1942	Edwin J. Cohn	1954	DeWitt Stetten, Jr.
1943	Ernest Carroll Faust	1955	Charles H. Rammelkamp, Jr.
1944	Gervase J. Connor	1956	(1957) George N. Papanicolaou
1945	Alexander S. Wiener	1957	William C. Stadie
1946	William H. Feldman	1958	Michael E. De Bakey
1947	Joseph D. Aronson	1959	Hilary Koprowski
1948	Melvin H. Knisely	1960	John P. Merrill
1949	Owen H. Wangensteen	1961	Seymour S. Kety
1950	Ephraim Shorr	1962	John H. Gibbon, Jr.
1951	George W. Thorn	1963	Rupert E. Billingham, D.Sc.
		1964	Christian J. Lambertsen

(1) In competition
(2) Entry dates refer to the year of the award; dates in parenthesis, to the year the lecture was delivered. The recipient of the 1944 award did not deliver a lecture. The lectures of the recipients of the 1948 and 1958 awards were not made available for publication. All of the other lectures may be found in the College's Transactions & Studies.

U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately

9/29/65 jb

MADISON, Wis.--Dr. Harry F. Harlow, director of the University of Wisconsin's Regional Primate Research Center in Madison, will deliver the national Sigma Xi lectures before 11 eastern colleges Oct. 18-30.

His topic will be "The Primate Affectional Systems." His schedule calls for lectures before audiences at Carnegie Institute of Technology, Pittsburgh; Pennsylvania State University; Franklin and Marshall College, Lancaster, Pa.; Lehigh University, Bethlehem, Pa.; Villanova University, Villanova, Pa.; George Washington University, Catholic University of America, and Howard University, Washington, D. C.; Medical College of Virginia, Richmond; Hollins College, Hollins College, Va.; Virginia Polytechnic Institute, Blacksburg; and the Sigma Xi Club of Lynchburg, Va.

A professor of psychology, Dr. Harlow, a fellow of the American Academy of Arts and Sciences and American Philosophical Society, is internationally known for his work in animal behavior. He joined the Wisconsin faculty in 1930, founded the Wisconsin Primate Laboratory soon after his arrival and has been its only director.

Sigma Xi is an honorary scientific research society of 100,000 members. Its president this year is Emer. Prof. Farrington Daniels of the Wisconsin Solar Energy Laboratory.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571

Release:

Immediately

9/27/65 ns

Elsevier Publishing Co, of London, Amsterdam, and New York, has announced the selection of Dr. Harry F. Harlow, University of Wisconsin professor of psychology, as a member of its editorial board.

Dr. Harlow will be concerned with "Brain Research," an international multi-disciplinary journal devoted to fundamental studies in the brain sciences.

He is the author of more than 175 scientific articles and served as editor of The Journal of Comparative and Physiological Psychology from 1951 to 1963.

Dr. Harlow, director of the University's Regional Primate Research Center, aided in establishment of the Wisconsin Primate Laboratory soon after his appointment to the faculty in 1930.

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William Beranek, professor of commerce at the University of Wisconsin in Madison, will address the Institute of Management Science in Rochester, N. Y., Oct. 14. His paper is titled "Discrimination Functions and the Selection of Charge Account Customers."

-more-

A University of Wisconsin professor of journalism, Bruce H. Westley, will present 20 lectures in 11 days in Quito, Ecuador, in October.

Prof. Westley, who joined the Wisconsin faculty 19 years ago, will address the International Center for Advanced Study in Journalism for Latin America, starting Oct. 4. He will leave Madison Sept. 30.

His topic will be "Theory of Mass Communications." His audience will consist mainly of students of journalism and practicing journalists from Latin American countries.

-0-

Prof. William P. Glade, University of Wisconsin School of Commerce in Madison, will serve as an economic consultant when the Education and World Affairs research organization meets in New York City Sept. 30-Oct. 1.

He is particularly concerned with a study of economics in Mexico, a special project of the organization.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571

Release:
Immediately

8/30/65 dbw

MADISON, Wis.--Three University of Wisconsin psychologists and a UW journalism professor will present papers at the 77th annual convention of the American Psychological Association in Chicago, Sept. 3-7.

Profs. Leonard Berkowitz, Peter J. Lang, and Albert R. Marston, all of the psychology department, and Prof. Jack M. McLeod, assistant director of the University's Mass Communications Research Center, will read papers at convention sessions. Prof. Marston will also serve as chairman of a session on human conditioning.

Prof. Harry F. Harlow, director of the UW Primate Research Laboratory, also will speak at a session of the convention.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Bascom Hall, Madison 53706
Telephone (Area Code 608) 262-3571 Release:
8/16/65 jb Immediately

Sturgis W. Bailey, professor of geology at the University of Wisconsin, Madison campus, will present the keynote lecture at the national meeting of the Clay Minerals Society at Berkeley, Calif., Aug. 23. Prof. Bailey also was appointed editor of the proceedings of the society.

-0-

At the invitation of President Lyndon B. Johnson, Dr. Harry F. Harlow, director of the Primate Laboratory and Regional Research Center at the University of Wisconsin in Madison, was in Washington, D.C., this past week to witness the signing of the Health Research Facilities Amendments of 1965.

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Prof. Alan C. Filley, University of Wisconsin School of Commerce, Madison, is one of three educators who edited a new publication, "Management in Perspective: Selected Readings," published by Houghton-Mifflin Co., Boston, this month.

The other editors are Profs. William E. Schlender, University of Texas, and William G. Scott, DePaul University.

##

7/1/65

FELLOWS OF THE AMERICAN ACADEMY OF ARTS AND SCIENCES - UNIVERSITY OF WISCONSIN

SCIENCES

1. Rudolph Ernest Langer - Emeritus Prof. of Mathematics, Director of the Mathematical Research Center - U.S. Army

2. Farrington Daniels - Emeritus Prof. of Chemistry, Professor Emeritus of the Experimental Station Solar Laboratory

3. Joseph Oakland Hirschfelder - Prof. of Chemistry, Director of the Theoretical Chemistry Institute

4. William Robert Marshall, Jr. - Assoc. Dean of the College of Engineering, Assoc. Director of the Engineering Experimental Station

5. Van Rensselaer Potter - Prof. of Oncology, Asst. Director of the McArdle Cancer Laboratory

6. Harold Paul Rusch, Prof. of Oncology, Director of the McArdle Cancer Laboratory

7. Kenneth Bryan Raper - Prof. of Bacteriology and Botany

8. Folke Karl Skoog - Prof. of Botany

9. Sewell Wright - Emeritus Prof. of Genetics

10. Harry F. Harlow - Prof. of Psychology, Director of Primate Laboratory Research Center

ARTS

1. Merle Eugene Curti - Emeritus Prof. of History

2. Merritt Yerkes Hughes - Emeritus Prof. of English

3. Helen Constance White - Prof. of English

(NOTE - Wisconsin lost two Academy Fellows during the 1964-65 school year to Princeton. They are Marshall Clagett and Gaines Post, both of history.)

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Observatory Hill Office, Madison 53706
Telephone (Area Code 608) 262-3571

Release:
Immediately

6/18/65 jb

MADISON, Wis.--Ninety-three National Education Television stations around the country will soon show "A Scientist Looks at Love," a half-hour program made at the University of Wisconsin's Primate Regional Research Center and Laboratory this spring.

A segment of the NET Spectrum series, it will be shown on WHA-TV, the University's outlet in Madison, on Thursday (June 24) at 7 p.m.

In the program, Dr. Harry F. Harlow, center director and internationally-known psychologist, is interviewed by Jack Prowitt, host and producer of the series.

Dr. Harlow outlines the center concept of affectional systems and describes current research as it relates to human behavior. A study of love under laboratory conditions, the program centers on his new study of five basic affectional systems in primates--systems which Dr. Harlow believes are common to both monkeys and man. His five basic categories of love are:

Mother to infant, infant to mother, infant to infant, heterosexual, and paternal.

Two of the most interesting aspects of Dr. Harlow's studies are his findings on what makes a good mother and the effects of social deprivation on institutionalized children.

The program has won high praise from both NET and National Institutes of Health officials.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Observatory Hill Office, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately
6/8/65 jb

MADISON, Wis.--Dr. Harry F. Harlow, professor of psychology and director of the University of Wisconsin Primate Laboratory in Madison, has been appointed national lecturer for the Society of Sigma Xi mid-Atlantic tour.

Beginning next fall, Dr. Harlow will address Sigma Xi chapters at the Carnegie Institute of Technology, Pennsylvania State University, Franklin and Marshall College, Lehigh University, Villanova University, George Washington University, Catholic University, Howard University, Medical College of Virginia, Hollins College, Virginia Polytechnic Institute, and the Lynchburg, Va., Sigma Xi Club.

An honorary scientific research society, Sigma Xi has 100,000 members. Emer. Prof. Farrington Daniels of the University of Wisconsin Solar Energy Laboratory is society president this year.

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U.W. NEWS

From The University of Wisconsin News and Publications Service, Observatory Hill Office, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately

6/4/65 mcg

MADISON, Wis.--Prof. Germaine Bree, director of the University of Wisconsin Institute for Research in the Humanities, has been elected to membership in the American Philosophical Society.

The election of Prof. Bree brings to a total of eight the University of Wisconsin members of the society. They are Prof. Merle Curti, history; Emeritus Prof. Farrington Daniels, chemistry; Emeritus Pres. E. B. Fred; Prof. Harry Harlow, psychology; Prof. Willard Hurst, law; Prof. Kenneth Raper, bacteriology and botany; and Emeritus Prof. Sewall Wright, genetics.

The internationally-known French scholar came to Wisconsin in the fall of 1960 with a reputation as one of the most distinguished critics of French literature in the world. She is one of the first Vilas Professors appointed at the University. This year she is one of eight distinguished Americans, and the only woman, named Phi Beta Kappa Visiting Scholars.

Miss Bree is a member of many learned societies, holder of many honorary degrees, and a director of the American Council of Learned Societies.

##

File - Harlow

THE UNIVERSITY OF WISCONSIN
MADISON 53715

REGIONAL PRIMATE RESEARCH CENTER
1223 CAPITOL COURT

May 26, 1965

Mr. John F. Burke
Project Assistant,
News and Publications Service
Observatory Hill Office Building
University of Wisconsin
Madison, Wisconsin

Dear Mr. Burke:

The March 1965 issue of the American Scientist announces the appointment of Dr. Harry F. Harlow as the Society of the Sigma Xi's National Lecturer, Mid-Atlantic Tour for the Fall Series--1965. During the two weeks beginning October 18, 1965 Dr. Harlow, speaking on "The Primate Affectional Systems," will address Sigma Xi chapters at the Carnegie Institute of Technology, Pennsylvania State University, Franklin and Marshall College, Lehigh University, Villanova University, George Washington University, Catholic University, Howard University, Medical College of Virginia, Hollins College, Virginia Polytechnic Institute, and the Lynchburg, Virginia Sigma Xi Club.

Sincerely,

Helen E. Lauersdorf

(Mrs.) Helen E. Lauersdorf
Secretary to Dr. H. F. Harlow

HEL/dhe

U.W. NEWS

From The University of Wisconsin News and Publications Service, Observatory Hill Office, Madison 53706
Telephone (Area Code 608) 262-3571 Release: Immediately
4/28/65 mes

WASHINGTON, D.C.--How does an illegitimate child, raised in an orphanage or foster home, adjust to society?

Such children, who come from breakdowns in family structures which result in more or less complete social isolation, are a problem of vast importance for society today.

What effect does social isolation have on the individual? A world-famed psychologist told members of the National Academy of Sciences Wednesday (April 28) that isolation "injures personal adjustment to society and development of normal sexual behavior patterns."

Dr. Harry F. Harlow, professor of psychology at the University of Wisconsin, Madison, spoke on "The Effects of Total Social Isolation in Monkeys" at the 102nd annual meeting of the academy.

Because it is difficult--if not impossible--to study the impact of social deprivation in humans, researchers have turned to one of man's closest relatives, the monkey. "Monkeys and man are so closely related that the basic biological laws operating for one must operate for the other," Prof. Harlow pointed out.

Prof. Harlow is director of the Wisconsin Regional Primate Center, located on the University of Wisconsin campus in Madison. The center, one of seven primate research facilities set up by the National Institutes of Health across the United States, is recognized as one of the top psychological research centers in the world.

-more-

For the past 10 years Prof. Harlow and his associates at the center have studied the effects of partial social isolation by raising monkeys from birth in wire cages. These monkeys had no mothering and, even more important, had little or no opportunity to play with and form affectional ties with other infants.

More recently the Wisconsin researchers have studied the effects of total social isolation for periods of three, six, and 12 months after birth. In these experiments the infant monkeys were sentenced to solitary confinement in chambers in which they had no contact with any animal, human or subhuman.

"When first removed from total isolation most monkeys went into a state of emotional shock, characterized by 'day-dreaming' and self-clutching and rocking motions," Prof. Harlow said.

"One of the six monkeys isolated for three months died from the shock, and another would have died had we not resorted to forced feeding." Such extreme shock was not observed in the other monkeys, though.

After recovery from initial shock, the three-month isolates made effective social contacts with each other.

"Results indicate the harmful effects of three months of social isolation are dramatic but reversible, long-term social damage is slight, and there is no intellectual scarring.

"Given the opportunity to later associate with normal monkeys, these short-term isolates become beautiful, bubbling, bright, and brilliant," the psychologist said.

"In human terms, they are the children salvaged from the orphanage within the first year of life."

Social isolation during the first six months of life, however, imparts deep and lasting damage to the infants. These monkeys failed to adjust in later social situations and play groups.

"The effects of six-month total isolation were so devastating that we first assumed that 12 months of isolation would not produce any further damage," Prof. Harlow said. "This assumption proved false, however, for 12 months of isolation apparently resulted in social obliteration."

Whereas the six-month isolates failed to adjust to the level of normal monkeys and were enormously impaired in play with each other, the 12-month isolates failed completely with controls and each other.

Impairment of both six- and 12-month groups in social situations appeared to be permanent, although the "intellectual mind" was not as crippled as the "social mind" by prolonged total social deprivation, he pointed out.

"A striking fact is that all of the socially isolated monkeys learned effectively after being removed from the isolation cages," he said.

Thus one should be cautious in attributing mental deficiencies to social deprivation if adequate schooling--in monkeys or men--has been subsequently provided.

An 18-month follow-up study by the scientists on the social behavior of some of the isolate monkeys showed the effects of prolonged social deprivation continue for long periods of time. Many of the isolates were hostile towards adults and infants--a phenomenon never seen in normal laboratory-raised animals nor reported in the wild.

Months later, these animals continued to show uncoordinated sexual behavior, reduced playful social interaction, a high level of fear, and maladaptive aggression against both large adults and helpless infants.

Prof. Harlow's research on the so-called developmental "critical periods" in monkeys are similar to the "critical periods" that arise during human infant development.

"The overall data from our research indicate there is an early period in infant development when social isolation produces temporary defects which can be overcome by later social interaction," the Wisconsin scientist concluded.

##

WIRE NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

4/24/64 jb

RELEASE: Immediately

MADISON, Wis.--Three top officials of the National Institutes of Health will participate in the formal opening of the University of Wisconsin's new Regional Primate Research Center in Madison Monday and Tuesday (April 27-28).

Guests will include Drs. Frederick Stone, chief of the NIH division of research facilities and resources; Willard H. Eyestone and Joe R. Held, of the animal resources office.

Other participants in a series of scientific meetings will include Profs. Harry A. Waisman, pediatrics; Harry F. Harlow, center director; James R. Allen and Julian L. Van Lancker, pathology; Richard C. Wolf, physiology; and project associates Robert E. Bowman, John W. Davenport, and Vincent J. Polidora, members of the UW faculty.

The center, completed several months ago, is located at the corner of Capitol Court and North Orchard Street. It consists of a four-story brick research tower joined to a two-story glass and precast concrete panel administration wing. It cost $1.2 million to build, and was financed by U.S. Public Health Service grants.

Monday will be given over to a tour of the new facilities and to the meetings, one devoted to the center's biomedical work, the other to behavioral research efforts. A news conference has been arranged for 1:30 p.m. in Room 209 of the center.

The Primate Research Study section, the Primate Center Directors' organization, and the Wisconsin Regional Primate Research Center external advisory committee will hold separate sessions on Tuesday, also at the Wisconsin Center.

- more -

The new center is adjacent to the University's Primate Laboratory, famous for its research findings during the past 24 years. Together the buildings house 700 rhesus monkeys available for research purposes. This figure will be increased to 860 before next fall.

###

MADISON NEWS

Harlow, Harry

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

2/24/64 jb

RELEASE: Immediately

MADISON--Drs. Harry F. and Margaret K. Harlow, of the University of Wisconsin Primate Laboratory, will present papers at the First International Congress of Social Psychiatry in London Aug. 18-21.

Dr. Harry F. Harlow, laboratory director, will discuss "Maternal Behavior of Motherless Monkey Mothers," and his wife will speak on "The Effect of Early Play Deprivation on Social Development." Both papers are based on findings at the Primate Laboratory.

The Harlows will be guests of the British Association for the Advancement of Science annual meeting in Southampton, England, Aug. 26-Sept. 2. They will present research reports on topics not yet titled.

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NOTE

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON, WISCONSIN 53706

April 20, 1964

News Editors:

The formal opening of the University of Wisconsin's new Regional Primate Research Center will be held in Madison April 27-28 (next Monday and Tuesday).

A series of scientific meetings and tours will mark the occasion. A number of NIH officials will be on hand.

There will be a news conference at 1:30 p.m. Monday in Room 209 of the Center, and you are invited. Dr. Harry F. Harlow, center director; members of his staff; and the NIH officials will be there to answer questions and outline functions of the operations at the research installation.

Should you have any questions prior to the news conference as to facilities for camera use, etc., please get in touch with Dr. John W. Davenport of the center at 262-2249, with Fred Sponholz at the same number, or with the UW News Service at 262-3572.

We hope to see you there.

Jack Burke
UW News Service

MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

1/29/64 jb

RELEASE: Immediately

MADISON--Dr. Harry F. Harlow, director of the Primate Laboratory, University of Wisconsin department of psychology, Madison, has been elected vice-president of Section J (psychology) of the British Association for the Advancement of Science for 1964.

Dr. and Mrs. Harlow will be guests of the association Aug. 26-Sept. 2 at its annual meetings in Southampton where they will present research papers.

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

1/10/64 rf

RELEASE: 3 p.m. Sunday, Jan. 12

MADISON--(Advance for 3 p.m. Sunday, Jan. 12)--A University of Wisconsin professor of English told several hundred UW honor students Sunday afternoon that "the American brand of free enterprise means working hard and sharing the fruits of one's labors with one's neighbors, in order that the community we live in may be a more gracious and a more stimulating one for everybody."

Prof. Helen C. White, noted author and scholar of 16th and 17th century English literature and chairman of the UW English department at Madison, spoke at the initiation ceremony of Phi Kappa Phi, national scholastic honor society, in Great Hall of the Wisconsin Union. Prof. White spoke on the subject, "Scholarship and Community Service."

A total of 268 students and three faculty members were initiated into the UW chapter. Faculty members honored were Prof. Winston L. Brembeck, speech; Prof. Harry F. Harlow, psychology and director of the Primate Laboratory; and Prof. Wilson B. Thiede, associate dean of the School of Education.

Student election to the society is on the basis of scholarship, leadership, extra-curricular activities, and faculty recommendations as to character, leadership, and general good citizenship.

Free enterprise in the American sense means looking about one, and seeing what is needed by the community and mobilizing the resources of the community to fulfill that need, Prof. White told the honor students.

-more-

"Free enterprise in the American sense means that the gifted and the energetic and the fortunate do more than their exact arithmetical share to see that the community gets what it needs," she said. "The Elvehjem Art Center, for example, is going to be a monument to the free enterprise of this community in the fullest American sense of the term."

What Lincoln told us about freedom in one nation, we now know embraces the whole world, the noted UW scholar told the honored students.

"We now realize that we will enjoy our hard-won plenty if there are no hungry faces at the window, and we will walk more securely in our smart and warm clothes if the rest of the world is not shivering with cold or fever," she said.

"We know that men who have some felicity to lose to the folly of violence will be slower to answer the demagogue's siren, that prosperity shared is the most durable of all prosperities, and that the light of hope shines farthest in the darkness, and the burdens of brethern shared are the easiest to carry.

"You with your regard for the welfare of your little university community, and your anticipation of concern for the greater human community are behaving like modern men, and yet you are in the oldest of American traditions of free enterprise for the common good," Prof. White told the honor students. "And may I add also in the tradition of every religious effort that has enlightened the unsteady course of man down the pages of history."

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

1/6/64 rf

RELEASE: Immediately

MADISON--Prof. Helen C. White, chairman of the University of Wisconsin English department on the Madison campus, will give the address at the annual initiation ceremony of Phi Kappa Phi, national scholastic honor society, at 3 p.m. Sunday (Jan. 12) in Great Hall of the Memorial Union.

Prof. White will speak on the subject, "Scholarship and Community Service."

Prof. Kenneth G. Shiels, of the UW College of Engineering, president of the Wisconsin chapter of the society, will preside. A reception and tea for the initiates will follow the initiation.

A total of 268 students and three faculty members will be initiated. Faculty members honored are Prof. Winston L. Brembeck, speech; Prof. Harry F. Harlow, psychology and director of the Primate Laboratory; and Prof. Wilson B. Thiede, associate dean of the School of Education.

Of the students, 200 are seniors and 68 are juniors. Election to the society is on the basis of scholarship, extra-curricular activities, and faculty recommendations as to character, leadership, and citizenship.

A member of the English faculty since 1919, Prof. White has written a series of historical novels and several volumes on 16th and 17th century English literature, and has held office in numerous national and international organizations. She was president of the American Association of University Professors, president of the Modern Humanities Research Association, and a vice president of the International Federation of University Women. She also has served on the U.S. national commission for UNESCO.

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

12/17/63 rf RELEASE: Immediately

MADISON--Two hundred and sixty-eight students and three faculty members will be initiated into membership in the University of Wisconsin chapter of Phi Kappa Phi, national scholastic honor society, at the annual initiation ceremony at 3 p.m. Sunday, Jan. 12, in Great Hall of the Memorial Union, it was announced on the UW campus in Madison today.

Faculty members honored are Prof. Winston L. Brembeck, speech; Prof. Harry F. Harlow, psychology and director of the Primate Laboratory; and Prof. Wilson B. Thiede, education and associate dean of the School of Education.

Of the 268 students elected to the society, 200 are seniors and 68 are juniors. Election to the society is on the basis of scholarship, extracurricular activities, and faculty recommendations as to character, leadership, and general good citizenship.

Students elected are:

SENIORS--Cheryl L. Aaronson, Silver Spring, Md.; Stanley J. Adelman (3879 N. Humbolt), Milwaukee; Virginia Allen (2875 Fish Hatchery), Madison; Nina J. Auerbach, New York, N.Y.; Judith J. Bagemihl (7900 N. Links Cir.), Milwaukee; Carla K. Barker, Oxford; Joel W. Barlow, Cambridge; Donna M. Bathke, Oshkosh; Roger T. Becker, Kenosha; Gail A. Belanger, Holden, Mass.; Thomas H. Bestul, Scandinavia; Helmuth K. Beutel, Racine; Kurt A. Beyreis, Schofield; Lynda D. Billhardt, Chicago, Ill.; Carol A. Black, Ames, Ia.; William A. Block, Sheboygan; Norma J. Bly, Evansville; William G. Boehm, Racine; Glenn A. Borchardt, Watertown; Thomas M. Boykoff, Bellerose, N.Y.; Alfred S. Bradford, Appleton; Glenn A. Breitung (1204 Vilas Ave.), Madison; Susan G. Budlong, Evanston, Ill.; William A. Burckhardt, III, West Bend; Patricia J. Burks, Bloomsbury, N.J.;

-more-

FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

7/31/63 jb

RELEASE: Immediately

By JACK BURKE

MADISON, Wis.--Just like human babies, infant monkeys suck their thumbs and fingers.

And the better the young primates learn to suck during early feeding, the more likely they are to seek further experience along this line in thumbsucking, too.

This is the conclusion reached by Dr. Lorna S. Benjamin, research associate at the Wisconsin Psychiatric Institute in the University of Wisconsin Medical Center. Her investigations were carried out at the UW Primate Laboratory in Madison.

"Our findings show that greater amounts of sucking during feeding will be followed by greater amounts of thumbsucking," Dr. Benjamin said. "Baby monkeys which were required to suck a great deal in order to obtain their milk ultimately suck their thumbs far more than others allowed to obtain their milk with little or no sucking."

She said that her investigations upset the previous contention that thumbsucking is a result of too little opportunity for the expression of the sucking drive during nursing. On the basis of this contention, many mothers were advised to make certain their infants suck extensively during this period.

"We observed that monkeys showed no interest in a nipple which offered them the opportunity to express sucking needs or drives, but which gave no pay-off in milk," Dr. Benjamin explained. "But feeding history is by no means the whole story of thumbsucking--for example, monkeys with similar feeding histories ultimately established their own unique levels of thumbsucking.

-more-

Add one--thumbsucking

"These differences among individual monkeys were traced in part to factors independent of feeding, such as the amount of rocking their surrogate-laboratory mothers provided for them. In other words, more rocking (by the substitute mothers), more thumbsucking.

"As baby monkeys become hungrier, thumbsucking increases. It also increases when the infants are frustrated by being made to wait a few minutes for a favorite fruit. Further, when these babies are confronted with sights and sounds frightening to them, the sucking increases up to a point. And when the situation becomes too intense, the thumbsucking increases as the monkeys turn to some other activity, such as hiding their heads between their knees and rocking back and forth."

It appears, the researcher stated, that thumbsucking can begin for one reason and be sustained for others. She found that thumb and finger sucking is clearly associated with malocclusion (improper fitting together of upper and lower rows of teeth) in the baby monkey's first teeth, but the effect seems less important than disposition to malocclusion present at birth.

There are strong indications, too, Dr. Benjamin said, that sucking in infancy, if not stopped before permanent teeth arrive, will lead to malocclusion.

Laboratory-raised monkeys, unlike humans, often persist in thumbsucking through adolescence and even into adulthood, she added.

Her research was conducted while she was a National Institute of Mental Health (NIMH) Fellow, collaborating with Dr. Harry F. Harlow, director of the Primate Laboratory; Dr. William A. Mason, formerly a member of the UW faculty and now assistant director of the Yorkes Laboratory of Primate Biology at Orange Park, Fla.; and Dr. Ben L. Herzberg, Chicago orthodontist.

The experiments were supported by funds received by Dr. Harlow from the UW Graduate School, the Ford Foundation, and the NIMH.

###

MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/10/63 ns

Immediately

MADISON--Dr. Harry F. Harlow, director of the University of Wisconsin Primate Laboratory in Madison, will deliver the Mme. Francoise Boulanger Memorial Lecture before the Canadian Psychoanalytic Society in Toronto Thursday (June 13).

His topic will be "Effects of Early Experience on Heterosexual and Maternal Behavior."

The annual meeting lecture honors Mme. Boulanger, for many years a prominent member of the society.

-0-

Prof. Lloyd J. Austin of Cambridge University, H.F. Johnson Professor at the UW Institute for Research in the Humanities, delivered the fourth H. F. Johnson Lecture in the Humanities last week at Wingspread, Racine. His topic: "The Genius of Paul Valery."

-0-

Two members of the UW faculty in Madison will serve as visiting staff instructors for the seventh annual Summer Institute for Teachers of Science and Mathematics at South Dokota State College at Brookings June 11-Aug. 2. They are Profs. Aaron J. Ihde, chemistry, and Joseph R. Dillinger, physics. The session is sponsored by the National Science Foundation.

-0-

Clark F. Edwards, Madison (262 Mallard Lane), an audiologist at the UW Speech and Hearing Rehabilitation Center, was awarded a master of arts degree in special education at the George Peabody College for Teachers in Nashville, Tenn., last week. He holds the B.A. degree from David Lipscomb College in Nashville.

###

U. W. NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/7/63 jb RELEASE: Immediately

MADISON, Wis.--Prof. Harry F. Harlow, director of the University of Wisconsin's internationally-known Primate Laboratory on the Madison campus, will be a guest on the CBS television program "To Tell the Truth" Monday (June 10) at 6:30 p.m. (CDT).

In Wisconsin, the following stations carry the program:

WISC-TV, Madison; WISN-TV, Milwaukee; WBAY-TV, Green Bay; and WSAU-TV, Wausau.

WLUC-TV, Marquette, Mich., also carries the panel show.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/7/63 rb

Immediately

MADISON--The University of Wisconsin Medical School will hold its Annual Field Day Thursday (May 9) in the auditorium of Service Memorial Institutes. An address by Emeritus Dean William S. Middleton will highlight the day of lectures, exhibits, awards and other presentations.

Dr. Harry F. Harlow, professor of psychology and director of the Primate Laboratory and Regional Primate Center at the University, will lecture at 9 a.m. on "The Effect of Early Experience on Heterosexual and Maternal Behavior in Monkeys."

Student-faculty research projects will be presented at 10 a.m. by Dr. K. H. Clifton, department of radiology, and William Summers, second year medical student; Dr. R. E. Parks, Jr., department of pharmacology, and Gretajo Northrop, third year medical student; and Dr. R. D. Coye, department of pathology, and Reginald Williams, second year medical student.

Scientific exhibits and demonstrations will be shown in Room 235, Service Memorial Institutes, at 10:45 a.m. and a student-faculty luncheon will follow.

An awards program at 1:30 p.m. will present awards and scholarships to 17 students. Also, for the first time, the Medical Alumni Award for Distinguished Teaching will be presented. Dr. James F. Crow, acting dean, will make the presentations.

After awards, Dr. Middleton will give an address entitled "Medicine at the Crossroads."

Students and faculty will go to Vilas Park at 3:30 p.m. for recreation and refreshments. A student-faculty dinner at the Chanticleer will feature skits by the junior class.

###

U. W. NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

4/5/63 jb RELEASE: Immediately

MILWAUKEE, Wis.--Initial plans for a Primate Holding Center in Madison's Vilas Park Zoo were approved by University of Wisconsin regents Friday.

To be built with National Institutes of Health (NIH) funds, the $189,726 project will be constructed this fall near the buffalo yard and bear pens, on the zoo's east section.

Circular in design, the structure will be on two-levels, and feature indoor and outdoor observation cages open on two sides. To contain an office, and food preparation, handling, mechanical equipment, and treatment rooms, it will be built of reinforced concrete and stone in accordance with plans drawn by Herbst, Jacoby, and Herbst, Milwaukee architects.

Prof. Harry F. Harlow, Primate Laboratory director, said the building would serve as a temporary housing facility for small, hardy types of primates. Experiments will continue to be conducted only at the laboratory's quarters on Horth Charter Street.

Construction of the holding center is expected to be completed before the end of this year.

Work was begun several months ago on the Madison campus on a new regional primate center, one of a series of such structures planned around the country by NIH. Expected to be completed by next January, this will be a four-story windowless research tower of brick and a pre-cast decorative concrete panel administration wing. Once completed, it will serve to broaden the scope of research to make it interdisciplinary, covering various departments of the University as developments warrant, Dr. Harlow said.

The regional center is located at North Orchard Street and Capital Court.

###

U. W. NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

Harlow

10/29/62 jl RELEASE: Immediately

MADISON, Wis.--Youngsters possessing normal mothers have an excellent chance of developing normally themselves, but an absence of maternal affection may not necessarily be serious if there are plenty of other youngsters around--and if the rules governing monkey behavior also apply to human behavior.

This is one of the Primate Laboratory findings reported by University of Wisconsin psychologists Harry and Margaret Kuenne Harlow in the issue of Scientific American published Monday. (Oct. 29). The laboratory's studies of normal and abnormal development in monkeys may have begun to shed light on certain mysteries of human psychology.

Normal mothering alone isn't enough to insure normal development, the Harlows add. Young monkeys, as a matter of fact, need plenty of opportunity to play with other youngsters. Those reared alone with their mothers under isolated conditions do not subsequently develop normal interactions with their age mates when the opportunity arises.

Next to infants raised in complete isolation, the Harlows report, these were the most socially retarded of the infant monkeys tested.

The experiments with infant monkeys under total isolation during the first two to six months of life have "bracketed what may be the critical period of development during which social experience is necessary for normal behavior in later life," they write.

-more-

Add one--Harlows

Since the rhesus monkey is more mature than the human infant at birth and grows four times more rapidly, six months is equivalent to two years for the human child. Effects of short periods of early isolation, perhaps 60 to 90 days or even longer, appear quite reversible, but six months is destructive.

"Case studies of children reared in impersonal institutions or in homes with indifferent mothers or nurses show a frightening comparability," the Harlows point out.

"The child may remain relatively unharmed through the first six months of life. But from this time on the damage is progressive and cumulative. By one year of age he may sustain enduring emotional scars and by two years many children have reached the point of no return."

Studies of groups of motherless monkeys, in each of which four infants were raised in close association with one another, indicate that their affectional relationships with each other may compensate for lack of mothering, the Harlows disclose.

These experiments are still incomplete, but the monkeys give every indication of being socially and sexually on a par with infants raised by their own mothers and also given opportunity to associate with other young monkeys.

"Of course research on nonhuman animals, even monkeys, will never resolve the bafflingly complex roles of various kinds of early experience in the development of human personality," the Harlows report.

"The close behavioral resemblance of our disturbed infants to disturbed human beings gives us the confidence that we are working with significant variables and the hope that we can point the way to reducing the toll of psychosocial trauma in human society," they add.

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WIRE NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE:

9/17/62 jb

Immediately

MADISON, Wis.--Two members of the University of Wisconsin faculty have been named fellows of the Center for Advanced Study in the Behavioral Sciences at Stanford, Calif., for 1962-63, it was announced Monday.

Profs. Carl R. Rogers, psychology and psychiatry, and George B. Schaller, zoology, will leave this week and return to the UW campus in June, 1963. The center is supported by the Ford Foundation and other groups, and is similar in many respects to the Institute for Advanced Study at Princeton University.

Major project this academic year will concern primates. This will be launched by a conference attended by leading scientists, including Dr. Harry F. Harlow, director of the University of Wisconsin Primate Laboratory.

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U.W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

7/13/62 jb

Immediately

RELEASE:

MADISON, Wis.--Final plans for construction of a research building for the University of Wisconsin's internationally-known Primate Laboratory were approved by UW regents Friday.

The new structure will be one of a series of regional primate centers planned by the National Institutes of Health. Dr. Harry F. Harlow, laboratory director, said plans call for broadening the scope of research to make it interdisciplinary, covering other departments at the University as developments warrant.

To cost $1,217,000, the new center will be located at the corner of North Orchard Street and Capital Court, and augment the present laboratory building located nearby at 22 North Charter St.

The plans, drawn by Herbst, Jacoby and Herbst, Milwaukee architects, provide 31,200 square feet of space in a four-story windowless brick research tower and a two-story glass and pre-cast decorative concrete panel administration wing.

The University Planning and Construction office plans to break ground in early September, with completion set for January, 1964.

Outside of University expenditures for land and utility extensions, the entire cost of the new center, $1,123,500, will be borne by NIH.

A spokesman for the laboratory said the rhesus monkey population is now 450. Once the new building is completed the total will be raised to 600 or 700, with most of them housed in the present lab for behavioral studies under psychology department direction. A Vilas Park facility also is in the works, and when this is completed in the summer of 1964, the primate population is expected to reach 1,000.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/21/62 mcg

RELEASE: Immediately

MADISON--Prof. Orville Shetney of the University of Wisconsin School of Music has been appointed governor of Province 29 of Phi Mu Alpha Sinfonia, professional music fraternity, and reelected secretary of the Wisconsin Music Teachers Association.

As governor of Province 29, which includes chapters in Wisconsin and northern Illinois, Prof. Shetney will take part in the Sinfonia national convention in Cincinnati July 19-21.

-0-

Dr. Harry F. Harlow, director of the UW Primate Laboratory, has been renamed chairman of an American Institute for Research committee of eminent scientists chosen to judge outstanding doctoral dissertations in the field of psychology.

-0-

Prof. Eugene Boardman of the UW department of history was one of more than 80 scholars from all parts of the U.S. who participated recently in the eighth Round Table Conference on Chinese-American Cultural Relations at the University of Maryland.

-0-

Dean Lindley J. Stiles of the UW School of Education has been invited to do an evaluation of the teacher education program at the University of Costa Rica.

Dean Stiles will leave Madison June 4 and return July 10. The invitation came from the U.S. Agency for International Development.

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American Institute for Research
1808 Adams Mill Road, N. W.
Washington 9, D. C.

(Offices also in Pittsburgh, Pa.;
Los Angeles, and San Mateo, Calif.)

FOR RELEASE
Tuesday, 15 May 1962

NATIONAL AWARD WINNERS ANNOUNCED

FOR CREATIVE PSYCHOLOGICAL RESEARCH

FOR FURTHER INFORMATION:

Phone: Dr. John C. Flanagan
ADams 2-5766 (Washington)
MUseum 1-3000 (Pittsburgh)

Phone: Michael Amrine (Washington)
Adams 2-5766

Washington, D. C., 15 May 1962.---Dr. Louis M. Herman of Columbus, Ohio, was announced today as the top award winner of $1000 in the First Annual Creative Talent Awards Program of the American Institute for Research--for his doctoral dissertation done under the guidance of Dr. John F. Corso, Department of Psychology, Pennsylvania State University.

Dr. Herman's dissertation was chosen by a panel of eminent social scientists as "showing outstanding promise for creative contribution to scientific knowledge, contributing toward the advancement of the science of psychology." Dr. Herman is now with the Advanced System Research Section of North American Aviation, Columbus, Ohio. His study was entitled "Processing of Information on an Auditory Tracking and an Auditory Judgment Task Presented Simultaneously."

Two awards of $500 each were made for dissertations judged as "best in their fields" to Dr. Sheldon Lee Freud (work done under Dr. A. Robert Rollin, Department of Psychology, University of Connecticut); and to Dr. James C. Lingoes for work done under Dr. Louis L. McQuitty, Department of Psychology, Michigan State University. Dr. Freud is with the U. S. Air Force Hospital, Andrews Air Force Base, Washington, D. C., and Dr. Lingoes is on the faculty of the University of Michigan.

(MORE------OVER, PLEASE)

Dr. John C. Flanagan, President of the American Institute for Research, said that the Creative Talent Awards program was initiated by the Institute for the unique purpose of rewarding doctoral candidates for "new, ingenious, and provocative ideas" aimed toward solving the problems of human behavior.

Awards are made annually to doctoral candidates in psychology or in closely related fields with clearcut implications for the following three subject areas: Perception, Learning, and Motivation; Development, Counseling, and Mental Health; and Measurement and Evaluation: Individual and Group Behavior. The independent panel of leading scholars in each field who served for the initial year of the program and who have agreed to serve for the current year are as follows:

Perception, Learning, and Motivation

Dr. Harry F. Harlow, Chairman of Panel
Primate Laboratory, University of Wisconsin

Dr. Donald B. Lindsley
Chairman, Department of Psychology
University of California, Los Angeles

Dr. John L. Kennedy
Chairman, Department of Psychology
Princeton University

Development, Counseling, and Mental Health

Dr. James G. Miller, Chairman of Panel
Director, Mental Health Research Institute
University of Michigan

Dr. Henry A. Murray
Department of Social Relations
Harvard University

Dr. Jean W. Macfarlane
Department of Psychology
University of California, Berkeley

Measurement and Evaluation: Individual and Group Behavior

Dr. Theodore M. Newcomb, Chairman of Panel
Department of Psychology
University of Michigan

Dr. Edward E. Cureton
Chairman, Dept. of Philosophy and Psychology
University of Tennessee

Dr. Lloyd G. Humphreys
Chairman, Department of Psychology
University of Illinois

(MORE--OVER, PLEASE)

The judges were pleased with the many fine nominations received for the first year's entries, and in some cases, found it extremely difficult to choose among excellent dissertations. Citations of honorable mention were made in each field for those dissertations found worthy of national recognition for competent and creative work. Those persons receiving honorable mention are listed below:

Perception, Learning, and Motivation

Sebastian P. Grossman, Yale University
Sheldon Ebenholtz, New School for Social Research
Samuel A. Mudd, Purdue University

Measurement and Evaluation

Francis J. Wuest, Brown University
James M. Richards, Jr., University of Utah
Albert E. Myers, University of Illinois

Development, Counseling, and Mental Health

Nancy M. Johnson, University of North Carolina
Lillian C. Robbins, New York University
Richard de Mille, University of Southern California

Nomination forms, rules for submission of abstract of dissertation, and leaflets giving further details of the Creative Talent Awards program are available through departments of psychology, or may be obtained by writing the American Institute for Research, 1808 Adams Mill Road, N.W., Washington 9, D. C., or any A.I.R. office. A candidate may be nominated by his major advisor, the chairman of his department, or any member of the American Psychological Association. Dissertations completed and accepted by the doctoral committee during the period 1 September 1961--through 31 August 1962 will be eligible for the second annual Awards.

--- END ---

Harlow, Harry

April 6, 1962

Dear Mr. Taylor:

Thank you for sending along your well-done rundown of the events surrounding the release of information on the Harlow grant. Your comments about the affect of such announcements on the University of Wisconsin are well taken and will be made available to others in the Department in an effort to improve the situation.

This subject received some attention during the House Appropriations Committee hearings in February, and we are hopeful that something may be worked out to the mutual satisfaction of all.

Again, deepest thanks for your good summary and comments.

Sincerely,

Clifford F. Johnson
Chief of Information

Mr. Robert Taylor
Assistant to the President
University of Wisconsin
Observatory Hill Office
Madison 6, Wisconsin

UNIVERSITY OF WISCONSIN
NEWS SERVICE
OBSERVATORY HILL OFFICE BUILDING
MADISON 6, WISCONSIN

OFFICE OF THE DIRECTOR

April 4, 1962

Mr. Clifford Johnson
Office of Research Information
National Institutes of Health
Bethesda 14, Maryland

Dear Mr. Johnson:

Miss Lois Jones of the National Institutes of Mental Health called me yesterday to trace the origin of a story of a "$1.2 grant" from the NIH to the University for behavioral studies on monkeys. It took a little file-digging, but a thorough search revealed the following:

1. The "$1.2 grant" story first appeared in the Madison, Wisconsin, Capital Times apparently telephoned here by Rep. Robert Kastenmeier from data supplied him by NIH.

2. The story apparently was carried from Madison into Minnesota by United Press, and there took an editorial joshing. We do not get Minnesota clippings, so the first time we noted that this grant was being treated lightly was in the February 8 reprinting in the West Bend (Wisconsin) News of a Waseca, Minnesota, Herald editorial comment. On the same date, February 8, the Capital Times printed the first story locally on Senator Byrd's reaction.

3. The University first announced the grant almost a month later, on January 5, 1962, when our Board of Regents accepted $148,590. We have never published the $1.2 million commitment figure.

As I told Miss Jones in our telephone conversation, while we appreciate the interest congressmen have in making announcements of your grants, this system works a hardship on us and may--at some future date--provide a rather embarrassing incident when our Board of Regents decides not to accept a grant announced with fanfare before the Regents have an opportunity to consider it. The hardship on us comes in the sudden demand by newspapers for background information on research projects on which Congressmen or granting agencies announce grants. These demands too often reach us when the principal investigator cannot be located immediately, and we have to patch together information which sometimes is inadequate to justify the grant.

In an attempt to modify this part of the problem, John F. Newman, our News Service Director, has written to Congressman Kastenmeier suggesting an "early warning." Whether that suggestion will prove acceptable I don't know. Perhaps the problem should be attacked from the base with a notification to universities from your office before congressmen are given the word. It would also be helpful if release could be delayed until our Board of Regents, which meets monthly, can consider acceptance of the grants--but this may be asking too much.

We have no desire to monopolize grant announcements. We don't really care who makes the announcement, so long as it is accompanied with sufficient data to justify our interest in the project. Until this incident we had more than a decade of success in handling this particular research project.

Copies of the clippings mentioned and our release on this particular grant are enclosed. If we can be of further help, let us know.

Sincerely,

Robert Taylor
Assistant to the President

RT:m
cc: Congressman Kastenmeier
Lois Jones
Harry Harlow

WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

4/19/62 jb

RELEASE: Immediately

MADISON, Wis.--Wisconsin visitors to the World's Fair in Seattle will find six delegates from the University of Wisconsin ready to greet them.

Two mother monkeys and four infants from the internationally-known UW Primate Laboratory are the star attractions of a display set up this week in the United States-sponsored Science Hall exhibit section.

The display describes and illustrates the much-cited studies of Dr. Harry F. Harlow, director of the laboratory. These stress maternal-infant affection in primates.

In keeping with the hall's theme of portraying how scientists work, the UW presentation, covering 40 feet of floor space, compares the relationship between infant monkeys raised with surrogate (substitute) mothers with those raised by their own mothers.

The techniques of research, the types of affection shown, limitations of an inanimate mother and other pertinent knowledge gained in this field of specialized study are clearly shown by the primates, by photographs, film and a story-board.

Details of the display were worked out by Fred Sponholz, project supervisor for the laboratory. It will remain in Seattle until the fair closes Oct. 21.

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RADIO NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

3/1/62 jb

RELEASE: Immediately

MADISON--Dr. Harry F. Harlow, director of the University of Wisconsin Primate Research Laboratory, will be interviewed on the CBS-TV "Calendar" program at 9 to 9:30 a.m. (CST) Friday, March 2. The show will originate in New York.

Harry Wiesner and Mary Pickett will ask Dr. Harlow questions relating to his work with primates, stressing his research on surrogate (substitute) mothers for infant monkeys and followup studies on heterosexual maternal behavior. Film clips of a previous program on CBS, "Conquest," in which Dr. Harlow appeared, also will be shown to provide a setting for this chapter of "Calendar."

The program is not shown in Madison. WKBT, La Crosse (Ch. 8), WSAU-TV, Wausau (7), and WBBM-TV, Chicago (2), have "Calendar" on their daily schedule.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

9/12/61 jb

RELEASE: Immediately

By JACK BURKE

MADISON, Wis.--Heredity vs. environment? Well, the behavior of little boy and girl monkeys is more biological than cultural. That's the word from a noted University of Wisconsin psychologist.

Dr. Harry F. Harlow, director of the UW Primate Laboratory, made the statement in a paper prepared for a recent meeting of the American Psychological Association. The research findings of Harlow and his associates have brought worldwide recognition to the study center. The lab was the first of its kind in the country. He said:

"Infant monkeys show clear-cut differences in behavior of far greater significance than early sexual responses. Grooming patterns, for example, which are basic to rhesus social life, show late maturation. But they sharply differentiate the two sexes. Caressing is both a property and prerogative of the girls. They show better manners, too."

The director said that there "is no fundamental difference between a Madison park and a laboratory monkey playroom. I base my generality on an observation made some time ago at a school picnic attended by 25 second graders and their parents. While the parents sat and the girls stood around, 13 boys wrestled, romped, chased and retreated. No little girl chased little boy, but some little boys chased some little girls.

"In our study of the lab monkeys, we have learned that young males and females show varied differences. Play behavior is initiated by the males, seldom by females. Contact play is more frequent among the boys and is almost invariably started by them. Real rough and tumble play is strictly for the boy monkeys."

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Harlow contended that secondary sex-behavior differences probably exist throughout the primate order, and they are innately-determined biological variances regardless of any cultural influences or overlap.

Because of the monkeys' nature, he said, they tend automatically to produce segregation of the sexes.

Monkeys reared alone in lab cages, however, do not develop normally into adulthood. They are less active in play, appear emotionally unstable, are unintereste in their environment, and indulge in such actions as pulling at their own skin and hair.

Other observations based on lab surveys, Harlow listed, include:

Female monkeys show no respect for males they can dominate, sometimes mauling the ill-fated males of gentle demeanor.

Surrogate (substitute mothered) monkeys display childish sexual behavior, absence of grooming practices, an exaggerated aggressiveness and a lack of affection for others.

Surrogate-raised females, difficult to mate, are themselves "helpless, heartless, hopeless mothers, almost totally devoid of any maternal feeling."

In 1958, Harlow found that mother love in infant monkeys depends considerably on close body contact, and not primarily on nursing as thought previously. Two years ago his studies revealed that an overly-extended period of mother love impaired baby monkeys' abilities to form friendly relationships with their fellows.

Harlow began his research in animal behavior some 20 years ago. The lab was opened in 1954, with an addition built in 1956 with funds provided by the Wisconsin Alumni Research Foundation. Last spring the National Institutes of Health announced it was granting $1.6 million for operations and an expanded regional lab here.

The information gleaned from current research with primates has great value in increasing basic and advanced knowledge of relationships to behavior patterns of human beings, to child relationships, and in learning more about problems connected with mental health.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/13/61 gmb

RELEASE: Immediately

By GAIL McBRIDE

MADISON, Wis.--Observations that damage to an infant brain produces less disturbance than equivalent damage to an adult brain are the subject of a cooperative research venture by University of Wisconsin scientists from four different fields.

Evidence has been derived from work with humans. Now tests are being conducted on animals.

At present, work is concentrated on rhesus monkeys raised in the psychology department's Primate Laboratory directed by Dr. Harry F. Harlow, professor of psychology. Previous research in this general area was done by Dr. Robert F. Benjamin, assistant professor of physiology, of the neurophysiology laboratory of the Medical School.

Dr. Benjamin worked with four groups of animals: normal kittens, kittens on whom brain operations were performed at four days of age, normal adult cats, and adult cats subjected to the same operation as the kittens.

In the operations, somatic sensory areas I and II of the brain were removed. These are the areas of the cortex or outer layer of the brain which received most of the touch impulses from the body. After the operation, the animals were allowed to rest for six months.

Then they were trained to learn a roughness discrimination task--a fairly simple one in which they had to distinguish between smooth and rough grades of sandpaper on the floor of a maze. When the animals moved down the side with rough sandpaper, they were rewarded with food.

-more-

The normal adult cats could learn to solve this problem successfully. But the adult cats which had undergone operations could not.

Amazingly enough, however, there was no difference between normal and altered kittens. They performed equally well on the task. Only on the most complicated problems was there a difference.

Brain cells don't grow back after the operations, so the startling results must be explained by something else. Scientists use the vague term "plasticity" to describe the immature brain. They suggest that perhaps the connections are not as firmly established as in older brains, and other parts can take over when something is damaged or removed.

Dr. Harlow has been tracing the development of learning in rhesus monkeys for about seven years. He has found that their ability to solve what is called a "delayed response" problem begins, or "matures," at about 125 days of age and improves subsequently.

An example of a delayed response problem is the placing of a piece of food in one of two identical containers in full view of an animal. The containers are then removed from his view for a short while. When they are again shown to him, he must remember where the food is in order to obtain it.

Dr. Harlow has found that discrimination learning set, which essentially means the transfer of information learned in solving one problem to another similar problem, matures in the monkey at about six months of age--considerably later.

When the lateral or outer surfaces of the two frontal lobes of the cortex are surgically damaged--a "lesion" is made--the ability to solve delayed response problems is destroyed in normal adult monkeys but discrimination learning set remains.

On the other hand, if large lesions are made in the two temporal lobes of the cortex, which are important visual associative areas, discrimination learning set is seriously impaired but not delayed response learning. This phenomenon is called a double dissociated syndrome by neurologists and psychologists.

The theory is that there should be little noticeable effect from brain injuries or lesions made before the function matures--before 125 days in the delayed response problem solving or before six months in the set discrimination learning. Apparently, this theory holds true.

Dr. Konrad Akert, professor of anatomy at UW Medical School, performs the brain operations. At first, there was a problem with anesthesia dosage in the baby monkeys. So Dr. O. Sidney Orth, professor of anesthesiology in the Medical School, volunteered to personally administer the anesthesia in the first two of the delicate, five-hour operations.

Lateral lesions on each frontal lobe were made when the monkeys were five days old. Six months later the animals were tested.

Again the amazing results: Normal and altered monkeys showed no differences on the basis of delayed response problem solving. They have not been tested on very complicated problems, but so far, no difference has been detected on any test.

This experiment was reported in the Dec. 30, 1960, issue of Science magazine.

Two other baby monkeys were operated on at 150 days of age. This is roughly comparable to a lesion in a one-year-old human child. They also showed no loss of ability. Dr. Harlow says, however, that this is still an early lesion--just slightly after the delayed response problem solving ability begins to mature.

In an effort to find a "critical" time at which the young brain loses its "plasticity"--when the functions become set and irreversible as seen in adults--lesions were recently made in 18-month-old monkeys. This is comparable to a human child of eight years.

This time there was a change. These monkeys apparently cannot learn. The "critical" time is passed. Experiments with surgical lesions induced at other ages are now in progress.

Add three--brain research

Restless, circling behavior is usually seen in adult monkeys that have had the frontal lobe operation. This is not seen in the five-day or 150-day operates, again suggesting that the operation has little effect at this early age, but is seen in the 18-month operates.

Surgical operations on both temporal lobes have been done on two monkeys. These monkeys, compared to normal ones of the same age, apparently showed no loss in discrimination learning set ability or on any other test.

Currently, temporal lobe operations are being extended to older animals. As yet, there is no information.

If the monkeys are followed long enough and given various tests, it may be that eventually they will be found deficient in some respects. Perhaps personalities have been altered. Dr. Harlow says that there is some evidence that temporal lesions adversely affect play and other behavior in the monkeys.

Successful surgery like this opens up an entirely new area--that of showing how the functions and structures of the brain mature and what the capabilities of rehabilitation are in the infant.

Such research suggests that brain damaged or retarded human children who need brain operations should be operated upon early in life because less permanent damage might occur.

Eventually the sections of brain removed will be looked at microscopically to determine the amount of brain actually removed, and damaged nerve pathways will be studied. Researchers would like to bracket brain functions within narrow age limits and correlate it with the developing anatomy of the brain.

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Harlow, Harry

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/24/61 db

RELEASE: Immediately

MADISON, Wis.--A grant of $1.3 million for construction of a regional primate laboratory at the University of Wisconsin and another $364,000 for the first year's operation of the research center has been approved by the National Institutes of Health, according to press reports Wednesday from Washington.

University officials said that when the grant is officially received, it will be presented to the Board of Regents for acceptance at the June meeting.

Prof. Harry F. Harlow, director of the present UW Primate Laboratory, said the new facility will provide the University with an interdepartmental center, and the Midwest with a regional center, for research on rhesus monkeys.

The federal government has decided to establish centers such as this one because monkeys are becoming necessary to many fields of scientific research. All biological and psychological sciences dealing with human mental and physical disorders use monkeys in their research.

While the demand for monkeys is on the increase, the supply of these animals from their native jungle homes is fast dwindling. The UW center will provide facilities for housing of several hundred monkeys.

It will permit study of monkeys over their entire lifespan, which is sometimes more than 25 years.

The laboratory will occupy a four-story structure to be located adjacent to the present UW Primate Lab on North Charter Street. Preliminary plans call for sonstruction to begin in June, 1962.

The UW was selected as the location for the regional center because its present Primate Lab is one of the largest such facilities in the United States.

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Add one--primate lab

Many techniques now in use in primate maintenance and research under laboratory conditions, particularly those involving infants, were developed at the UW laboratory.

Dr. Harlow's "mother love" experiments conducted at the Primate Lab have received international attention. Although the laboratory is not involved in defense research projects, one of its animals--Able--was the first monkey to be launched into space by the U.S. Able was supplied by the Wisconsin lab in answer to a call for a monkey of specific size and weight.

The research center will be a semi-autonomous part of the University. It will be directed by Dr. Harlow and guided by a committee of the UW Graduate School under supervision of Dean John Willard.

A full time staff of 20 scientists and 20 to 30 administrative and maintenance employees will run the center.

Within limits of its capacity, the center will be open for any scientist in the Midwest who desires to use the facilities. Initially, the center will provide facilities for integrated research programs in neuro-anatomy, physiology, biochemistry. and psychology.

The first research program involving regional participation will be a joint research project between Prof. William C. Young of the University of Kansas anatomy department and UW scientists.

Other initial research programs will be conducted by Dr. Harry A. Waisman, pediatrics department, Dr. Konrad Akert, anatomy department, Dr. R. K. Meyer, zoology department, and Dr. Jay B. Mowbray, associate director of the Primate Lab, in addition to regional studies and work already in progress at the present primate laboratory.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/10/61 gb

RELEASE: Thursday, May 11
(Release date set by Academy)

MADISON, Wis.--(Advance for Thursday, May 11)--Three distinguished University of Wisconsin professors were among 100 new Fellows from 34 states elected to membership in the American Academy of Arts and Sciences at its 181st annual meeting Wednesday (May 10) in Boston.

Prof. Harry F. Harlow, psychology; Prof. Merritt Y. Hughes, English; and Dr. Carl R. Rogers, psychology and psychiatry, are the Wisconsin faculty members honored by the Academy.

Prof. Harlow, elected to membership as a Fellow in the Academy's class two, "Biological Sciences," was cited for his work in physiology and experimental psychology. On the Wisconsin faculty since 1930, Harlow holds the B.A. and Ph.D. degrees from Stanfrod University. He founded the UW Primate Laboratory in the early 1930s and has served as its director since that time.

For more than a quarter of a century, Harlow has studied learning, motivation, and physiological psychology. His extensive work with monkeys has brought him many honors including the coveted Howard Crosby Warren Medal of the Society of Experimental Psychologists for research in learning of primates, which he received in 1956.

Prof. Hughes, who became a Fellow in the "Humanities" class four of the Academy, was cited for his longtime study in philology and criticism. Hughes, who holds the B.A. from Boston University, the M.A. from University of Edinburgh, Scotland, and the Ph.D. from Harvard University, also holds two Doctor of Literature degrees, one from Edinburgh (1950) and one from Boston (1954).

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He is particularly well-known for his research and study of John Milton and his writings. He has been a Fellow of the American Field Service, University of Paris; the John Simon Guggenheim Foundation, Rome, Italy; and the Henry E. Huntington Library, San Marino, Calif.

Dr. Rogers, named a Fellow in the Academy's class three, "Social Arts and Sciences," was cited for his work in social relations. Known principally for his "client-centered therapy," Dr. Rogers came to Wisconsin in 1957 as Knapp Visiting Professor and since has become a permanent faculty member in the department of psychology and psychiatry.

He earned the B.A. degree at Wisconsin and M.A. and Ph.D. degrees from Columbia University Teachers College. In 1955 he was awarded the Nicholas Murray Butler Medal for outstanding research. He is the author of five books and numerous articles.

American Academy of Arts and Sciences members work on many different projects each year, inclucing several studies and international conferences where many distinguished scholars and practitioners of the arts and sciences contribute significantly to past, present, and future problems.

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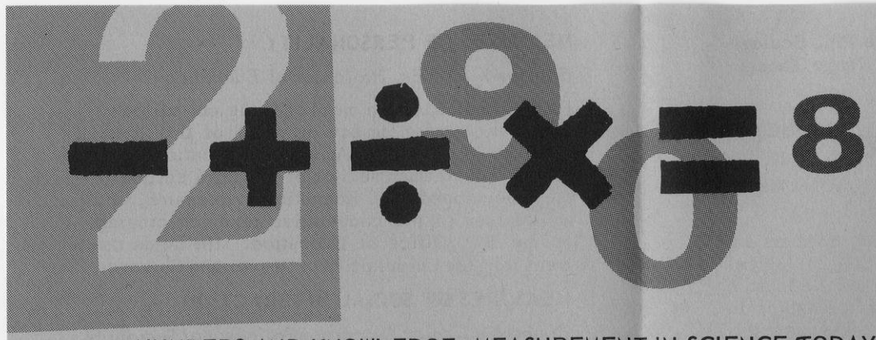


NUMBERS AND KNOWLEDGE: MEASUREMENT IN SCIENCE TODAY

Course Orientation

Feb. 2 James W. Cleary: *The Purpose and Structure of Freshman Forum* (will not be broadcast)

Numbers as Tools

Feb. 4 Marshall Clagett: *The Origins of Mathematics*
9 Mark H. Ingraham: *Numbers, Triangles, and Measurements*
11 Discussion—Clagett and Ingraham
16 Vincent C. Rideout: *Automation and Its Engineering and Educational Implications*
18 Discussion—Rideout
23 Guy H. Orcutt: *Simulation of an Economy*
25 Discussion—Orcutt

The Measure of Nature

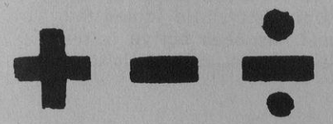
Mar. 1 Aaron Ihde: *Chemistry as a Quantitative Science*
3 Six-Weeks Examination
8 Grant Cottam: *Measuring Vegetation*
10 Discussion—Ihde and Cottam
15 Robert A. Ragotzkie: *Environment and Biological Productivity*
17 Discussion—Ragotzkie
22 Arthur H. Robinson: *Measurement of the Earth*
24 Discussion—Robinson

The Measure of Man

Mar. 29 Harry F. Harlow: *Monkeys as a Measure of Man*
31 Discussion—Harlow
Apr. 5 William S. Laughlin: *Measurement of Racial Differences*
7 Discussion—Laughlin
12 Chester W. Harris: *Measures of Personality*
14 Discussion—Harris
26 Robert McGinnis: *Measures of Social Interaction*
28 Discussion—McGinnis
May 3 Bruce H. Westley: *Measuring the Effects of Mass Communications*
5 Discussion—Westley
10 Winston L. Brembeck: *Measurements of Public Address*
12 Discussion—Brembeck

An Overview

May 17 Herbert M. Howe: *Count the Streaks on the Tulip*
19 Discussion—Howe
24 Final Examination



FRESHMAN FORUM COMMITTEE

Reid A. Bryson *(Chairman)*
Professor and Chairman, Department of Meteorology

Rondo E. Cameron
Associate Professor of History and Economics

James W. Cleary
Assistant Professor of Speech

Eugene F. Kaelin
Assistant Professor of Philosophy

Karl Kroeber
Assistant Professor of English

Jonathan D. Sauer
Associate Professor of Botany and Geography

Peter O. Steiner
Professor of Economics

FRESHMAN FORUM ON THE AIR

Lectures (AM and FM)
11:00 A.M., Tuesdays

Discussions (AM and FM)
11:00 A.M., Thursdays

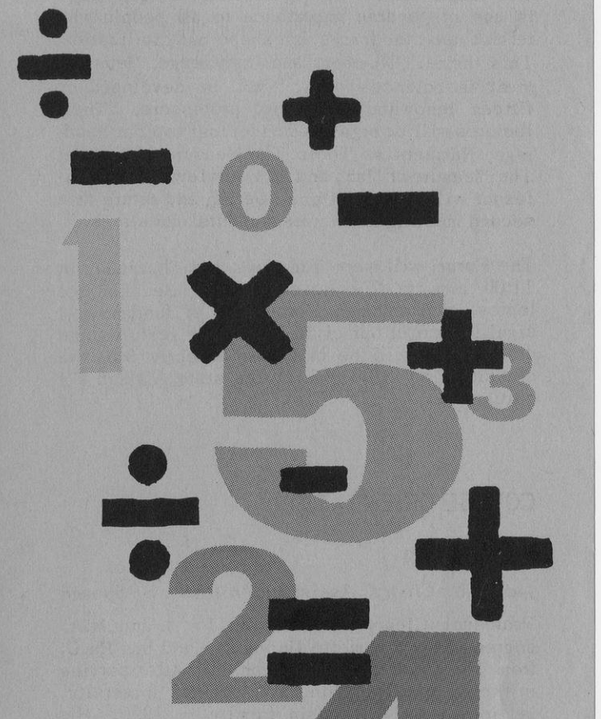
Hear it on the State Stations

AM: WHA, Madison (970kc.)
WLBL, Auburndale (930kc.)

FM: WHA-FM, Madison
WHAD, Delafield
WHKW, Chilton
WHRM, Rib Mountain
WHWC, Colfax
WHLA, West Salem
WHSA, Brule
WHHI, Highland

(All between 88 and 92 megacycles on the FM dial.)

1-60-6500



FRESHMAN FORUM

SPRING, 1960

NUMBERS AND KNOWLEDGE: MEASUREMENT IN SCIENCE TODAY

11:00 A.M. — TUESDAYS AND THURSDAYS

272 BASCOM HALL

ONE CREDIT

Freshman Forum is a one-credit, lecture-discussion course that may be elected in *either* or in *both* semesters of the freshman year. The general theme for the spring semester of 1959-1960 is one of genuine importance to all people who reflect upon the forces that shape our civilization. This theme, "Numbers and Knowledge: Measurement in Science Today," will be developed by fifteen renowned University professors. Their lectures will be organized under four topical headings; Numbers as Tools; The Measure of Nature; The Measure of Man; and An Overview. Each professor will lecture at one meeting and return at a second meeting to answer students' questions.

The Forum will meet Tuesdays and Thursdays at 11:00 a.m. in 272 Bascom Hall. Because the topics of Freshman Forum are of fundamental significance in our civilization, the lectures and discussions will be broadcast directly from the classroom at 11:00 a.m. by the state AM and FM stations.

COURSE ORIENTATION

MODERATOR

James W. Cleary, Assistant Professor of Speech

Professor Cleary received his Ph.B. and M.A. degrees from Marquette University and his Ph.D. from The University of Wisconsin. After serving in the Army and teaching at Marquette University, he joined the Wisconsin faculty in 1956. His special interests are public address, parliamentary procedure, and the history of rhetorical theory.

NUMBERS AS TOOLS

THE ORIGINS OF MATHEMATICS

Marshall Clagett, Professor of the History of Science and Director of the Institute for Research in the Humanities

Marshall Clagett, A.B., A.M., George Washington University and Ph.D., Columbia University, has been a member of the faculty since 1947; has published extensively; and is considered "one of the nation's leaders in his field."

NUMBERS, TRIANGLES, AND MEASUREMENTS

Mark H. Ingraham, Dean, College of Letters and Science

Dean Ingraham earned his A.B. from Cornell University, A.M. from The University of Wisconsin, and Ph.D. from the University of Chicago. He holds an LL.D. from Lawrence College and an Sc.D. from Wesleyan University. He joined the the faculty in 1919 and has been active in research and in faculty affairs, nationally and locally.

AUTOMATION AND ITS ENGINEERING AND EDUCATIONAL IMPLICATIONS

Vincent C. Rideout, Professor of Electrical Engineering

Professor Rideout was educated at the University of Alberta, McGill, and California Institute of Technology. He spent seven years on the technical staff of the Bell Laboratories before he came to Wisconsin in 1946. For the academic year 1954-1955, he was in Bangalore, India, where he taught and advised at the Indian Institute of Science. His main research and teaching interests are analog computing, random processes, and network theory.

SIMULATION OF AN ECONOMY

Guy H. Orcutt, Brittingham Professor of Economics

Professor Orcutt has been called "one of the leading younger economists in the United States." A graduate of the University of Michigan, he was an instructor at M.I.T., on the staffs of the Department of Applied Economics at Cambridge University and of the International Monetary Fund, and a professor at Harvard University before coming to Wisconsin in 1958.

THE MEASURE OF NATURE

CHEMISTRY AS A QUANTITATIVE SCIENCE

Aaron Ihde, Professor of Chemistry, ILS, and History of Science

Professor Aaron Ihde is a chemist and historian of science whose three degrees were taken at Wisconsin, with concentration in the chemistry of foods. He has had experience as a chemist in the food industry and has taught at Butler and Harvard Universities.

MEASURING VEGETATION

Grant Cottam, Associate Professor of Botany

Professor Cottam earned his Ph.D. at The University of Wisconsin. He was assistant professor of botany at the University of Hawaii for a year before his appointment at Wisconsin. His special fields are ecological methods and history and vegetation of oak openings. He is a member of Phi Sigma, Sigma Xi, Phi Kappa Phi, Ecological Society of America, Society of Range Management.

ENVIRONMENT AND BIOLOGICAL PRODUCTIVITY

Robert A. Ragotzkie, Assistant Professor of Meteorology

Professor Ragotzkie seeks to put numbers on biological productivity. By describing biological systems in terms of energy exchanges, he is able to determine more exactly their relationships to environment. His main interest: lakes as environments and as physical systems. Before coming to The University of Wisconsin last April, he was Director of the University of Georgia's Marine Institute where he studied marine environments.

MEASUREMENT OF THE EARTH

Arthur H. Robinson, Professor of Geography

Professor Robinson secured his B.A. at Miami (Ohio), M.A. at The University of Wisconsin, and Ph.D. at Ohio State University. From 1941 to 1945 he was chief of the Map Division in the Office of Strategic Services. In 1946 he joined the geography faculty at The University of Wisconsin. He has written *Elements of Cartography*, *The Look of Maps*, and is a co-author of *Elements of Geography*.

THE MEASURE OF MAN

MONKEYS AS A MEASURE OF MAN

Harry F. Harlow, Professor of Psychology

Professor Harlow is nationally known for his work at The University of Wisconsin Primate Laboratory. He is the author of over one-hundred publications about his research on animal behavior, including studies of mother love in infant monkeys. He is a member of the National Academy of Sciences and past president of the American Psychological Association. Professor Harlow obtained his Ph.D. from Stanford in 1930, joining The University of Wisconsin staff the same year.

MEASUREMENT OF RACIAL DIFFERENCES

William S. Laughlin, Professor of Anthropology

Professor Laughlin is recognized as one of the outstanding young American anthropologists and is particularly well known for his research on blood group genetics and racial history of Aleuts, Eskimos, and American Indians. He holds degrees from Willamette University, Haverford College, and Harvard. A veteran of many field expeditions, he has written numerous articles for professional journals and is editor of the American Journal of Physical Anthropology.

MEASURES OF PERSONALITY

Chester W. Harris, Professor of Education

Professor Harris is a member of the committee on personality development in youth of the SSRC, president-elect of the American Educational Research Association, editor of the third edition of the Encyclopedia of Educational Research, and an advisor to the cooperative research program of the U.S. Office of Education. He holds degrees from the Universities of Denver and Chicago.

MEASURES OF SOCIAL INTERACTION

Robert McGinnis, Associate Professor of Sociology

Professor McGinnis holds degrees from San Francisco State College and Stanford and Northwestern universities. Before coming to Wisconsin in 1955, he was director of the Sociological Research Laboratory at Florida State University. In addition to collaborating on the volume, "Selected Studies in Marriage and the Family," he has written many articles for professional journals.

MEASURING THE EFFECTS OF MASS COMMUNICATIONS

Bruce H. Westley, Associate Professor of Journalism

A former newspaper reporter and editor, Professor Westley is the author of "News Editing" and co-author of "The Dynamics of Planned Change." He holds the bachelor's degree from the University of North Dakota, Master's from Columbia University, and is a candidate for the Ph.D. in social psychology at the University of Michigan.

MEASUREMENTS OF PUBLIC ADDRESS

Winston L. Brembeck, Associate Professor of Speech

Professor Brembeck has charge of courses in persuasion, argumentation and debate, and basic public speaking at the University, and is co-author of the textbook, "PERSUASION," published by Prentice-Hall, Inc. He received his B.A. degree from Manchester College and his M.A. and Ph.D. degrees from The University of Wisconsin. He has been a member of the faculty since 1947.

AN OVERVIEW

COUNT THE STREAKS ON THE TULIP

Herbert M. Howe, Professor and Chairman, Department of Classics

Professor Howe is co-author of "Classics in Translation" and of "Medical Greek and Latin." A native of Rhode Island, he earned his A.B. at Harvard in 1934, and the M.A. in 1941 and Ph.D. in 1948 at Wisconsin. A member of the faculty since 1948, he previously taught at Brooks and Pomfret Schools.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

12/12/60 NIH

RELEASE: Tuesday, Dec. 13
(Release date set by NIH)

BETHESDA, Md.--(Advance for Tuesday, Dec. 13)--Appointment of Dr. Harry F. Harlow of the University of Wisconsin to serve on the National Advisory Council for Health Research Facilities was announced Tuesday by Surgeon General Leroy E. Burney of the Public Health Service, Department of Health, Education, and Welfare.

Dr. Harlow, professor of psychology at Wisconsin, will serve on the council through Aug. 31, 1961. Dr. Harlow received his B.A. and his Ph.D. in psychology from Stanford University and was a Carnegie Fellow at Columbia University during the year 1939-40.

He has taught psychology at Wisconsin since 1930, and among his special fields of interest are cortical localization of function in monkeys, the affectional systems in primates, and primate psychobiology.

Dr. Harlow is a Fellow of the American Psychological Association, a member of the National Academy of Science, American Philosophical Society, American Association for the Advancement of Science, and the Society of Experimental Psychologists; and past president of the Midwestern Psychological Association and the American Psychological Association.

As a member of the National Advisory Council on Health Research Facilities, Dr. Harlow advises and makes recommendations to the Surgeon General on matters relating to the federal program to strengthen the nation's capacity for medical research by constructing and equipping health research facilties.

The council is one of nine national advisory councils established as advisors to the Public Health Service. The division of research grants of the National Institutes of Health (principal research center for the Public Health Service) administers the health research facilities construction program.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

11/13/59 vh

RELEASE: Immediately

MADISON--The winner of the Howard Crosby Warren Medal for outstanding research in experimental psychology, Dr. Harry F. Harlow, will deliver a public lecture at the University of Wisconsin Tuesday, Nov. 17, presented by the Wisconsin chapter of Sigma Xi.

Dr. Harlow, widely known UW professor of psychology, will talk on "Affectional Responses in Infant Monkeys" before the national honorary scientific fraternity at 8 p.m. in Birge Hall auditorium.

Harlow is known especially for his work at the UW Primate Laboratory which he founded--work in animal learning, motivation, and physiological psychology. He and his experiments in determining what mother love constitutes were shown recently on a nationwide CBS-TV program.

Professor Harlow, who received his Ph.D. from Stanford University, has been on the Wisconsin campus since 1930. He is a member of Sigma Xi, the National Academy of Sciences, and a past president of the American Psychological Association.

He has served as chief of Human Resources Research for the U. S. Army General Staff, 1950-52, and has also served as consultant to the National Institutes of Health, the U. S. Army, Air Force, and Navy, the Department of Defense, and the Army Scientific Advisory Panel.

The lecture is open to the public without charge.

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RADIO NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE:

10/27/59 gb

Immediately

NEW YORK--The Columbia Broadcasting System's television network will feature "Mother Love," based on the research of University of Wisconsin psychologist Dr. Harry F. Harlow, in the premiere of "Conquest," to be seen at 4 p.m. (CST) Sunday, Nov. 1.

Filmed at the University, the program covers the work of Dr. Harlow and his associates at the UW Primate Laboratory. CBS newsman Charles Collingwood will be host and narrator of the 30-minute program, which will be broadcast in Madison over WISC-TV, Ch. 3.

Dr. Harlow conducted experiments with baby rhesus monkeys, which at birth have a brain and nervous system comparable to that of a five-month old human child. The baby monkeys were separated from their real mothers immediately after birth and placed in cages with two strange objects. One object was made of wire and had a wooden head. The other was similar in size and appearance, but was covered with soft terry cloth.

This enabled the experimenters to discover that the "mother" in question did not have to be an adult female rhesus monkey. An inanimate "mother object" can do the job just as well, provided the object is soft and cuddly.

Dr. Harlow reported that the infant monkeys would spend up to 18 hours a day with the cloth object, but would stay near the wire object only long enough to get nourishment if a baby bottle were attached to the wire object.

As a result of these experiments, designed to measure and define mother love, Dr. Harlow concluded that the key factor in the mother-child relationship--at least in rhesus monkeys--is not nursing or feeding, but the bodily contact between the infant and the "mother."

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

9/21/59 gb

RELEASE: Immediately

MADISON, Wis.--Too much mother love can throw a monkey wrench into the friendly relationships between small monkeys, according to a University of Wisconsin psychology professor.

Prof. Harry F. Harlow, who will explain his theories on the development of affectional patterns in infant monkeys to British psychologists this week, believes that "too much love and for too long a time is wrong."

He will deliver his first talk before the Tavistock Seminar conference on Mother-Infant Interaction in London, Sept. 22nd. After this, he will address a joint meeting of the British psychology association and the experimental psychology society of England. Later, he will present an informal television discussion over the British Broadcasting Co. with J. M. Tanner of the Institute of Child Health of the University of London.

"A baby monkey must be guided by the mother through a number of stages. The baby must be provided from birth throughout early infancy with the nutritional and comfort needs upon which are formed affection and security. The mother must safeguard its infant until effective danger signals are recognized," Harlow explains.

"Too much mother love results in a tense situation between infant-with-infant relationships." This means that small monkeys have social problems on a friendly relationship basis with other small monkeys, according to Harlow.

The psychologist reasons that if infant monkeys have too much mother love, they become indifferent to their peers and even after long removal from their mothers, cannot form normal relationships.

-more-

add one--Harlow

Harlow's monkeys at the UW Primate Laboratory are being run through a battery of tests to come up with a workable theory on infant-infant interaction. For example, the small monkeys are placed in cages with a simulated mother in terry cloth form. The clinging and clasping aspect of the infant monkeys is observed.

Later, the small monkeys are placed in areas with other small monkeys so that the patterns of play are observed. "The development of infant-infant affection through play holds in check the murderously aggressive patterns of the adult monkeys, and the patterns of play are essential training for normal adolescent and adult sexual behavior," Harlow explains.

By placing small monkeys near or with partners, they tend to develop the imitative pattern, the psychologist says. "Noncontact interaction involves such behavior patterns as alternately running back and forth toward the partner and such things as mutual, oriented jumping up and down, mutual summersaulting, mutual approach and lip smacking responses."

Harlow explains that data on development of interaction among infants are limited: first, because the number of animals is small, and second, the number of observations limited.

"If one has limited data and the opportunity to make a speech, one has very little option but to present a theory, and this we have done. We are certain that as more and more data are collected our present theory will have to be modified or possibly discarded, for it is very hard to spin an adequate theory out of whole cloth, even if it is terry cloth," Harlow concludes.

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MADISON NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/6/59 db

RELEASE: Immediately

MADISON--Harry F. Harlow, professor of psychology at the University of Wisconsin, is one of six contributors to a new book which argues that primitive man's use of tools influenced the shape of his head and hands.

"The Evolution of Man's Capacity for Culture," according to the publisher's summary, "not only outlines the course of biological development that eventually produced man's bodily structure; it shows how primate behavior of various kinds, but particularly the use of tools, has profoundly affected the evolution of man's body and brain."

The new book consists of essays originally presented at the 56th annual meeting of the American Anthropological Association. Compiled into a book by J. N. Spuhler, one of the essayists, the work was published by Wayne State University Press.

Other contributors to the book include Profs. Ralph W. Gerard and Marshall D. Sahlins of the University of Michigan, Prof. S. L. Washburn, University of California, and Prof. Charles F. Hockett, Cornell University.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE: Immediately

12/24/58 jl

MADISON, Wis.--A review of research findings in the fields of physiology and biochemistry which shed light upon basic behavioral characteristics of animals has been published by the University of Wisconsin Press.

The volume, edited by Harry F. Harlow and Clinton F. Woolsey of the University of Wisconsin, is the outgrowth of a symposium on interdisciplinary research in the field of physiology and psychology held at Wisconsin last year.

The 20 symposium participants are eminent authorities recognized for contributions in anatomy, embryology, physiology, pharmacology, and biochemistry which help to explain many of the behavioral characteristics of animals which have been revealed by recent work in psychology.

Contributors to the volume and the titles of their papers are as follows:

Behavioral Contributions to Interdisciplinary Research, Harry F. Harlow, (University of Wisconsin); Non-Specific Brain Mechanisms, H. W. Magoun, (University of California); Reticular-Cortical Systems and Theories of the Integrative Action of the Brain, Herbert Jasper, (Montreal Neurological Institute); Organization of Somatic Sensory and Motor Areas of the Cerebral Cortex, Clinton N. Woolsey, (University of Wisconsin); Correlations Between Neurophysiological Activity in the Cortex and Short-Term Behavior in the Monkey, John C. Lilly, (National Institutes of Health); The Neural Basis of Auditory Discrimination, William D. Neff and Irving T. Diamond, (University of Chicago); Cortical Connections and Functional Organization of the Thalamic Auditory System of the Cat, Jerzy E. Rose, (The Johns Hopkins University), and Clinton N. Woolsey, (University of Wisconsin); Neocortical

-more-

Function in Behavior, Karl H. Pribram, (The Institute of Living); Some Psychological Determinants of Sparing and Loss Following Damage to the Brain, Donald R. Meyer, (The Ohio State University); The Paleocortex and Behavioral Motivation, Joseph V. Brady, (Walter Reed Institute of Research); Adaptive Functions of Paleocortical and Related Structures, James Olds, (University of Michigan); Neural and Chemical Regulation of Behavior, Frank A. Beach, (Yale University); The Neurochemical Substrates of Cerebral Function and Activity, Donald B. Tower, (National Institute of Neurological Diseases and Blindness); Brain Chemistry and Adaptive Behavior, Mark R. Rosenzweig, David Krech, and Edward L. Bennett, (University of California); Physiological Plasticity and Brain Circuit Theory, R. W. Sperry, (California Institute of Technology); Plasticity of Behavior: Psychological Series, Austin H. Riesen, (University of Chicago); Alice in Wonderland, or, Psychology Among the Biological Sciences, D. O. Hebb, (McGill University).

The 475-page volume is available for $8 from the University of Wisconsin Press or through local bookstores.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/28/58 er

RELEASE: 7:45 p.m. Sunday, Aug. 31

BY GENE ROARK

WASHINGTON, D.C.--(Advance for 7:45 p.m. Sunday)--Motherhood is obsolete. Among monkeys, at least. Baby monkeys are as happy with a dummy--made of wood, covered with terry cloth, and warmed by a light bulb--as with their real mothers.

This is one conclusion of long research by Prof. Harry Harlow and his associates at the University of Wisconsin Primate Laboratory, described tonight by Harlow in his presidential address to the American Psychological Association, meeting in Washington, D. C.

"Love is a wondrous state, deep, tender, and rewarding," Harlow said, and added, "It is of such import and intimacy that it is regarded by some as an improper topic for experimental research.

"The apparent repression of love by modern psychologists stands in sharp contrast with the attitude taken by many famous and normal people. The word 'love' has the highest reference frequency of any word cited in Bartlett's book of 'Familiar Quotations'," the Wisconsin psychologist pointed out.

Harlow, feeling that psychologists should study all human and animal behavior, and that poets and novelists had so far done a better job of describing love, set out to explore mother love in the macaque monkey.

"We know that the first love response is by infant to mother or surrogate," he explained. This fact--that the infant would accept a surrogate, or substitute for the real mother--led Harlow to replace monkey-mothers with dummies.

Baby macaque monkeys are mature enough when born to allow separation from the mother at the tender age of six to 12 hours. "The infant mortality

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rate was only a small fraction of what would have been obtained had we let the monkey-mothers raise their infants," Harlow reported.

"Our bottle-fed babies were healthier and heavier than are monkey-mother reared infants. We were better monkey-mothers than real monkey-mothers thanks to synthetic diets, vitamins, iron extracts, penicillin, chloromycetin, 5% glucose, and constant, tender, loving care."

Harlow and his co-workers noticed the fierce attachment of monkey babies for the diaper pads put in their cages. Harlow compares this to the devotion human infants have for favorite pillows or stuffed toys.

Apparently, Harlow said, "The baby, human or monkey, if it is to survive, must clutch at more than a straw."

Harlow found that monkeys raised on bare wire cage floors survived with difficulty if at all, but that those provided with a wire mesh cone did better. Carrying this farther, if the cone was covered with terry cloth, "husky, healthy, happy babies evolve."

Fron this observation came the idea of trying a false mother. A block of wood, sponge rubber padding, terry cloth "fur," and a warming electric light, were combined into a "perfectly proportioned, streamlined body stripped of unnecessary bulges and appendages."

This dummy or surrogate mother, Harlow pointed out, has certain advantages over the monkey-mother, from the baby's point of view. "The result was a mother soft, warm, and tender, a mother with infinite patience, a mother available 24 hours a day, a mother that never scolded its infant, never struck or bit its baby in anger."

This surrogate and one made only of wire mesh were placed in compartments next to the baby's cage. Automatic devices recorded the time spent by the infant cuddling or climbing on each of the two "mothers."

Among eight monkeys placed in this situation, four got their milk from a bottle set into the wire-mother's chest, four from the cloth-mother.

All the babies spent far more time snuggled up to the softer surrogate. The infants "nursed" by wire-mothers deserted the inhospitable and uncomfortable breast that fed them as soon as they had their fill.

Harlow's conclusion, that "contact comfort" plays a more important part than nursing in the development of love, came as a surprise. The love of the infant for the mother arises from her conforting presence, contact with her warmth and softness, more than from her ability to satisfy hunger.

To demonstrate his point, Harlow showed several slides of tender mother-infant scenes from the animal kingdon. These were accompanied by limericks:

To baby vipers, skin of scale
Gives contact comfort without fail.
For every species God has blessed
With kind of skin it loves the best.

Further experiments, using many monkeys under a variety of situations, seemed to confirm that monkeys, and presumably man, "cannot live by milk alone." Harlow's dummy-mothered monkeys proved to be just as affectionate and just as secure as their monkey-mothered kin.

If monkey babies are satisfied with dummy mothers, will human babies grow up successfully with a surrogate? Harlow suggested that, considering the way American women are threatening to "displace the American man in science and industry," it might be "cheering--to realize that the American male is physically endowed with all the really essential equipment to compete with the American woman on equal terms in one essential activity--the rearing of infants."

Going a little farther, Harlow suggested that nursing one's own children may even become a "form of conspicuous consumption limited perhaps to the upper classes."

"Whatever course history may take," Prof. Harlow concludes, "it is comforting to know that at least we have basic knowledge of the nature of love."

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

12/18/56

RELEASE: Immediately

(Editor's Note: This is the first in a series of four articles on the effects of radiation and the current scientific discussions over whether continued H-bomb testing and increased use of x-rays is endangering human welfare. This article briefly summarizes the problem as seen by four University of Wisconsin scientists.)

By RALPH CLARK

MADISON, Wis.--The total amount of radiation to which an average person is exposed has increased markedly during the past decade--but what its long-term effect will be, no one yet knows.

This, in short, sums up the opinions -- some strikingly conflicting -- of scientists studying the problem of the effects of radiation on the human body.

In the past year, two national scientific organizations have released reports on the pressing problem of whether continued H-bomb testing, the increasing use of x-rays in medical diagnosis, and even such daily affairs as using a shoe-store x-ray machine, are having harmful effects on the health of the American people.

Four University of Wisconsin scientists studying the problem are careful to point out that as yet "not enough is known about radiation to tell the whole story."

They do, however, have these comments:

"Any radiation that reaches the reproductive cells is a genetic risk, although we are uncertain how great the risk is," according to Prof. James F. Crow of the UW genetics department.

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ad one--effects of radiation on the body

Every bit of radiation striking the gonads -- sex organs -- will increase the percentage of sex cells harboring mutations, he said. When sperm or ova containing mutations are united, deffective offspring may result.

Everyone is exposed to a certain amount of unavoidable natural radiation. Fortunately, this radiation exists in low amounts. And use of x-ray machines is rendered safe radiologists say, in most cases by proper shielding of the sex organs from the rays.

Prof. John H. Juhl, UW radiologist, says: "The x-rays a normal, healthy person receives over the course of his life have little effect on his body, providing the reproductive cells are properly shielded."

There are other interesting aspects of the effect of large amounts of radiation. For one thing -- with the advent of the A-bomb and man-made highly radioactive materials -- scientists asked if large doses of radiation would affect mental ability.

Two University of Wisconsin scientists -- Harry Harlow and Paul Settlage -- are studying this problem. They have found, so far, that learning ability and behavior of monkeys seem unchanged even after large doses of total-body radiation. Harlow and Settlage are now using radiation to study the effects of aging. Since radiation speeds up normal aging processes, it has become a tool to study mental and physical aging processes.

But all scientists admit that research so far has only scratched the surface. The full impact of radiation on human and animal life is not known. Perhaps it will only be known after sufficient time has elapsed for any effects to appear in later generations.

(The second article of this series will explain in greater detail the objections of geneticists to continued H-bomb testing and uncontrolled use of x-rays.)

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

12/18/56

RELEASE: Immediately

(Editor's Note: This is the last in a series of four articles concerned with the effects of radiation on the body. This article briefly summarizes what scientists are doing to expand man's knowledge of radioactive materials.)

By RALPH CLARK

MADISON, Wis.--Scientists who are studying the problems of radiation and its effects on the human body are careful to point out that as yet "not enough is known about radiation to tell the whole story."

Experiments are constantly being devised in an effort to get below a surface that has only been scratched, and there are many ways scientists are going about it.

University of Wisconsin scientists recently gave two Java monkeys a 62-hour balloon ride to the height of 90,000 feet to learn more about cosmic rays.

The scientists -- Harry Harlow and Allan Schrier -- helped devise the test for the Air Force to learn the effects of cosmic ray radiation on learning ability and behavior.

But it was learned that the monkeys' ride with the clouds left no visible effects on them. In fact, tests showed that their behavior and learning abilities were as good if not better than those of two other monkeys that had stayed on the ground.

Harlow and a third scientist, Paul Settlage, next exposed monkeys to 100 roentgens of total body radiation every 35 days.

Again they found that the animals showed no decline in learning ability even though they developed all the signs of radiation sickness and premature aging and eventually died as a result of the exposure.

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The only effect of radiation was a reduction in total body activity -- to be expected as a result of the symptoms of radiation sickness, the two scientists pointed out.

The monkeys continued to maintain their normal curiosity and continued to work problems -- exploring new things and puzzle-solving -- for a food reward even though their appetite had declined.

The scientists are now studying the effects of small lesions, or injuries, on the brain induced by implanting radioactive cobalt seeds for short periods of time.

This study will be of considerable medical importance because it has been found that small brain lesions can often produce large effects -- such as a total loss of memory of habitual behavior patterns.

On the other hand, a small lesion, for some reason, produced greater disturbances than total removal of a portion of the brain of equal or greater size. The lesion apparantly sets off random and meaningless brain waves that disturb the normal operation of the rest of the brain tissue, the scientists reported.

Using radioactive cobalt seeds, the scientists will produce lesions and study their effects in greater detail in addition to developing surgical methods by which the effects of the lesions can be minimized. They also hope to learn what function certain portions of the brain perform in thinking and living.

The research being carried on at the University of Wisconsin is but one example of world-wide study aimed at digging deeper into the mysterious field of radiation.

While the UW scientists are experimenting with monkeys, other scientists elsewhere are using different "tools" to understand radiation.

In many laboratories, scientists are using mice. These animals are placed in small lead containers which shield all the body except the gonads, or sex organs. These organs are then exposed to x-rays and the mice are mated.

ad one--effects of radiation on the body

Finally, their offspring are examined for mutations, or changes in body characteristics, induced by the x-rays.

The tiny fruit fly -- so small it can hardly be seen with the naked eye -- is undergoing the same treatment. Although more time is required for mice to bear offspring as compared to the fruit fly, the larger size of the mouse makes it easier to handle and examine.

Sampling stations have been established throughout the world to measure fall-out from atomic weapons testing. The purposes of these stations is to estimate the levels of human exposure produced by radioactive fall-out at great distances from nuclear explosions.

The scientists are mainly concerned with strontium-90 and its bone-cancer producing properties.

Only through research will they be able to tell how many roentgens humans receive over their normal life span and what can be done to lessen the dosage.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

9/8/56 jl

RELEASE: Immediately

MADISON, Wis.--A long-term research project to study the effects of atomic radiation on monkeys throughout their entire lifetime will begin at the University of Wisconsin this year.

The study will be started with an initial grant of $172,500 from the National Institutes of Health. The grant, which will finance work during the first year of the program, was formally accepted by the UW regents Saturday.

To house the project, the Wisconsin Alumni Research Foundation has agreed to construct a $250,000 addition to the WARF building which is used by University's Primate Laboratory. Rent on the addition, which will be used exclusively to house the radiation project, will come from "overhead" on federal contracts.

The research project will have two broad purposes: to learn the direct effect of radiation damage upon the physiological function of the various organs; and to use radiation as a tool in studies of aging.

Wisconsin scientists who will direct the program include Harry Harlow, director of the Primate Laboratory; John Z. Bowers, dean of the University of Wisconsin Medical School; D. Murray Angevine, professor of pathology; Van R. Potter, professor of cancer research; Robert F. Schilling, professor of medicine and cancer research; and Paul H. Phillips, professor of biochemistry.

An associate director will be named to head the radio-biological aspects of the radiation project.

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ad one--radiation and primates

Wisconsin was selected to be the site of the project from among a number of schools by the National Institutes of Health.

Prof. Harlow and Dean Bowers pointed out that the great similarity between the primate body and the human body will permit the researchers to gauge the effect of radiation on humans by studying its effect on monkeys.

In addition, they added, radiation apparently speeds up the normal processes of aging, and by using it experimentally many of the processes of primate--and, thus, of human--aging can be studied intensively and under laboratory conditions.

"This program will permit an exhaustive testing of the actual nature of aging, in terms of all the sciences and processes with which we are familiar--biochemical, physical, and mental," Harlow pointed out.

The study, in addition, will permit the Wisconsin scientists to watch for any increases in leukemia and other cancers, eye cataracts and other ailments among the radiated monkeys.

In general, two types of radiation exposure will be utilized in the lifetime studies of their effects on the experimental animals--single, large but sub-lethal doses, and many, small cumulative doses of radiation, Harlow said.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

10/11/56 jl

RELEASE: Immediately

MADISON, Wis.--Learning ability and behavior seem to be nearly unaffected by large doses of radiation, according to two University of Wisconsin scientists who are studying the effect of radiation on primates.

The scientists--Profs. Harry Harlow and Paul Settlage--exposed monkeys to 100 roentgens of total body radiation every 35 days and found that the animals showed no decline in learning ability although they developed all the symptoms of radiation sickness and premature aging as a consequence of the exposure. They died in little more than a year.

Many learning tests were given during the period of the experiment in addition to observations of evidence of changes in the monkey's urge to explore new things and solve puzzles, changes in total body activity, and changes in eating habits and appetite.

"As far as we could make out," Harlow and Settlage reported today, "there was no effect, no deficit, produced on the learning and thinking processes of these monkeys, either from the acute effects of radiation or from the long-term effects such as aging."

The only effect of radiation was a reduction in total body activity--to be expected as a result of the symptoms of radiation sickness, the scientists pointed out, although the dose given actually produced few and minor symptoms of acute radiation sickness.

-more-

The monkeys maintained their normal curiosity and continued to work problems for a food reward even though their appetite had declined.

The research was conducted on an Atomic Energy Commission grant. The AEC has now provided an additional $40,000 for a continuation of the research at the University of Wisconsin's Primate Laboratory.

The new grant will be used partly to continue a study of the effect of small lesions on the brain induced by implanting radioactive cobalt seeds for short periods of time. The method of implanting the seeds is one developed by Settlage.

This study will also be of considerable medical importance because it has been found that extremely small brain lesions can often produce large effects. In fact, a small lesion, for some reason, produces greater disturbances than total removal of a portion of the brain of equal or greater size.

Settlage and Harlow have found that removal of a chunk of brain tissue often has little or no effect on the ability of monkeys--and, thus, of humans--to live and learn. But a small lesion at the same spot will often result in a total loss of memory of habitual behavior patterns. A growing tumor will cause similar effects.

"It seems as though an active pathological process causes more disturbances than actual removal of portions of the brain," the scientists point out.

Settlage added that there seem to be great differences in the effects of radiation on different species. The same radiation dose will cause much larger lesions on the brain of a monkey and cat than on the brain of a rat, for example.

These lesions apparently set off random and meaningless brain waves that disturb the normal operation of the rest of the brain tissue.

Using radiative cobalt seeds, Harlow and Settlage will produce lesions and study their effects in greater detail, in addition to developing surgical methods by which the effects of the lesions can be minimized. By the use of

cobalt seeds, they point out, lesions can be produced deep within the brain in areas never before studied in this manner. By knocking out portions of the brain with radiation, they will be able to learn what function these particular spots perform in thinking and living.

Such studies have been carried on for a number of years using surgery to remove parts of the brain, but the cobalt can be planted in areas so deep within the brain that they cannot be reached through the use of surgical techniques.

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U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

8/13/56 1h RELEASE: Immediately

MADISON, Wis.--Prof. Harry F. Harlow of the University of Wisconsin department of psychology has been elected president of the American Psychological Association, the University announced today.

He will assume office at the annual meeting of the association which will be held in Chicago starting Aug. 29. The association has 15,000 members.

Prof. Harlow has been at the University since 1930. He is founder and present director of the UW Primate Laboratory, and is noted for his research in the fields of learning, motivation, and physiological psychology. He is former chairman of the department of psychology.

During a leave of absence from the University in 1950-52, he served as chief of the Office Human Resources Research with the Army General Staff in Washington, D. C., an office which Harlow established.

Harlow is a member of the National Academy of Sciences, Sigma Xi, the Society of Experimental Psychologists, and the Midwestern Psychological Association. In July he concluded a two year term as chairman of the Division of Anthropology and Psychology of the National Research Council. He has also served as editor of the Journal of Comparative and Physiological Psychology since 1950.

Last April he was awarded the Howard Crosby Warren medal by the Society of Experimental Psychologists for his research in learning and motivation in primates.

A native of Fairfield, Iowa, Harlow received his B.A. degree from Reed College, Portland, Ore., in 1927 and his Ph.D. from Stanford University in 1930.

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

4/12/56 jl

RELEASE: Immediately

MADISON--Harry F. Harlow, professor of psychology and director of the University of Wisconsin Primate Laboratory, has been awarded the Howard Crosby Warren Medal, one of the highest honors in the field of psychology.

The award is given by the Society of Experimental Psychologists, a scientific society with membership composed of 50 of the nation's leading researchers in the field of experimental psychology.

The Warren Medal and accompanying award was presented to Harlow this week at the annual meeting of the society, held at the University of Illinois.

Harlow was selected as this year's recipient of the award "for a series of brilliantly conceived experiments on the behavior of monkeys, including studies of motivation, learning, and problem solving," according to the citation for the award.

The Warren Medal is the only award conferred for outstanding research in experimental psychology.

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1956 File 4677 Ler

Announcement has been made by the American Psychological Association that Harry F. Harlow, George Cary Comstock Professor of Psychology at the University of Wisconsin, has been elected to the office of President-Elect of the Association. Professor Harlow will assume office at the annual meetings of the American Psychological Association in Chicago this fall (August 29 to September 5) and will serve for the year 1956-57. In September, 1957, he will begin his term as President of the Association, which numbers 15,000 members.

Professor Harlow has been at the University of Wisconsin since 1930, when he was appointed Assistant Professor of Psychology. He is the founder and head of the Primate Laboratory. He is noted for his researches in the fields of learning, motivation, and physiological psychology and is the author of over one hundred articles in scientific journals and a contributor to a number of scholarly books. He is a former chairman of the Psychology Department. During a leave of absence from the University in 1950-52, he served as Chief of Human Resources Research with the Army General Staff in Washington, D. C., where he established the Human Resources Research Office for the Army.

Dr. Harlow is a member of the National Academy of Sciences, Sigma Xi, the Society of Experimental Psychologists, and the Midwestern Psychological Association. He served as president of the Midwestern Psychological Association in 1947-48 and president of the Division of Experimental Psychologists of the American Psychological Association in 1950-51. In 1954-55 he was chairman of the Policy and Planning Board of the American Psychological Association. In July he concluded a two-year term as chairman of the Division of Anthropology and Psychology of the National Research Council. He is editor of the Journal of Comparative and Physiological Psychology, a position he has held since 1950. He has also served as a consultant to the National Institutes of Health, the Army, the Air Force, the Navy and the Department of Defsense, and is currently a member of the Army Scientific

1956

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Advisory Panel. In April of this year he was awarded the Howard Crosby Warren Medal by the Society of Experimental Psychologists for a series of researches in learning and motivation of primates.

Professor Harlow is a native of Fairfield, Iowa, and studied at Reed College in Portland, Oregon, and at Stanford University. He received his B.A. degree in 1927 and his Ph.D. degree in psychology in 1930 from Stanford University.

Story & cutlines Primate Lab

copy sent to authenticated news 11/7/55 for picture story on primate lab.

JS + OHK

The University of Wisconsin Primate Laboratory is one of the best known psychological research enters in the world. In what was once a cheese factory, but is now a modern scientific surrounding, psychologists are busy ~~mmmmm~~ learning about man's growth, development and behavior. They are doing this by studying man's lower link in the evolutionary chain, the monkey.

The laboratory carries on developmental studies with baby primates that are separated about two hours after birth from parent animals to insure laboratory controls in the study of their behavior and development.

The laboratory conducts studies of the learning behavior of adult monkeys. Some of these are normal; others have had portions ~~mm~~ of their brains removed, to teach psychologists more about brain functioning. Some of this work is done in cooperation with the medical faculty at the University of Wisconsin.

Evolutionary changes in different monkey species are another sphere of study. At present the laboratory has over 80 test monkeys.

Studies are also under way on the effects of atomic radiation on monkeys, so that scientists can learn more about the effects of radiation on human beings.

Dr. Harry Harlow, University of Wisconsin professor of psychology, is director of the Laboratory.

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copy of cutlines sent to authenticated news, 11 7 55 for picture story on primate lab.

93951-C

Weighing time. The plastic bag is used to prevent the baby monkey from jumping off the scale and scampering about the room--obviously an unnecessary precuation in the case of this sleepy fellow.

93458-C

Despite the surprised expression, the infant rhesus appears to enjoy being held. But he is generally denied this pleasure except in the "line of duty" since nursery regulations strictly forbid any nonessential petting or fondling of animals.

93456-C

At a very tender age the infant rhesus monkey shows signs of the alertness and lively curiosity so characteristic of his older kinfolk.

S (maze picture)

A "Y" maze is designed to test simple "sign" behavior in baby monkeys. Food is always found in the alley with the dark-colored plaque at the end but never in the opposite one. Although adult monkeys have never been tied in this apparatus, it is liekly that they would rapidly solve the problem. As might be expected, it is more difficult for the babies who only learn the problem after many trials.

Z (infant hanging)

The infant monkey possesses an amazingly powerful grip. This little fellow, only a few days old, can easily support his weight by his hands. This is a very useful trait in the jungle where mother must occasionally release her grip on junior and use both hands in escaping a predator or attaining a particularly succulent morsel of fruit.

3397-M

This is no monkey business. Scientists at the University of Wisconsin Primate Laboratory are learning more about growth, development and behavior from these animals. This young rhesus at the laboratory is weighed daily and handled almost like a human infant to keep him fit. Although the baby monkey seems doubtful about the weighing, he needn't worry with Mrs. Robert Blazek nearby. She is assistant in the baby primate lab.

3398-M

It's bottle time for "Rhinestone" at the UW Primate Laboratory. Mrs. Robert Blazek, assistant in the baby primate project, feeds the test animal. Rhinestone will later perform tests enabling scientists to check the earliest development of his learning and manipulation behavior.

1614-M

There's a raisin under one of the objects. Faced with thedecision, an adult monkey with experience solving problems learns after one trial which object to pick. for rest see cutline 3/23/50, pic no. 1, primate lab. folder.

1616-M

If his memory serves him right, there will be a raising under the dish for this monkey. for rest see cutline 3/23/ 50 picture No. 3 in primate lab. folder.

92531-C

see cutline 3/23/50, pic no. 2, primate lab. folder.

A and B

The organ grinder's monkey shown in these pictures was an unsual performer. Called a "monkey genius" by Dr. Harlow, the Laboratory's director, the animal is shown first moving a box to a position under which food is hanging from above. Then the animal, who is tied with a chain, makes use of the box to stand on in order to reach the food. In picture B, he uses a bamboo pole to climb to the food, in this case raised too high to be reached from the box.

C

Here the organ grinder monkey has a difficult problem about solved. The food morsel was originally in the heavy cement covered pipe. He pushed the food from the middle of the pipe with the pole end of the hoe, and now has turned the hoe around to use in retrieving the food. He is, of course, chained from behind so he cannot reach thefood without solving this brainbuster.

U. W. NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

6/16/55

RELEASE: Immediately

MADISON, Wis.--Creation of two professorships bearing the names of noted University of Wisconsin faculty members of past years was approved by the UW regents Thursday and two outstanding University scientists--Profs. Harry Harlow and Olaf Hougen--were named to fill them.

The professorships have been established with income from University Houses, the faculty-student apartment project built in 1947 by the Wisconsin Alumni Research Foundation. The houses were given to the University in 1951.

Prof. Harlow, chairman of the Wisconsin psychology department, was appointed to the George Cary Comstock Professorship, named in honor of an early-day professor of astronomy who became the first director of the University's Graduate School in 1904, and later the school's first dean.

Harlow is one of the world's authorities on the psychology of learning, and is particularly noted for his psychological research on the primates. He is a member of the National Academy of Sciences, the National Research Council, and a psychological consultant to the Air Force.

Prof. Hougen, chairman of the department of chemical engineering, was named to the Charles F. Burgess Professorship.

Burgess became an instructor in engineering at the University in 1895, and began teaching the University's first course in chemical engineering in 1904. His important research in electro-chemistry led eventually to the founding of the Burgess Battery Co., Madison, a pioneer in its field.

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Prof. Hougen is internationally known for his application of the principles of chemical kinetics--mechanisms and speeds of chemical reactions--to the field of process design. His discoveries have been of great importance to chemical manufacturing industries throughout the world, and he has been the recipient of many awards and honors for his research in this field.

Both the Harlow and Hougen appointments are for five years beginning with the 1955-56 academic year.

Two similar professorships were established last year by the UW regents on funds received from the Wisconsin Alumni Research Foundation. They were the Homer Adkins and Leon J. Cole Professorships held by Prof. William S. Johnson of the chemistry department who is on leave during the current year to serve as visiting professor at Harvard, and Prof. Sewall Wright, noted geneticist who was brought to Wisconsin last year from the University of Chicago.

"It would be difficult to overestimate the value of the Wisconsin Alumni Research Foundation's gift of University Houses to the University's educational and research program," it was pointed out by Conrad A. Elvehjem, dean of the UW Graduate School and chairman of the UW committee which handles the foundation's grants to the University.

"It has helped the University solve a difficult housing problem, and is now giving substantial support to the University's teaching and research program," Elvehjem said.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

3/15/55

RELEASE: Immediately

By JACK SPEILLER

MADISON, Wis.--At the University of Wisconsin Primate Laboratory--one of the best-known psychological research centers in the world--psychologists are learning more about man's growth, development, and behavior by studying monkeys.

Scientists explain that monkeys lend themselves more readily to laboratory study than humans do because their mental processes are simpler.

However, experimental results with monkeys, properly interpreted, can often be used to further the knowledge of human activities. For example, much can be learned from monkeys of the value of rewards in speeding the learning process in children.

One of the laboratory's many projects is a study of baby primates, conducted by Dr. William Mason.

The normal development of baby rhesus monkeys born at the Primate Laboratory is studied from birth. These animals are separated about two hours after birth from the parent to insure complete laboratory control of their development.

Mrs. Robert Blazek, who assists in the project, explains the advantage of using baby primates.

"Here we have the opportunity of checking the earliest development of learning and manipulation behavior with standardized tests," she says. "We had a problem in the development of apparatus at first, for the baby monkeys were often too young to take solids for food reward tests, and often too weak to handle the regular puzzle problems given adult monkeys.

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"Our earliest tests used were based therefore on a manipulation drive, in which the animal's sole reward was an opportunity to explore or solve a mechanical puzzle."

Psychologists at the University of Wisconsin had earlier found that intellectual curiosity alone would inspire an adult monkey to solve a problem.

Dr. Mason suggests that there may well be a similar intellectual drive at work in the early development of our own children.

He and Mrs. Blazek point out that monkeys used at the laboratory are not raised as pets, although the first group were named members of the Stone family, "Rhinestone," "Loadstone," "Millstone," "Grindstone," and "Hearthstone."

Excess handling of animals is discouraged and a scientific surrounding is maintained. The animals are cared for almost like human infants from birth. They are fed every two hours at first, are kept on formulas, and are weighed daily.

Each monkey has his own cage, and is provided with a soft, warm piece of flannel. The monkeys like to hug the material, perhaps as a "mother substitute," Mrs. Blazek says.

Three types of tests are given experimental animals in this project. First are manipulation tests, where no reward is offered the animal but to handle the devices. Some of these tests, boards with latches to open, vary in difficulty.

The monkey may need to perfect three successful device openings to solve some of the harder ones.

A second group of tests are standard learning tests, like the string test "Millstone" performs.

A panel is lifted from the side of his cage. "Millstone" can now reach out and pull a string leading to a food cup holding a tasty snack. There are four metal strings leading to four different cups, but only one cup contains food. To make the problem harder, the strings are crossed. "Millstone" hesitates, pulls one of the strings, and an empty container heads toward the animal.

"He hasn't learned it yet," the experimenter explains. "The other monkeys have progressed farther, but 'Millstone' is slow."

Another standard learning test is the delayed response test. Here two identical objects are used to test the monkey's memory. In view of the primate, a raisin is placed under one of two dishes. After so much time is clocked, the monkey is allowed to pick one of them. If he remembers where the raisin is, he is rewarded with it.

A third category of tests is visual, and employs a modified "visual exploration chamber." This is a special cage with a windowed section into another cage, or chamber.

The test measures the amounts of attraction various objects put in the chamber have for the monkey. How long, for instance, will a monkey peer through the window at another monkey, or a ticking clock?

"The time spent by the animal in looking in to view the particular moving or still object, reveals data on the animal's exploratory drive," Mrs. Blazek explains.

The value of the baby primate project? The director of the University of Wisconsin Primate Laboratory, Prof. Harry Harlow, says:

"Information which can be obtained from the studies of the early behavioral development of the newborn rhesus will be of vast interest to the area of human development. We are now certain that we can trace the development of the so-called curiosity drives from birth. More study is necessary, however, before we can evolve a more comprehensive theory of human motivation."

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WIRE NEWS

9/25/54

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE: Immediately

MADISON, Wis.--The resignations of four University of Wisconsin faculty members were accepted by the UW regents Saturday.

The faculty members are Erich A. Farber, associate professor of mechanical engineering; Paul Farmer, associate professor of history; John L. Powell, associate professor of physics; and Glen W. Vergeront, assistant professor of dairy husbandry.

Prof. Farber has accepted a position in the department of mechanical engineering at the University of Florida, and Prof. Powell has accepted a position with Lockheed Aircraft Corp. Prof. Farmer is leaving the teaching profession, and Prof. Vergeront is resigning to begin his retirement.

In other personnel actions, the regents voted to confer emeritus rank upon Prof. Vergeront and upon Margaret H'Doubler Claxton, professor of women's physical education who retired at the close of the 1953-54 academic year.

Emeritus status was also conferred upon Mrs. Florence C. Stehn who retired June 30 from her position of assistant professor in the University Extension Division, and upon Hans F. Kirchberger, lecturer in political science in the University's Extension Division who retired in June after eight years with the extension center program.

Leaves of absence for two University faculty members were approved by the regents in other actions. Harry F. Harlow, professor of psychology, was granted official leave for the month of August to cover a period of teaching during a short summer session at the University of California.

Joseph Rossi, professor of Italian, was granted leave for the academic year to enable him to conduct research in Italy on a Fulbright award.

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WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

RELEASE:

7/11/53 Immediately

(WITH UW 1953-55 BUDGET)

MADISON--Top salary increases provided by the 1953-54 University of Wisconsin budget will go to 19 faculty members who received raises of $750 or more for the coming year, University regents revealed Saturday.

Some of the major increases go to faculty members promoted to new positions, some result from changes in Summer Session payments, others reward exceptional merit, University officials explained.

Those receiving raises of $750 or more include:

Profs. Ruth C. Adams, nursing; Robert W. Bray, animal husbandry; Jerome H. Buckley, English; Merle Curti, history; Truman F. Graf, agricultural economics; David A. Grant, psychology; Harry F. Harlow, psychology; Charles Heidelberger, cancer research; William S. Johnson, chemistry; Rudolph E. Langer, mathematics;

Gerald W. Lawton, civil engineering; Gerald A. LePage, cancer research; Gerald C. Mueller, cancer research; Quillian R. Murphy, physiology; Glenn A. Sonnedecker, pharmacy; Lionel W. Thatcher, commerce and economics; Assoc. Director Richard A. Siggelkow, teacher placement; Dean Kurt F. Wendt, College of Engineering; and Dean of Men Theodore W. Zillman.

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U. W. NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

4/24/52

RELEASE: Friday 2 p.m., April 25

CLEVELAND, O.--Rats seem to have a built-in urge to learn as much as possible even when they have no hope of reward for the knowledge they possess.

This is the finding of two University of Wisconsin psychologists, Robert W. Leary and Prof. Harry F. Harlow, who reported the result of research into the learning processes of rats Friday afternoon Apr. 25 at the annual meeting of the Midwestern Psychological Association in Cleveland.

The psychologists found that curiosity alone is enough to make a rat expend a good deal of energy learning the ins-and-outs of a circular "endless" maze in which trap doors open whenever the rat scuttles into certain recognizeable blind alleys. In the experiment, each trap door opened into another chamber of the maze, and the rats would continue to operate the doors just to see what was on the other side.

When the experimenters later offered a food reward for successful navigation of the maze, the rats that had been opening doors on their own initiative were much quicker at getting to the food than rats that had been permitted to run through the maze while the doors opened automatically every three minutes.

In other words, rats that have been exercising some initiative in exploring the maze learn the twists and turns much better than those to which all doors are automatically open.

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This finding ties in with other recent experiments which show that monkeys have a natural inclination to solve puzzles just for the sake of solving puzzles. Monkeys even enjoy solving the same puzzles over and over again.

The experiments with rats also show that the peculiar urge to learn and to satisfy curiosity exists in the lower as well as the higher mammals, although it is conducted on a simpler level in rats because the mental equipment of the rat is less capable of problem-solving activity than that of the monkey.

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WIRE NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

5/8/51 RELEASE: Immediately

Madison, Wis.—Harry F. Harlow, professor of psychology at the University of Wisconsin who is now on leave as scientific advisor to the U.S. department of the army, has been selected to deliver the 1951 James Arthur lecture at the American Museum of Natural History.

The James Arthur lecture is traditionally presented on the subject of the evolution of the human brain. Professor Harlow has selected as his special topic within that field "The Brain and Learned Behavior."

Since the establishment of the Primate laboratory at the University of Wisconsin in 1932, Professor Harlow has carried out extensive research in the field of learning and intelligence, using as his subjects both normal monkeys and those with experimentally produced brain damage.

The lecture will be presented Thursday evening, May 10, at Lecture hall, Roosevelt building, 79th and Central Park West, New York City.

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WIRE NEWS

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

4/25/51 RELEASE: Immediately

Madison, Wis.--Two University of Wisconsin professors were among 30 scientists of the nation to be elected to full membership in the National Academy of Sciences, meeting in Washington, D. C., Tuesday.

They are Dr. A. J. Riker, plant pathology, and Dr. Harry Harlow, psychology.

Dr. Riker, a 30-year veteran of the University faculty, was born in Wheeling, W. Va. He received his B. A. in botany at Oberlin in 1917, his M. S. in botany at the University of Cincinnati in 1920, and his Ph. D. in plant pathology at the University of Wisconsin in 1922. He specializes in diseases of plants, with emphasis on forest trees, what makes healthy cells start diseased growth, and what keeps them going. He is a member of 13 other scientific societies and is the author or co-author of nearly 100 scientific papers.

Dr. Harlow has gained national recognition for his work in comparative and physiological psychology and is especially noted for his work on the psychology of monkeys and the applications of such knowledge to problems in the human field. Born in Fairfield, Iowa, he was educated at Reed college, 1923-24, and Stanford, 1924-30, receiving the B. A. and Ph.D. degrees. He came to Wisconsin in 1939 and has authored more than 60 publications. He was president of the Midwest Psychological association in 1947-48. Currently Dr. Harlow is on leave of absence for work with the Research and Development divison of the army.

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FEATURE STORY

FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

3/23/50

RELEASE: Thursday, March 30

Pictures Available

By James Larsen

A University of Wisconsin scientist studying the effect of the removal of brain tissue upon the learning ability of monkeys has found that some monkeys with half a brain are more mentally adept than others with a full cranial quota.

This is, however, true only under certain circumstances, says Harry Harlow, professor of psychology, who has found that a "surprising" amount of brain tissue can be destroyed without intellectual incapacitation, and that training experiences will compensate for serious brain injury.

His work with monkeys may advance knowledge of the general principles governing the effect of brain damage upon human behavior.

The monkey's brain--like that of human beings and all higher animals--is divided into two identical right and left halves or hemispheres, Harlow explains. In a number of monkeys, an entire hemisphere was removed. Care was taken not to damage any of the sensory or motor areas of the brain.

All monkeys were tested for ability to learn to solve problems involving discrimination between objects and what psychologists call "delayed response," a memory test.

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Monkeys minus an entire hemisphere were inferior to normal animals in solving problems when all were equal in problem-solving experience, but experienced animals with "half a brain" were superior to untrained normal subjects.

"Thus it would appear that in this situation, half a brain is better than one if the trained half-brain is compared to the untrained whole one," Harlow reports.

"The large cortical lesion has produced a behavioral deficit, but it can be demonstrated only if we know the past histories of our subjects," he added.

In one difficult test, normal monkeys at first attained a grade of 7.5, while half-brained monkeys achieved only 3.9. Tested again a year later, the normal group averaged 7.8, the operated monkeys made 6.6.

"In a final experiment a year after the second test, no differences whatever were obtained between the two groups," Harlow said. "The operation appeared to produce serious deficit originally, but deficit which was overcome by training and some spontaneous recovery process."

There were, however, emotional differences between normal and "half-brained" monkeys. During the testing the normal animals sat quietly, while their operated partners showed signs of emotional disturbance, Harlow says.

"The superiority of the normal animals over the operated animals on the most complex problem was clear," he added, "yet the smartest of the half-brained monkeys did better than the worst of the normal group.

"It is apparently better to be a half-brained genius than a full-brained dolt," as Harlow puts it.

Striking results were obtained when Harlow removed portions of the remaining half-brain of the test monkeys.

Despite removal of frontal brain areas, the monkeys did better on the third series of discrimination tests than they did on the second.

Those with posterior portions of the brain removed did not do as well on visual discrimination tests as they had before, nor did they do as well as normal untrained animals.

In delayed response tests, however, the reverse was true. Those with posterior lesions did better than monkeys with frontal lesions. Monkeys with frontal lesions did better than normal untrained monkeys.

"The inferiority of the frontal-operated monkeys to the posterior group on the delayed response studies was almost exactly mirrored by inferiority of the posterior monkeys to the frontal monkeys in all discrimination tests," he pointed out.

"The monkeys have given us clear-cut data concerning the effect of experience and training on animals with cortical lesions," Harlow summarizes. "It has been clearly demonstrated that lesions in the frontal association areas produce intellectual loss, intellectual loss of a particular kind, intellectual loss not dependent upon mere motor or sensory deficit.

"Likewise, monkeys with large lesions in the posterior association areas have characteristic intellectual deficits, deficits of a type not associated with frontal area destruction. Instead, gross posterior damage produces its own special kind of intellectual loss, a loss involving the power to form efficiently various types of visual associations," he concluded.

Harlow doubts that either the science of anatomy or of behavior has yet attained the point where it is possible to "effect any minute correlations between locus of lesion and intellectual loss."

His work, however, is a step in that direction, scientists believe.

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University of Wisconsin News Service Immediate Release

Madison, Wis.(Special)--Harry F. Harlow, professor of psychology at the University of Wisconsin, was elected president of the Midwest Psychological Association at the recent annual meeting held in Chicago.

Prof. Harlow has done outstanding and world-recognized work in comparative and physiological psychology, and is especially noted for his work on the psychology of monkeys.

He came to the University of Wisconsin from Stanford University in 1930. Born in Fairfield, Iowa, in 1905, he received his bachelor of arts degree and his doctor of philosophy from Stanford in 1927 and 1930.

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By Harry F. Harlow Professor of Psychology

When the Forest Products Laboratory moved to its new million dollar building, most of the buildings it previously occupied were assigned to the College of Engineering. One building was deemed unfit for engineering purposes, and because it was unwanted by any other college or department, it became the Wisconsin Primate Laboratory. More than fifteen years have passed since this event, and during that time a long series of investigations has been made there on the behavior of monkeys.

Most people are apt to think of the monkey as an animal that belongs either in a zoological garden or the comic supplement page of a newspaper. Granting that he may be appropriately located in either of these places, we find that the monkey is a very useful animal for psychological researches. Because a greater degree of experimental control can be exerted over these lower animals than over man, psychologists for many years have used animals as subjects for studying basic behavioral laws. The essential principle of the scientific method is to control all extraneous factors while systematically varying specified factors. This is very difficult to carry out with human beings, who object to having other people running their lives or at least insist on being paid salaries if this is to be done. But monkeys, like rats, learn to like having their lives run by others and ask no salary other than a few dog biscuits, two carrots, and a hand-full of peanuts each day.

In many ways monkeys are the best of all subhuman subjects; they are far more tractable and less destructive than the chimpanzee

and they are far more intelligent than any subhuman animal other than the great apes. As a result, a wide variety of problems similar to those studied on man, can also be studied in the monkey. Monkeys learn simple problems with the greatest of ease and, with prolonged training, they can solve problems of bewildering complexity. Another great advantage of the monkey as a subject for psychological investigaitons of behavior lies in the fact that his brain is a simplified model of the human brain. All the basic landmarks of the human brain are to be found in the monkey brain, and anatomists and physiologists tell us that all the primary sensory and motor areas present in the human brain are also present in the monkey brain and in approximately the same relative positions. Since this is true there is every reason to think that information obtained in researches on the monkey concerning the relation between brain function and behavior will have reasonable application to man.

The monkey in the laboratory

People who see monkeys in a zoological garden often think of them as wild and ill-mannered caricatures of our own species. The monkey is a wild animal, but if he is treated kindly, cajoled with food rewards, and never frightened, he eventually changes. Even though monkeys seldom become real friends of people - and for this reason do not make good pets - the well treated laboratory monkey learns to accept people with good-natured tolerance and becomes a willing and even eager laboratory subject. In the years that we have worked at the Wisconsin Laboratory our monkeys have consistently been good, cooperative subjects and we have every reason to believe that this results in large part from the fact that they are treated kindly. Punishment is never used in our training procedures - it may be possible to abuse an animal into learning simple tricks, but you

cannot force an animal to "think" either by punishment or starvation.

Human and animal learning

Many people have the idea that learning in human and learning in subhuman animals differ very sharply and that there is an insurmountable gulf between the intellectual capacities of these two groups. It is commonly held that lower animals learn only by "trial-and-error", that is, that they must always try out the problem, fumble thorugh it, and finally catch on to it by accident, Human beings on the other hand are supposed to solve many, if not most, problems by reason or by insight - that is, through an ability to "see" the solution to the problem without the fumble-thorugh, trial-anderror process.

It may come as a surprise to realize that educated monkeys - animals who have graduated from our laboratory grade school - often solve problems by apparent reason or insight. One of our monkeys, for example, an organ-grinder monkey named "Murphy", was a "born" engineer - but more likely he learned these abilities. Some of his reasoning is indicated in the three accompanying illustrations. The first picture shows him pulling in a piece of food with a stick, but what the picture does not show is that the problem had been set up in such a way that he had first to use the little bamboo stick to pull in the middle-sized stick, and then use the middle-sized stick to pull in the long stick which he is holding in the picture to get the food! The second picture shows "Murphy" rolling a light wooden box under a piece of food which has been suspended just beyond his jumping range when he is unaided by the box. The third picture shows "Murphy" sitting on a box which he has trundled under a piece of food. A few moments later the little monkey had climbed up the pole balanced on the box, and

picked off the banana dangling from the "sky-hook." Surely only a cynic, or a psychologist, would possibly deny the ability to think to a monkey who could do these instrumental feats.

One of the types of items commonly found on tests of intelligence for school children requires the recognition of similarities and differences, a very simple kind of reasoning. We were interested in finding out whether monkeys, too, could solve a problem of this kind. To test them on this ability, we confronted them with a matching problem - a problem requiring the animal to pick out the object, from a group of otherwise different objects, which matched a model presented in a fixed position on a test tray. Since monkeys could learn to do this fairly easily we made the problem harder by forcing the monkey not only to recognize but even to remember similarities. Solution of the memory of similarity problem is shown in Figure IV. Here "Sally" has been shown a triangle with a piece of orange in the food-well underneath. As soon as she received her reward an opaque screen was dropped in front of her, the triangle removed, and four objects put on the other side of the tray - one a triangle. "Sally's" problem was to remember the object just previously pushed aside and to pick out its "match" from the four new objects now in front of her.

For the study of basic learning laws we have used a very simple problem quite extensively - the discrimination problem. The subject is presented two objects on a board, and is rewarded for choosing one of these regardless of its position. The accompanying drawing (Figure V) of the apparatus used in most of our studies, shows a two-object discrimination set-up. The monkey has pushed aside the correct object and has picked up the piece of food which lay in the food-well under the object. By employing many diverse

pairs of stimuli, and by varying the position of the correct stimulus in different trial sequences, we have been able to attack such questions as the factors which lead to errors in learning, and the role of past training in learning performance.

The discrimination technique has another advantage, too. It is readily adapted to children, and thus is a problem that offers an opportunity to study animals and human subjects in a situation that makes no unnatural demands on either species. The subject need only be able to see the objects clearly, reach, push an object and pick up a reward - responses employed in everyday living by both monkeys and children. The changes in testing conditions for the human subjects are relatively slight. The iron-barred cages have been eliminated and a play table and chair have been substituted. In place of food, which might interfere with mothers' careful training in eating habits, we give brightly colored macoroni beads which the children may trade for dime store toys at the exchange rate of twenty beads per toy. Needless to say, the children enjoy "playing games" as much as the monkeys like working for pieces of carrot and apple. In the photograph (Figure V1) the preschooler shown is being trained on the discrimination problem.

The assumption that there is no insurmountable gulf bewteen the intellectual powers of monkeys and human children was borne out by studies using this descrimination learning technique. The human subjects were a group of two-to five-year-old children, an age level chosen to keep earlier experience on similiar problems at a minimum. Both monkeys and children had never before been trained on any learning problem in the laboratory. Analysis of the data obtained from the two groups of subjects shows that the children made the same basic kinds of errors as were made by the monkeys.

Certain other differences did, however, appear. The children learned the problems somewhat more rapidly than the monkeys. The older children verbalized what they did and gave "reasons" for their behavior. Once the monkeys solved a problem they made very few errors afterward, whereas many of the children would make other errors even after explaining the solution of the problem. These children were apparently trying to find if there were any other possible solution.

After we had completed our comparative studies on discrimination learning in the monkeys and children, we tested both groups of subjects on a more difficult problem, the discrimination reversal problem. In the discrimination reversal problem the subject is trained initially to choose one object of a pair, and then to avoid this object and choose the previously incorrect object. Correct response on this double problem is illustrated in Figure V11, the child was first taught that the bead was always under the cube, and after he had learned this, the problem was changed without warning and the bead was henceforth always put under the pyramid. To solve the discrimination reversal problem the subject must not only form a habit but he must also break a habit. Both the monkeys and the children were trained on a series of these discrimination reversal problems just as they had been trained on a series of discrimination problems.

The superiority of the children over the monkeys was even more marked on the discrimination reversal problems than on the simpler discrimination problems. The children learned to solve the discrimination problems quickly until they had practiced on several dozen of them. But eventually all of the monkeys, like the children, did learn to solve the discrimination problems easily - indeed, they

reached the point where they almost always "caught on" to the solution after making a single error when the problem reversed.

Learning to think

In the various experiments we have described using monkey and child subjects we have talked about "sudden" or "insightful" problem solutions. These sudden solutions imply that the animal thinks out the problem without previous trying-out, exploratory behavior. Psychologists have long wondered how this "insightful" behavior arises. Is insight a function of innate intelligence or does it arise as a result of experience generalized from the previous learning of similar problems?

The answer to this question can only be given if the psychologist has a complete record of the learning experiences of his subjects so that he can interpret the animal's performance in terms of his learning history. The psychologist working with human subjucts has no such opportunity. Even the child subjects whose learning behavior was described came with a multitude of differential and unrecorded learning experiences which had modified them in indeterminable ways. Older human subjects, by virtue of their still more complex past, would have presented an even more confusing picture for the learning theorist to cope with. The impossibility of determining the effect of the subjects' past learning experience on present learning behavior has probably given rise to many false ideas as to the mechanisms underlying human learning and thinking.

To discover the effedt of learning history on subsequent learning of our monkey subjects, we analyzed the data from the series of over 300 discrimination learning problems and more than one hundred discrimination reversal learning problems. It was found that all of the monkeys learned to solve both the discrimination learning problems and the discrimination reversal learning problems

"insightfully". The animals behaved as if they could reason-out the nature of the problem in a single trial or two. By the time their training was complete they were almost as good on these particular kinds of problems as were college students. But our learning history data show clearly that their insight-learning did not result merely from an innate ability to "reason-out" the problem. Initially they learned both of these kinds of problems by slow trial-and-error, and their final ability resulted in large part from transferring previously learned habits to new situations.

There is every reason to think that "insight learning" in human beings also arises in the same basic way. Human beings, like monkeys originally must learn by trying-out, but they learn more rapidly and they generalize what they learn more broadly. The essential fact still remains, however, that men, like monkeys, have to learn how to reason. No matter how potentially smart a person may be at birth, he will never become an efficient thinking or reasoning person unless he learns through varied experiences to make full use of the potential abilities which he inherits.

The Role of The Brain in Learning

During the last twenty years brain operations in human patients have been made with ever increasing frequency. The brain consists of four main parts called the frontal, parietal, temporal and occipital lobes, which are located on the front, top, side and back, respectively. Surgeons have removed entire lobes from the brains of men and women having tumors or other organic ailments. More recently brain operations have been made on human patients suffering from serious emotional and personality disorders. These operations have usually not involved the actual removal of brain tissue but have instead, been confined to cutting the brain connections which lie beneath the surface of the various lobes. The most common of these operations, the frontal lobotomy, involves cutting the subsurface connections between the frontal lobes and the parts of the brain lying behind and beneath these lobes.

Almost everybody knows that the brain is the organ primarily concerned with learning and thinking. Since this is true it may seem surprising that very little is known about how the brain functions during learning and thinking, or what parts of the brain are primarily concerned with our various intellectual processes. It is obvious that if surgeons are going to subject the brain to operations in the treatment of organic conditions and emotional problems we should strive to increase our knowledge of the relation between thinking processes and the brain.

Study of the human patients who have been subjected to brain operations has given us some information concerning the effect of brain destruction on various kinds of intellectual processes. But human subjects are far from perfect for studies of this type. One

method of determining the effect of a brain operation on learning and thinking, is to obtain measures of the learning and thinking ability of the subjects prior to the operation and after recovery from the operation. The effect of the operation may then be determined by comparing the abilities of the subjects at these two times. Since surgeons cannot operate and remove brain tissue from human patients unless they are already ill, the preoperative measures of normal people and are apt to underestimate their mental abilities. A theoretically alternative approach is to pair normal and ill subjects on the basis of very similar past histories and to compare the normal subject's performance with the patient's post-operative performance. Since we cannot control past experience, however, it is almost impossible to obtain satisfactory control subjects. Great difficulty is also encountered in testing human patients for long periods of time after operation, since they usually leave the hospital and return to their homes and families. This makes it very difficult to determine the degree to which recovery can take place from brain injury. Finally, the surgeon can remove only pathological brain tissue in human beings, or cut in limited areas, whereas many different parts of the brain in various combinations may be ligitimately removed for experimental purposes in subhuman animals.

As we have already indicated monkeys make excellent subjects for the study of the brain localization of learning because they are capable of mastering varied and complicated problems, and because their brains are fundamentally similar in pattern to those of men.

Using monkeys as subjects we have investigated a number of fundamental problems concerning the brain localization of learning and thinking. The first and simplest of the problems that we attacked was whether destruction of lobes of the brain produces any measurable learning loss.

To answer this question we compared the learning behavior of six previously untrained monkeys with both frontal lobes removed, with that of four previously untrained unoperated monkeys. The normal monkeys were superior to the unoperated monkeys on all the tests that we made - the discrimination tests, the matching tests, and the delayed reaction tests, which are tests of recent memory. Thus, there appeared to be little question but that destruction of both frontal lobes did interfere with the ability of monkeys to learn.

In this operation brain tissue was removed from both sides of the brain. Such experiments do not demonstrate that there will be any learning loss if large amounts of brain tissue are removed from a single side of the brain. A critical experiment bearing on this phase of the problem was made in the Wisconsin laboratories by removing part of the parietal and almost all of the frontal, occipital, and temporal lobes on one side of the brain. Eight monkeys were used, the operation being carried out on the right side of the brain in four and on the left side of the brain in the remaining four. The behavior of these monkeys with almost half of the brain removed was then compared with the behavior of a group of four unoperated monkeys given exactly the same tests. Once again the normal monkeys learned better than the operated monkeys on all the tests that were carried out.

Thus, the experiments described show that destruction of lobes of the brain results in loss of learning ability whether the lobes removed come from both sides of the brain or from only one side of the brain. Although there is learning loss, the amount of the loss is far less than one might have expected. Even though large amounts of brain tissue were removed the operated monkeys could still learn the problems; they simply learned more slowly than the normal monkeys.

Indeed, on most of the tests the smartest of the brain injured monkeys learned more rapidly than the dullest of the normal control monkeys. The brain injury did not reduce the monkeys to any complete state of "idiocy" - it simply left them less mentally acute than they had been before.

The second question that we tested was whether or not any intellectual functions are localized in particular lobes of the brain. Many scientists have long believed that our most complex learning and memory processes are localized in the frontal lobes and that these functions would be lost if the frontal lobes were destroyed.

Our experiments with monkeys in which both frontal lobes have been destroyed show that these theories are not tenable. All these brain-injured monkeys solved the very complicated "matching" problems and some of them mastered the delayed reaction problems, which are measures of the most complicated of all kinds of memory - the memory for recent events. Our studies show, then, that no particular kind of intellectual process is exclusively localized in the frontal lobes, for we found no learning problem that was completely unsolvable by the monkeys after frontal lobe destruction.

By comparing the performance of the monkeys with brain damage on only one side of the brain with the performance of the monkeys with both frontal lobes removed, we did find evidence that certain kinds of intellectual functions were more severely affected (but not destroyed) by removal of the frontal lobes than by removal of as much or more tissue on one side of the brain.

The monkeys with the frontal lobes removed had particular difficulty in shifting their mental set when a problem changed during

the course of a day's testing. This function was measured by testing the monkeys on a series of antagonistic problems during a single day. These problems were complicated variations of the discrimination problem previously described, and a typical test is illustrated in Figure VIII. For 15 trials the funnel might be correct regardless of position, for the next 15 trials the right position might be correct regardless of the object there, for the third 15 trials the salt-celler might be correct regardless of its position, and for the last 15 trials the left food-well might be correct regardless of the object there. The problem for the monkey was to "catch-on" to the fact that the basis of solution frequently changed during the test period. The monkeys with the frontal lobes removed were particularly stupid on this test. They had "one-track" minds that made it very difficult for them to adapt successfully to the changing problems. On this test the smartest of these brain-injured animals was more stupid than the dullest of the normal control monkeys.

These data suggest that frontal lobe destruction produces especially great disruption of this ability to "shift set". It should be noted, however, that even this ability is not totally destroyed. In general, therefore, it would appear that although some kinds of learning abilities are more dependent upon the integrity of the frontal lobes than others, no kind of learning ability is completely or exclusively located in the frontal lobes.

Summary

The use of animals other than man has become commonplace and accepted in most of the biological sciences. The principles of genetics, the controls for diseases, the fundamental laws of physiology are discoveries which have been made possible by employing subhuman animals as experimental subjects. But in spite of the fact that the need for using subhuman subjects is accepted by the layman for the other biological sciences, he ofter questions their use in psychology. The purpose of our researches outlined in this brief paper has been to obtain information concerning the basic behavioral laws that operate in both normal and pathological human beings. Our choice of subhuman subjects has not been dictated merely by conenience, but by suitability for psychological research. In psychology, as well as in the other biological sciences, the final test of the basic principle is its applicability to man, but the complexities of the human being are such that the scientist often wisely tests out his theories initially on some lower animal form.

WIRE NEWS FROM THE UNIVERSITY OF WISCONSIN NEWS SERVICE, MADISON 6, WISCONSIN

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Madison, Wis.--The importance of understanding emotional problems as a factor in delinquency was brought out by Harry F. Harlow, professor of psychology at the University of Wisconsin, speaking at a general session of probation and parole officers meeting at the University this week.

Professor Harlow spoke Thursday afternoon on "Emotional Bases of Human Behavior," and was followed by Dr. Annette Washburne, professor of neuropsychiatry and preventive medicine at the University, who spoke on "Behavior Problems of Youth."

"Man is not a social animal," said Professor Harlow, "his social drives are a result of his intelligence and the cortex of the brain."

The emotions, he said, are not social. "They are strong, highly individualized, self centered, violent--and they produce violent internal changes--fighting changes--in the body."

To understand human behavior, Professor Harlow advised, keep in mind that the emotions are of egoistic, self centered, fighting animals, not of social animals.

(more)

He described five ways in which emotional learning differs from other learning:

1. I can be learned very early in life, 2. It can be learned very rapidly, 3. It may spread to other objects or situations, 4. It is not easily forgotten, 5. It can take place without the intention of learning.

"To understand a delinquent child it is necessary to understand the operation of the emotional mechanisms of rationalization, projection, and negativism," he said. These he described as aids in maintaining self respect.

Rationalization, he explained, is giving a false explanation for behavior instead of the true one. "This mechanism is operating constantly in everyone," he said.

Projection may not be as apparent, but it is the mechanism by which people justify their faults by seeing them in others, he explained. It promotes the feeling of having acted in self defense.

Negativism, Professor Harlow explained, is often thought of as pure stubborness, but is a mechanism typical of the people who are underprivileged in any way. It arises when there is a feeling of inferiority, he added, and has two definite periods in life. It is found first at the age of two and a half to four, and again during adolescence.

The treatment, he added, is kindness and sympathy, and the building of skills. "Faith in the ability to do one thing well might overcome the feelings of inferiority and negativism," he suggested.

(more)

Dr. Washburne also emphasized the importance of the emotional field in treatment of delinquency. "There is much stress and strain in the emotional field during adolescence," she said, "resulting from the attitudes of parents and teachers who expect adolescents to behave and accept the responsibilities of adults, but who fail to recognize that the individuals have not yet arrived at emotional maturity."

Insecurity during adolescence, she added, may be concealed by overcompensation--the tough guy--the rebellious one--or the one constantly calling attention to himself.

Other symptoms such as day dreaming, and mood shifts, may be exhibited. "Parents often are certain of serious mental problems in their children when they exhibit these symptoms," she said. "While they may be symptoms of mental disorder, they are more often symptoms of the struggle of the child to reach the stature of a mature person," she added.

The treatment, she pointed out, should involve study of the home, the individual's former actions, and the moods of the person.

The four day institute for parole and probation officers was sponsored by the University and the State Department of Public Welfare. About 100 officers attended to discuss the problems of parole, probation, and social work.

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" Monkey business" can be serious business and the Primate Laboratory of the University of Wisconsin has the proof.

Under the direction of Prof. H.F. Harlow of the Psychology department, the laboratory has a population of 200 Rhesus monkeys used in research to determine the cause and effect of emotion and environment on the little mammals.

Hour after hou r, day after day, dedicated research scientists patiently work with the animals in many widely varied experiments.

The laboratory, like many Wisconsin university departments and schools , was among the first to be incorporated in a university science department to work in experimental psychology.

From 1925, when it was inaugurated, to 1954 the laboratory was located on the Madison campus. Four years ago it was moved into a small building on Capitol court, between Mills and Charter streets. This vacated cheese factory served as its facility until a month ago, when a large new wing was xxxxxx completed.

Its original purpose was to determine the intelligence and performance of the monkey whose psychological reactions most closely resemble those of man.

In past years the monkeys were imported from India. They became increasingly difficult to get and recently the government of India xxx placed an embargo on them.

Without monkeys the laboratory would cease to exist , but far-sighted administrators came up with an answer to this. They would raise their own monkeys!

This decision/solved not only xxlvex the problem of monkey supply, but opened a wider field of experimentation, inlcuding learning capacity, social behavior and curiosityxx of the young.

When a baby is born (and one so obliged during our visit) it is allowed to remain with the mother only an hour or two. It is then taken to the "nur sery" where it is placed in a small cage on an electric heating pad, all 15 or 16 ounces of it. Themonkey infant is more advanced at birth than the human species. It has its eyes wide open and its earliest instinct,immediately present, is to grasp any object within reach. They are fed a milk, dextrose and vitamin formula xixhxx from a doll's nursing bottle.

It is estimated that a healthy infant monkey is worth about $1,500. Monkeys attain an average age of 35 to 40 years, but it takes five years to bring it to what is xx called the "adult" age.

Professor Harlow is conducting a unique and entirely new experiment known as the "mother surrogate project." He questioned the soundness of the theory that monkeys could be used in experiments to determine intelligence and performance through sight and sound alone. He believed that they were motivated by a sense of

For his test, which is not completed , and which will be the first of its kind to prove or disprove this theory, he xx devised the "surrogate mother." Its head is wooden, fashioned after that of a monkey, with red reflector eyes. Itxis The body is flat and made of soft wooly material. Another "mother" of wire in some instances and a flat board covered with the same wooly material in others is used to determine the young monkey's choice. One of each type is placed at the end of the cage, separated by wire. Beneath each side is an automatic counter. When the monkey scampers into his "mother's "lap,the counter is tripped and the minutes recorded on a dial.

Statistics to date indicate a strong desire for the device which resembles the real monkey.

A third phase of the experiment is to use two "monkey mothers", one stationary and one that rocks when the little monkey hops on her lap.

Thumb-sucking is prevalent among monkeys (the large toe does just as well) and Miss Laura Smith, a graduate student is delving into. the emotional cause. Presently she/is also studying the habit from a physical standpoint, nipple nursing. The infant is taught to lap its formula from a specially designed cup, which allows his tongue to reach the milk, but keeps his nose out of it.

Adult monkeys are put through many types of experiments, one of which is to determine social preferences. Three monkeys are used. Two are cage mates, the third an outsider. A cage mate and the third animal are put into cages inside a six-to eight-foot square wooden enclosure about ten feet high. Each cage may be opened electrically when the chain is pulled. The second cage mate is let into the enclosure and has to decide which monkey he will free. He is given two minutes and is watched from the outside, which is dark to conceal the presence of observers.

In two tests the active monkeys displayed opposite emotions. The first entered the cage, crouched and covering his head with hands, rocked back and forth. After several attemped approaches to the cages, interrupted with crouches and more head rocking, his time was up and he was removed. Three other monkeys replaced their predecessors and this time there was little hesitation. Almost immediately he approached the mate's cage and after a bit of "monkey business" grasped the chain and released him. This was followed by a moments of ~~the next~~ hectic play

The experiment has been in favor of a social preference for a recognized companion rather than the stranger. However, some of the more aggressive animals take advantage of the opportunity to indulge in a fight, and release the strange monkey for an opponent.

" Learning to learn" is a process which is repeated 150 to 200 times before it succeeds. An adult monkey is placed in a cage in which there is a table arrangement with three small concave impressions. A solid door, operated by the researcher, is lowered to obscure the placing of a raisin in one hole . Two similar and one odd object are placed over the holes.The door is opened and the monkey moves one object. If he is right he gets the raisin, if not the process is repeated with objects of other sizes and shapes. He eventually learns that the raisin is not always in the same place or under the same object, but it is a tedius and patience-provoking task to teach him.

Other tests include the effect of brain lesions on learning ability, the long time effect of radiation and many others designed to benefit that other primate-- Man.

Dr. William Mason of the psychology department is assistant director of the laboratory, and eight graduate research assistants are working for their doctorates. The laboratory employs between 25 and 30 students and 10 civil service employees.

Monkeys are susceptible to pneumonia and tuberculosis and the infants to digestive disturbances ; they have accidents such as most children do...one little fellow broke his wrist when he was a few days old and has it in a cast.

The vital statistics testify to the care given the occupants of Primate Monkey World... 200 of them... and only three fatalities.

Effects of Social Deprivation on Personal, Heterosexual and Maternal Behaviors of Rhesus Monkeys

Harry F. Harlow and Margaret K. Harlow

During the last two decades, intensive efforts have been made to analyze the ontogenetic variables that underly adolescent and adult behavior disorders. The historical antecedents of these problems arose much earlier and the description and clinical analyses of these behavior deviations has been a primary concern of psychoanalysts and psychiatrists ever since Freud's elucidation of the important role which early infantile experiences may have in directing and misdirecting personality development. The list of investigatows who have made important contributions to this problem is legend, but among those who have made unusually significant contributions are such names as: Spitz, Freud and Burlingham, Kanner, Goldfarb, and Bowlby. Common among the symptoms that are reported are disorders relating to heterosexual adjustment, inadequate maternal behavior, misplaced aggression, and anxiety. Early experiential factors that appear to play important roles are inadequate and inconsistent mothering and an external or self-imposed isolation with consequent social withdrawal.

Although the resolution of human problems can only be attained ultimately by the use of human subjects, significant information relating to the nature and analysis of the variables adversative to normal personality development may be obtained under more rigidly controlled experimental conditions using nonhuman subjects. Among the most significant of these researches are those of Beach, analyzing variables influencing sexual behavior in the rat, Liddell's studies of maternal deprivation in goats and sheep, Scott's studies of social deprivation of dogs, and the studies on the effect of total early social isolation of both dogs and rats which have come from Hebb's laboratory.

There is every reason to believe that important contributions can be made by analyzing the effect of early types of deprivation imposed on rhesus monkeys, since the monkey has closer kinship bonds to man than most nonhuman forms, undergoes a relatively long developmental period entailing close bonds between mother and infant, and subsequently enters stages of social interaction between infants that haveddefinite human-type analogies.

Most of the investigations to date, both clinical and experimental, have given primary emphasis to the importance of the mother-infant bonds, the interrelationship which we have described as the infant-mother and the mother-infant affectional systems, our first and fourth affectional systems, respectively. Less attention has been given to the very important role of the second affectional system, the infant-infant affectional system, on subsequent heterosexual, maternal, and personal adjustment. With human beings it is difficult, if not impossible, to unravel the differential role of the mother-infant relationships from that of the later appearing infant-infant relationships and subsequent adolescent and adult behaviors because family relationships confound all variables.

At the Wisconsin laboratory we have initiated studies on the effects of various kinds of mothering conditions and various degrees of social isolation on subsequent heterosexual, maternal and personal behaviors. For seven years we have been separating baby rhesus monkeys from their mothers a few hours after birth and maintaining them in the laboratory under various housing and mothering conditions. Our early efforts were directed solely to the analysis of the maturation of learning and only in the last few years have we come to recognize that capabilities that these infants offered for the analysis of the various affectional systems and the variables which determine their operation.

Our researches to date are in large part exploratory, represent attempts to form new social test situations and technqiues of measurement, and are in considerable part retrospective since some of our housing conditions had been

established before we initiated our developmental social researches.

Effects of total social isolation

One properly assumes that prolonged total or near total social isolation would produce the most devastating effects on later personality development as in the rare cases of human children confined from early infancy to darkened rooms or chained to a bed post. We have one such study of minimal mothering, actually no mothering combined with total social isolation. Two rhesus monkeys were housed in illuminated but totally enclosed steel cages so designed that the animals could be tested on learning tests by remote control without the monkey seeing any other living being but itself. At the end of this period the monkeys were tested in an observation cage, alone, together and with more normally raised monkeys. This two-year period of total social isolation apparently destroyed all subsequent capability for effective social interaction since the isolates merely huddled and crouched when alone and made no attempt at any social interaction when placed together. Subsequently the isolates were paired with other monkeys and here the isolates froze or fled when the other infant approached and made no effort to defend themselves from aggressive assaults by these strangers, even when the stranger was little more than half the size of the social isolate (see Figs. 1-4). After the tests were completed these monkeys were raised together in a single large metal cage but showed little or no social interaction. Two years after removal from total social isolation each isolate was again tested in the presence of other laboratory raised monkeys. Again they made no effort to interact and made only limited and inadequate efforts to defend themselves against aggression.

At the present time Rowland is measuring the effect of 6 month and 12 month periods of total social isolation but the investigation has not progressed to the point where we can assess the effects on later personal, heterosexual and maternal responsiveness. However, there is reason to believe that a six month period of total social isolation will be totally and permanently destructive.

A group of four rhesus monkeys were raised in total social deprivation (except for a cloth surrogate) for 60 days and a second group of four monkeys were raised in total social deprivation for 60 days combined with near total visual deprivation during the first 30 days. Subsequently these two groups of monkeys were given our standard 20 minute a day period of social interaction in the playroom situation illustrated in Fig. 2+3. As can be seen in Fig. 6 their early social behaviors were deficient but in a relatively short period of time these animals began to respond effectively with their peers.

Summarizing the data on total social deprivation it is in no way surprising that total social deprivation for two years, approximately half the way from birth to puberty for the male rhesus monkey should have devastating effects on subsequent social development and it would be surprising, indeed, if a full year of total social isolation did not have serious resultants. On the other hand we have evidence that there is a period of time when any ill effects are clearly reversable. ~~At 60 days of age there is clear cut evidence that fear of specific external objects is appearing in monkeys just as human children demonstrate fear and anxiety toward strange people and things at six to eight months of age.~~ We do not believe that there is any sharp or relatively sharp critical period when the effects of total social isolation cease to be reversable but instead hazard the guess that every additional month after 60, 90, or 120 days exacts an increasing toll against normal personality development of rhesus infants.

Effectsoof social semi-isolation

The effects of prolonged social isolation are dramatic and intrinsically interesting, particularly in view of the existence of theories of critical periods of social development. On the other hand there are ~~only~~ very few accounts of human counterparts and such studies can make only limited contributions to the broad problem of the effects of early experience on subsequent personal-social development.

We have achieved a rather drastic form of social semi-isolation by raising 50 newborn rhesus monkeys in bare hardware cloth cages, housed in racks (see Figs. 4, 5, 6) which permitted them to see and hear other monkeys but denied them any opportunity to make physical contact. It should be noted that this housing condition imposes two sources of affectional deprivation since the infant has no mother and also no opportunity to interact with other infants and form normal infant to infant affectional contacts. We described this condition as that of social semi-isolation without mothering. Four other babies were raised in similar cages but given access to a wire surrogate and more than 70 were similarly raised but given access to either a cloth surrogate or allowed to choose between a cloth or wire surrogate. (Fig. 7, 8 + 9) We described this condition as social semi-isolation with cloth or wire surrogate mothering. Because of limitations in number of living cages about half or all these social semi-isolate animals continued to live alone after 180 days and the other half were paired. However, the size of these cages was such that the pairs engaged in only limited interactions and to date we have uncovered few if any differences between the isolated monkeys or paired ~~monkeys~~ after a half year.

We are developing one other condition of social semi-isolation in which babies will live with their own real monkey mothers for 180 or 360 days but be denied any opportunity to interact with other monkey babies during this period and will describe this as the condition of social semi-isolation with monkey mothering. (Fig. 10) Eventually we will be able to assess the roles and relative importance of mothering, our third affectional system, and infant-infant interaction, our second affectional system on the development of the later maturing heterosexual and maternal affectional systems.

Effects of Semi-social isolation rearing

The effect of raising babies in the social semi-isolation of essentially bare wire cages was first measured by Mason, who compared social behaviors among a group of seven monkeys so raised with that of a comparable group of rhesus monkeys which had been captured and presumably had lived under normal feral conditions for six months to a year. The most striking difference lay

in the fact that the feral raised monkeys, both male and female, exhibited normal heterosexual behaviors, which as shown in Fig. 11 a/b, involve elevation of the tail and buttocks and depression of the head and shoulders and backward looking by the female, and dorso-ventral mounting, ankle clasp by the feet, and buttocks clasp by the hands of the male. None of the monkeys raised in the semi-isolation laboratory conditions showed normal heterosexual behavior. The males frequently approached the females and engaged in thrusting. However, their postural orientations were always inadequate and the male typically would clasp the partner's head or body, followed by lateral thrusting. The posturing by the female monkeys was equally inappropriate and the females frequently simply sat on their buttocks and stared into space when approached and contacted by the males. Fig. 13 a/b Solicitation of the males by the females was not observed. Mason also saw other indications of inadequate social adjustment. The feral raised monkeys engaged in normal, intensive grooming, whereas grooming was almost entirely absent in the laboratory raised and socially deprived animals. Furthermore, aggressive responses were both more frequent and more punitive in the laboratory--than in the feral--raised group. Mason supplemented these observations with an objective test of social interaction. See Fig. 14 He trained all the animals to open a simple mechanical device which locked the door of a wire mesh cage large enough to hold a monkey. ~~Five out of six of the~~ Six of the seven feral raised monkeys ~~at one time or another~~ consistently released a partner and interacted with him, whereas this was not true of any of the socially deprived laboratory monkeys.

The severity of the social affliction following social semi-isolation without mothering became emphasized when some two years ago we first started to try to breed our wire-cage raised animals after they had attained sexual maturity. In no case were we in any sense successful, since no animal, either male or female, exhibited normal sex behavior, and the pairing of male and female frequently resulted in such vicious fighting that it became essential to separate them to maintain survival. Preliminary attempts were then made to

mate these socially deprived monkeys with sexually adequate and experienced males and females from our breeding colony. These initial attempts were completely unsuccessful, since the females, even though in full estrous, resisted the approaches of the males, and the males showed a complete inability to adjust heterosexually to the females even though the females approached, fully presented, and in some cases attempted to manually orient the male. Violent aggression was common, particularly if there was disparity in size between the would-be partners. (See Fig. 15, 16 & 16a) Direct living cage observation of these socially deprived monkeys suggested that they suffered not only from heterosexual maladaptation but also from personal-social inadequacies. Various individual stereotyped behaviors were common. Many of the monkeys simply sat and stared apathetically into space, some spent a large amount of time clasping their heads and bodies in their arms and rocking back and forth like human autistic children, and some showed self-inflicted aggression, such as biting their own arms or legs. Such behaviors could frequently be released by a human being approaching and making a threatening gesture. In this situation a normal rhesus monkey aggresses against the person, whereas the socially deprived monkeys would instead aggress against themselves by viscious biting of their own arms or legs. (Fig. 17) circled compulsively about the cage, (18) (Fig. 19, 20, 21)

Another indication of abnormality came from home cage observation of the monkeys which we had been forced to pair at 180 days of age. In no case have we seen normal sex behavior between these cage mates that have lived together for as long as five or six years--proving that one can live in complete propinquity with perfect propriety as long as nobody cages. We doubt that these abnormal behaviors can be explained merely in terms of years of isolation, even though they appear to become progressively more frequent and intense with time, because our breeding stock, which were feral raised for the first six months to a year and subsequently individually housed, show these stereotyped behaviors much less frequently. These breeding stock monkeys frequently interact toward each other and they are aggressive toward a human being that aggresses against

them.

During the last two years we have been measuring sexual capabilities in some 20 monkeys, four (three males and one female) raised on inanimate wire surrogates and the rest raised on cloth surrogates or in the dual surrogate situation. Again it must be emphasized that these monkeys had no experience with monkey mothers and no opportunity to associate with other infants previously and develop normal infant-infant affectional relationships.

Attempts to induce breeding among these male and female surrogate raised monkeys, many of which are sexually mature (particularly the females) was totally ineffective during this test series. Again, it appeared that the primary source of failure was the inadequate sex posturing by both sexes. The females either sat on their buttocks or froze on the cage floor when approached by the male and the males posturing toward the female exhibited the random positioning previously described by Mason (see Fig. 22 and 23). There was no evidence that cloth surrogate mothering was better than no mothering whatsoever as measured by subsequent heterosexual adequacy.

When these monkeys were approximately 3 years of age we placed 18 of them on the monkey island at the Madison Zoo to determine if sex behaviors would appear when they were placed in a spacious and presumably rich environment. Fig. 24

It should be pointed out that monkeys, both male and female, raised in the wild for six months to a year exhibit normal sex posturing and copulation long before this age.

Within a few days the animals adjusted physically to this new world and socially to each other with the exception of two monkeys which were removed. Within a few days grooming, which was almost nonexistent before, appeared with essentially normal frequency and normal form. Fig. 25, 26, 27, 28 Effective dominance relationships were established and a number of clear-cut friendship pairs were formed. A limited amount of sex behaviors appeared but little if any normal female posturing and no adequate male behavior involving ankle clasp and intromission. Even accidental provocative female posturing elicited no adequate response from the male as indicated in Fig. 29. Finally we introduced a most effective breeding male on the island and in spite of his

cooperative attempts we observed no completely normal sex behavior and we are certain that no female was impregnated. Fig. 30 & 31

These data indicate that the presence of a surrogate mother, cloth or wire, is not an adequate source of stimulation to the infant monkey for the development of such that it will develop normal heterosexual behavior at maturity. We have some slim threads of evidence that cloth surrogate mothered monkeys raised in our semi-isolation social situation are less seriously maladjusted than our totally motherless monkeys raised in the bare cages. However, since we did not originally design these experiments to achieve goals of social measurement, there are confounding variables of long term housing conditions and differential age that make it impossible for us to provide precise answers. Thus we do not know whether or not a dummy mother is better, or conceivably even worse, than none at all in so far as personal-social development is concerned.

Role of monkey mothering on infant development

During the last two years we have conducted experiments designed to give information concerning the relative efficiency of real monkey mothers and cloth-surrogate mothers in terms of their capabilities to facilitate normal responsiveness in our second affectional system--the infant-infant affectional system--and the effects of the combined patterns of mother-infant interaction and infant-infant interaction on later developing heterosexual and maternal behaviors.

To achieve these ends we have raised three groups of four infant monkeys each in our playpen situation shown in Fig. 32, 33, 34, & 34a. Two of these groups of babies have been raised from birth onward by their real monkey mothers and the third group has been raised on cloth surrogates with individualized faces and differently colored terry cloth cloaks. As can be seen, each mother and infant lives in a large living cage attached to one of four playpen units and each infant is free to go from the home cage to the playpen unit through apperatures too small to permit egress by the mother. During the first 180 days of life, pairs of infants were observed two hours a day during which time they

could play in double playpen units formed by removal of a screen and during the second half year of life the infants were observed when playing in pairs and also in groups of four.

The infants raised by real monkey mothers, after 20 to 30 days of age when their mothers first let them leave the home cages, interact more effectively with their monkey playmates than do the babies raised by cloth surrogates. During the first year of life the infant-infant affectional system is characterized by the development of increasingly complex play patterns. The first is a game of rough and tumble play by jumping, scuffling and wrestling with no monkey even being hurt and is subsequently followed in large part by a pattern of ~~nonecontact play~~ playful pursuit in which monkeys chase each other back and forth in between relatively brief wrestling and rough contact play. Subsequently an even more complex pattern of integrated play--a play pattern of violent activity which involves contact with all objects--animate and inanimate--in the room.

The infants which have been raised by real monkey mothers develop these play patterns earlier than monkeys raised by cloth mothers and the more complex the play pattern the greater the difference between real mother raised monkeys and cloth surrogate raised babies. (Indeed, it is doubtful if the surrogate raised monkeys ever developed the complex pattern of integrated play)

There are no doubt multiple raasons why this is true. From early in life onward babies show a strong tendency to imitate or ape their mothers' behavior and this responding to another monkey's behavior probably transfers positively when interactions with other infants become possible. Infants may also respond genitally to the mothers even to the point of immature sexual mounting and thrusting. Finally the real mother from the third month onward frequently punishes her infant, for reasons the observers frequently cannot understand, and these responses no doubt facilitate cutting the maternal apron strings and facilitating the development of the second affectional system of infant-infant interaction. Contrariwise, the cloth surrogates are completely passive mothers that do not interact with their infants, never punish their babies, and never

encourage them to engage in play with other infants.

There is reason to believe that normal heterosexual posturing arises during the course of the maturation and development of these play patterns during the first and second years of the infant monkey's life. There are marked and statistically significant sex differences in nonsexual as well as sexual behavior of infant monkeys from the second or third month of life onward. The females are more passive, the males more rough and aggressive. The females seldom threaten or initiate rough-and-tumble play with males. They break away from the males, retreat, and assume passive postures with faces directed away from the advancing males. The males then approach, frequently clasp and tend automatically to assume dorsal-ventral posturing. Certainly, as is seen in Fig. 48, when monkeys have an opportunity to interact effectively with each other the incidence of normal male mounting is progressive.

Among the eight monkeys raised by real monkey mothers, normal sex posturing, involving full ankle clasp by the males, has been observed in seven during the first 20 months of observation and no adequate sex posturing has been observed in any of the four infants raised on cloth surrogates. Since none of the female members of these groups is sexually mature the effects of differential mothering on the maternal affectional system must remain for future determination.

Our playpen researches provide strong evidence supporting what would seem to be a self-evident fact--real mothers play a significant role in the psychosexual development of their offspring that cannot be supplied by an inanimate dummy mother even if it possesses maximal contact comfort and can impart to its infant comfort, attachment, affection and security. It is apparent that real mothering plays a significant role in the subsequent normal development of the infantile and heterosexual affectional systems but these researches do not prove that it plays an essential role for the development of the later maturing affectional systems.

Data which we have obtained from our playroom situation raise interesting questions to which we have no final answers. As can be seen in Fig. 49, the playroom situation is a room approximately 8 ft. high with 34 ft. of floor space. Into this room are placed such things as a revolving wheel, platforms, ladders, flying rings, mechanical puzzles and movable toys.

We have tested four (?) groups of four infants 20 minutes a day in this room while living with cloth surrogate mothers the rest of the day. All of our infants which have been provided this relatively limited opportunity to interact with other infants have developed very effective infant-infant affectional play patterns. It may be argued that the human experimentalist has played a real-monkey-mother role of separating the infants from the cloth surrogates for these daily play sessions but the infants invariably react to these play sessions with an enthusiasm that is almost beyond description. The problem is not that of bringing the infants to the playroom but taking them away.

One of our playroom groups, two males and two females have been observed far into the second year of life. All of these animals, both males and females have exhibited normal and appropriate male and female sexual posturing and normal sex behavior (Fig. 50 & 51). Although these data emphasize the importance of opportunity for normal development of infantile affectional responding--and affectional system given less theoretical and research attention than the maternal affectional system--they provide no information concerning the complex interacting roles which undoubtedly exist between mother-infant and infant-infant affectional responses in the development of monkey personal-social behaviors.

We have contrasted the behavior of monkeys raised in social semi-isolation which denies them opportunity to develop normal responsiveness to other infants with that of monkeys which are allowed to interact with other infant monkeys while undergoing various mothering conditions. In spite of our presently existing incomplete over-all design it becomes apparent that both the maternal and infantile affectional systems are of extreme importance for the normal development of personal and heterosexual psychosocial development. ~~Earlier we descibed certain of these psychosocial inadequacies in groups of monkeys~~

It would appear that opportunities to form normal and adequate response patterns is an absolutely essential requirement for adolescent and adult heterosexuality. Our information concerning the role of the mother-infant bonds can be achieved only by the normal, real monkey mother interacting with her infant. There can be no doubt that these real-mother behaviors greatly facilitate the development, both quantitatively and qualitatively, of the subsequently developing patterns of affectional relationships among infants. However, it is more than a possibility that the real mother is dispensible in so far as normal heterosexual behavior is concerned if adequate infant-infant play patterns can be established. This is not to be taken to imply that motherless monkeys are normal--heterosexual adequacy is only one of many patterns that would be required to assess normality in a rhesus monkey.

Sexual reeducation

Earlier in the paper we described various psychosocial inadequacies in groups of monkeys denied, or subjected to abnormal, mothering and infant-interact conditions. During the last year we have again attempted a program of sexual reeducation. A large breeding room, approximately 8 feet high, 10 feet deep and 14 feet wide was constructed and in it was put a tree trunk and a broad ledge. Sex behavior is inhibited by cramped quarters and facilitated by allowing the monkeys to move freely in a three dimensional world. Formal test sessions lasted for an hour and were observed through a one-way vision screen by an experimenter in an adjacent chamber. The monkeys were then left together, if they had not fought or if fighting had ceased, for 23 more hours and sex behavior inferred from the presence or absence of semen.

We have now tested some 20 males and 20 females (that never knew a real monkey mother) in this situation (using our best and most experienced breeding stock males and females as sexual partners) and the results appear quite definitive. Normal or adequate sex behavior has never been observed in any "motherless" male

who continue and persist in expending their sexual energies--which appear to be entirely normal--in infantile-type, disoriented mounts and when these fail by masturbation. It is not the sexual energy but the sexual outlet that is inadequate.

One bare wire-cage reared female has been impregnated and three cloth surrogate raised females have also validated heterosexuality by giving birth to babies. This does not mean that any of these four females showed normal sex behavior--they did not.

By and large, wire cage reared females try to avoid the males and if they are larger than their consorts they may attack them. The cloth surrogate raised females are more passive but they do not assume any form of normal female present and when the experienced male attempts to mount, they collapse instead of maintaining normal posture. In all four cases of pregnancy, and we believe that eight more are now pregnant, pregnancy has been achieved from the patience, persistence and ingenuity of the experienced maleswho have managed in one way or another to shape up the reluctant "unmothered" females. We have a single case of one cloth surrogate female that did not become pregnant during sex consecutively monthly mating sessions and now exhibits normal female posturing and positive soliciting of the male.

Behavior of unmothered mothers

We have made detailed observations on all four "unmothered" mothers and their infants from the first day of birth onward. The first of these mothers completely ignored her infant and during the first week of life sat in the front of her cage staring fixedly and immobily into space. We have never seen such catatonic behavior in any macaque monkey before--she would not respond to human threats and made no effort to defend or reprieve her infant when the

experimenters took the baby away many times a day and fed it. The mother's responsiveness was largely limited to repulsing any advances of its baby by placing hand on the babies head or baby and crushing the baby's face into the wire mesh floor of the cage.

The second and third unmothered mothers not only repulsed any advances by their infants but also repetitively subjected them to brutal punishment. When the infant approached it was beaten and these mothers even went over to and beat their infants when passive. Both mothers were observed to hang from the ceiling of the cage and beat the babies with both hands simultaneously. They would bite their babies while the infants screamed but they did not draw blood. We despaired for the lives of both these infants but both survived as the brutal response gradually gave way to passivity and indifference.

The fourth motherless mother was passive and indifferent but was not brutal and gradually assumed passive, indifferent acceptance, even to letting the infant nurse. The indifference of the mothers contrasted completely with the desperate efforts made by all infants to attain maternal contact. No amount of indifference no amount off punishment blocked the efforts of the infants to attach to the mothers. The strength, persistence and invariability of infant-love contrasted completely with the absence of mother-love. All of the infants tried and partially/ succeeded in attaching to the back of the mother. Maternal contact and presumed contact comfort (see Harlow and Harlow Sc. Amer.) even when it was attained solely by the baby's persistent efforts with no maternal response and persistent mother repulsion was such a strong reifnorcement that the babies would accept being brushed-off, kicked and beaten time after time merely for occasional contact reward of the skin they loved to touch. Occasional contact comfort was clearly prepotent over physical pain and contact alone was a self sufficient variable to maintain responsiveness to the mother by all infants. Actually, two infants eventually were able to worm their way around their mothers body and

and attach to the nipple and nurse. One of the two mothers never accepted this behavior and repeatedly separated her infant--one more eventually showed some passive acceptance.

It now seems certain that inadequate early experience, mothering and interacting with other infants is seriously, even totally destructive to the pattern of normal maternal affection. This certainly does not mean that there are no biological and hormonal variables underlying the operation of the maternal affectional system but it does demonstrate that early experiental variables are essential for normal monkey mothering.

Research on nonhuman animals, even monkeys, will never resolve the bafflingly complex problems of the role of various kinds of early experience on the development of normal personal-social behaviors in the human being. However, it is clear that important theoretical and practical problems concerning personal-social development can be resolved, and can only be resolved by the use of nonhuman animals. With monkeys we can independently vary the maternal affectional system and the affectional system of infant interaction, the infant-infant affectional system and find the nature of their interactions and the contribution that each makes to the integrated adult personality. Furthermore, we are now in a position to institute neurological and biochemical researches which will eventually enable us to unravel the basic neurological and hormonal variables which underly and determine normal and abnormal personality development.

prepared 1984

Awards

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1973 -- Gold Medal Award of the American Psychological Foundation. One of the highest awards in American psychology, the Gold Medal went to Harlow "in recognition of a distinguished and long-continued record of scientific and scholarly achievements."

1974 -- Annual Award of the Society for Scientific Study of Sex.

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1975 -- Third International Kittay Award. This is the most prestigious award in the field of psychiatry and goes annually to an "outstanding researcher in the field of mental health whose work represents a major contribution with practical clinical applications." At the time of his award, Science News praised Harlow's work as "important, fruitful, imaginative, ingenious, valid, original, creative and outstanding." Theodore Lidz of Yale University Medical School called Harlow's work "of extreme significance for understanding those aspects of human behavior related to depression, aggression or sexual dysfunction, which originate in the formative years of mother-infant interaction." George Serban, medical director of the Kittay Foundation, said Harlow's work "freed clinical psychiatrists from existent speculative concepts and unverified assumptions concerning the mother-infant bond and the development of depression."

Harry Harlow

Honorary, elected, and appointed positions

1939-40 -- Carnegie Fellow in Anthropology, Columbia University.

1947-48 -- President, Midwestern Psychological Association.

1950-52 -- Chief of Human Resources Research, U. S. Army.

1951 -- Elected full member, National Academy of Sciences.

1951 -- James Arthur lecturer.

1951-63 -- Editor, Journal of Comparative and Physiological Psychology.

1954-56 -- Chairman, Division of Anthropology and Psychology, National Research Council.

1955-74 -- George Cary Comstock Research Professorship, Psychology Department, University of Wisconsin--Madison.

1956-65 -- Consultant, Army Scientific Advisory Panel.

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1972 -- Named Honorary Fellow of the British Psychological Society.

1981 -- Named to appear in International Encyclopedia of the Social Sciences.

awards H. F. Harlow

~~Leading Lights~~ SF Bio

In 1959 the 86th Congress established a National Medal of Science to be awarded by the President to individuals "deserving of special recognition by reason of their outstanding contributions to knowledge in the physical, biological, mathematical or engineering sciences."

National Medal of Science - 1967

For original and ingenious contributions to comparative and experimental psychology, particularly in the controlled study of learning and motivations, the determination of animal behavior, and development of affectional behavior.

Dr. Harlow has shed much light on human behavior and mental development through study of the social behavior of monkeys.

Kittay International Award - 1975 (Oct.

for breaking away from traditional concepts of psychology in his research on the "attachment bond" between mother and child. . . The significance of his work for child psychiatry became more apparent in comparing the behavior of infant monkeys with those of human infants when placed under stressful conditions..."

1973- Gold Medal Award of the American Psychological Fdn.

Amer. Psychologist
Jan. 74

The Award is given to an American psychologist in recognition of a distinguished and long-continued record of scientific and scholarly accomplishments.

citation reads: "To Harry F Harlow—a creative scientist and dedicated investigator, he has enlarged the science of man through artful experimentation with monkey."

HARRY F. HARLOW

This year's recipient of the Gold Medal Award has built a distinguished scientific career upon the study of basic psychological phenomena that are simultaneously of great scientific interest and great social importance. It is fair to say that, while he has been concerned with learning and behavior changes accompanying maturation from infancy to adulthood, and while he has shown some interest in therapeutic communities, a larger share of his attention has been given to affective behavior—especially to the affective relations between parents and offspring and to the pathologies of these relations. Although he would surely agree that "love is not enough," it is clear that he believes love is in first place, and that whatever is second is quite a few furlongs back. He has lectured and written extensively on the insufficiency of love and is probably best known to the general public for his views on this topic. Indeed, numbers of American mothers may have been influenced in how they behaved toward their children by hearing or reading his views.

p. 48
American Psychologist
Jan. 1974

Continued

Dr. Harry F. Harlow
Professor of Psychology
Director of the Primate Laboratory
Director of the Wisconsin Regional Primate Research Center
University of Wisconsin, Madison

News and Publications Service
University of Wisconsin

Dr. Harry F. Harlow is internationally known for his work in primate behavior at the University of Wisconsin Primate Laboratory at Madison. His more than 35 years of research has included studies of learning, motivation, and physiological psychology.

A native of Fairfield, Iowa, where he was born Oct. 31, 1905, he obtained both his B.S. in 1927 and Ph.D. in 1930 from Stanford University. He came to the University of Wisconsin in 1930 as an assistant professor of psychology, and was named an associate professor in 1938, a full professor in 1944.

Dr. Harlow founded the Primate Laboratory soon after his arrival in Madison, and has been its only director. The author of more than 200 scientific articles, he served as editor of The Journal of Comparative and Physiological Psychology from 1951 to 1963.

A former chairman of the UW psychology department, he served as consultant to the National Institutes of Health, the Army, Air Force, and Navy, Department of Defense, and the Army Scientific Advisory Panel. From 1950 to 1952 he was chief of Human Resources Research for the Army General Staff, Washington, D.C.

His record also shows service as chairman of the American Psychological Association policy and planning board in 1954-55, and APA president in 1957-58. In 1964-65 he served as president of the division of comparative and physiological psychology of the same association.

In April, 1956, Dr. Harlow was awarded one of the highest honors in the field of psychology, the Howard Crosby Warren Medal of the Society of Experimental Psychologists, based on his research in learning of primates. In August of 1964, he and his scientist-wife, Dr. Margaret K. Harlow, presented papers at the First International Congress of Social Psychiatry in London. In 1965 he was named to deliver the annual Sigma Xi lectures at 11 eastern colleges, and was selected as a

- more -

member of the editorial board of Elsevier Publishing Company, London, Amsterdam, and New York.

Dr. Harlow is a member of the National Academy of Sciences, National Academy of Arts and Sciences, National Society of Sigma Xi, and Phi Kappa Phi.

He has lectured in England and Italy, and in all parts of the U.S.A. He was called to Washington, D.C. by Pres. Johnson to witness the signing of the Health Research Facilities Amendments of 1965.

A fellow of the American Academy of Arts and Sciences, Dr. Harlow was elected vice president of Section J (psychology) of the British Association for the Advancement of Science in 1964. On Feb. 13, 1968, he was awarded the National Medal of Science by Pres. Lyndon B. Johnson in a White House ceremony.

Dr. Harlow's international reputation has been established by his studies of primate learning, brain function, motivation, and social development. His research on primates has led to a greater understanding of the psychology of mankind.

Harry Harlow
Professor of Psychology
University of Wisconsin-Madison 1930-1974

AWARDS	Year	Rationale
Carnegie Fellow in Anthropology Columbia University	1939-40	
George Cary Comstock Professorship	1955	
Howard Crosby Warren Medal	1956	Outstanding Research in Experimental Psychology
Invitation to present the Alvarenga Prize Lecture	1965	
Visiting Professor, sponsored by the Brittingham Foundation	1966	
National Medal of Science	1968	Medals are the highest tribute of the federal government for distinguished scientific and engineering achievement
Who's Who in Science	1968	Development of new hypotheses in neurophysiology, love and motivation
Honorary Fellow of British Psychology Association	1972	
G. Stanley Hall Medal, American Psychological Association (w/late Margaret K. Harlow)	1972	"Distinctive contribution" to developmental psychology
Martin Rehfuss Award	1972	Distinguished Service to Medicine
Gold Medal Award of the American Psychological Foundation	1973	"In recognition of a distinguished and long-continued record of scientific and scholarly accomplishments"
Kittay International Award	1975	for work on the "mother-infant attachment bond" in primates
Named to International Encyclopedia of the Social Sciences (peer-selected roster)	1981	

HARLOW/Add 1

APPOINTMENTS AND ELECTED POSITIONS

Witness to the signing of Health Research Facilities Amendment by President Lyndon B. Johnson

Fellow of American Academy of Arts & Sciences (1961)

Elected vice president of Psychology section of the British Association for the Advancement of Science (1964)

Editor of Journal of Comparative and Physiological Psychology (1951-1963)

Named to deliver Sigma Xi lectures (Mid-Atlantic states) (1965)

Chief of Human Resources Research for Army General staff, Washington, D.C. (1950-52)

Chairman, American Psychology Association's policy and planning board (1954-55)

American Psychology Association president (1957-58)

Midwest Psychology Association president (1947-48)

President, American Psychology Association's division of comparative and physiological psychology (1964-65)

President-designate of the division of anthropology and psychology of the National Research Council (1953-54)

National Advisory Council for Health Research Facilities (1960)

Member, editorial board of the Elsevier Publishing Company

SOCIETIES, Memberships in

National Academy of Sciences

National Academy of Arts & Sciences, elected full member in 1951

National Society of Sigma Xi, 1965
appointed national lecturer, 1965

Phi Kappa Phi, 1963

National Research Council

American Philosophical Society, 1957

Society of Experimental Psychologists

American Association for the Advancement of Science

American Academy of Arts & Sciences

PROF. HARRY F. HARLOW

Biographical Sketch, October 7, 1958

Born Fairfield, Iowa, October 31, 1905.

Attended Reed College 1923-24; B.A. from Stanford 1927.

Ph.D. 1930, Stanford

Assistant Professor Psychology, Univ. of Wis., 1930-38

Associate Professor Psychology, Univ. of Wis. 1938-44

Professor Psychology, Univ. of Wis., 1944 to present

Carnegie Fellow in Anthropology, Columbia University, 1939-40

Founded and headed the Primate Laboratory for most of this period.

Noted for research and publication in fields of learning, motivation, and physiological psychology.

Author of over ~~100~~ 130 articles in the literature, contributor to several scholarly books.

Former chairman of the University of Wisconsin Psychology Department.

Member of Sigma Xi, National Academy of Sciences, the Society of Experimental Psychologists, and the Midwestern Psychological Association.

Served as president of the Midwestern Psychological Association, 1947-48.

In 1954-55, he was chairman of the Policy and Planning Board of the American Psychological Association.

President-designate for 1953-54 of the division of anthropolgy and psychology of the National Research Council.

Leave of absence, 1950-52, to serve as chief of Human Resources Research for Army General Staff, Washington, D.C.

Served as editor of the Journal of Comparative and Physiological Psychology.

Also served as consultant to the National Institutes of Health, the Army, Air Force, and Navy, the Department of DEfense, and the Army Scientific Advisory Panel.

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Served as president-elect (1956-57) and president of the American Psychological Association, 1957-58.

#

Harry F. Harlow

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1981 -- Named to appear in International Encyclopedia of the Social Sciences.

5/10/49

FACULTY INFORMATION SHEET
University News Service
The University of Wisconsin

NAME HARRY F HARLOW

POSITION (academic rank, department, date of appointment, etc.)

PROF PSYCHOLOGY 1944 —

PREVIOUS POSITIONS YOU HAVE HELD (please give status, institution, dates

ASST PROF 1930 - 38

ASSOC " 1938 - 44

CARNEGIE FELLOW ANTHIROPOLOGY

COLUMBIA U - 1939-40

EDUCATION (please give dates of degrees granted or dates of attendance)

Undergraduate college REED COLLEGE 1923-24

STANFORD 1924-27 B.A.

Graduate college " 1927-30 Ph D

SPECIAL FIELD(S) OF STUDY OR RESEARCH (give dates of completion of any major projects)

COMPARATIVE, obviously particularly monkeys.

LEARNING

IF YOU HAVE A FAVORITE PHOTOGRAPH OF YOURSELF, PLEASE ATTACH A GLOSSY PRINT, OR INDICATE WHERE WE CAN SECURE ONE.

I will send one later

PUBLICATIONS (dates) some 60 publications + some 30 others from the lab.

(I enclose 3 reprints which are illustrative → the learning sets article has attracted wide attention

HONORS AND/OR AWARDS YOU HAVE RECEIVED (dates)

HONORARY FRATERNITIES, SOCIETIES, CLUBS TO WHICH YOU BELONG (list dates of offices held) SIGMA XI, SEC. WIS 1942-44
GAMMA ALPHA
APA,
MPA, PRESIDENT 1947-48

DATE AND PLACE OF BIRTH FAIRFIELD, IOWA, OCT 31, 1905

IF MARRIED, GIVE WIFE'S MAIDEN NAME AND NAMES AND AGES OF CHILDREN
MARGARET KUENNE
(DIVORCED FROM CLARA MEARS)
ROBERT M. 9 YR
RICHARD F. 6 YR

IN ADDITION TO THE ABOVE "WHO'S WHO" TYPE INFORMATION, WE WOULD APPRECIATE A FEW INFORMAL NOTES ON THE CLASSES YOU TEACH, YOUR HOBBIES, YOUR SERVICE OR WAR WORK, & ? PUBLIC SERVICE, ETC.
Animal behavior - Primates - a course on "monkeys apes + men"
tennis until I became too old
bridge

(please use reverse side of these pages for additional information)

ABSTRACT

A Theory of the Development of Affection in Primates

Harry F. Harlow

University of Wisconsin

It is proposed that the affectional life of primates--monkeys, apes, and men--is encompassed by four progressive affectional systems: the affectional pattern of infant for mother, the affectional pattern of child for child, the heterosexual affectional pattern, and the maternal affectional pattern. Each of these patterns progresses through definable stages, and the nature and strength of each pattern is in large part determined by different variables. Furthermore, the importance of many variables may change, even within a single stage of a single affectional pattern.

Using rhesus monkeys as subjects, research on the affectional pattern of the neonate and infant for the mother suggests that there are four different stages within this pattern, namely the reflex, the attachment, the security, and the independence affectional-stages.

Analysis of the variables underlying infant-to-mother affection reveals that the infant is initially bound to the mother by the contactual and nursing mechanisms which first appear as automatic, stereotyped responses, reflexes, or tropisms, and is also bound to the mother by fear responses which develop during the attachment affectional phase. Curiosity and manipulation are the primary infant-mother separating mechanisms and may be supplemented by the behavior of the mother animal toward the infant itself. The

infant monkey gradually develops independence from the mother through these mechanisms operating during the security affectional stage.

In the neonatal rhesus monkey both contact and nursing are operating affectional variables even though contact is always more important than activities associated with the breast. Nursing ceases to be a variable of measurable importance after 100 days of age and certainly is not the mechanism producing the strong and relatively permanent feelings of affection held by the child for the mother. Contact and nursing are not the only variables that bind the infant to the mother. Rocking motion appears as a mechanism of measurable importance even though it, like nursing, disappears during the second hundred days of life. Clinging can be demonstrated to operate as an affectional variable, either independent of contact or as a mechanism augmenting contact. It is possible that seeing, in and of itself, becomes an affectional variable of a delayed maturation type.

There is little reason to doubt that the same variables determining the infant monkey's affection for the mother operate in the human being. The baby monkey differs from the human baby in two fundamental ways: it is more mature at birth and develops approximately four times as fast. During the first year of life there is close similarity both in the form of expression and developmental stages of their emotional patterns and intellectual growth. Striking differences are the failure of the monkey to develop a smiling

response or spoken language. Only in these traits does the year old monkey appear to be inferior to the year old human infant and in many traits such as general learning capacities, the monkey is far ahead.

At the present time, researches are being initiated analysing the nature and development of affectional patterns between infants. It appears that progressive phases can be identified in these interactions, although the individual variability is greater than that found in the infant-mother pattern. Our preliminary investigations are studying the effect of various maternal and physiological variables.

Harlow, Harry

DO NOT USE

There exists on this campus a unique institution that 300 rhesus monkeys call home. This is the University of Wisconsin Primate Laboratory. The lab is in great measure the result of the efforts of Dr. Harry F. Harlow of the Department of Psychology and is the largest in the world that uses rhesus monkeys for primarily non-medical purposes.

In 1930 Dr. Harlow came to Wisconsin after receiving his PhD from Stanford. Because of his interest in comparative psychology he was soon conducting experiments with an orangatan, a baboon, and some monkeys at the Vilas Park Zoo. Impressed by the responses of the monkeys and especially by the relative ease of handling them for testing as compared to an orangatan or baboon, Dr. Harlow asked for space to begin a monkey laboratory of his own.

In 1933 the tiny old wooden building behind the Hasty Tasty and the railroad tracks which has now been remodeled as the Solar Energy Lab became the first University Primate Lab for behavioral research with monkeys in the United States.

The reputation of both Dr. Harlow and his monkeys grew rapidly in the 1940's because of his work on discrimination learning sets in which it was shown that monkeys "learn to learn," i.e. that monkeys learn from previous and similar problems how to attack and solve a new problem.

The lab continued to expand and in 1954 a small group of pregnant females was obtained so that the organization could grow from within.

After the birth of the first few infants, Dr. Harlow moved his rapidly expanding family into an old cheese factory which WARF had turned into a model home for monkeys. With more room came the decision to enlarge the breeding program and two stalwart males were purchased as part of the "do it yourself" philosophy of the laboratory. This was the first largescale attempt at raising the infant rhesus without its mother.

Those two monkeys with the aid of about five others later added to the staff have done a yeoman's task, for there have been one hundred and twenty-four baby monks born here since breeding began.

It was discovered that successful breeding depends on keeping charts of each female's monthly cycle which averages about 26 days as compared to 28 in humans. From information obtained by inspecting the charts the female is caged with a male for what calculations have shown to be the three most fertile days of her cycle. With luck, an infant rhesus is born in five and one half months.

Like the human infant, at birth the rhesus has a limited number of responses released by a small group of stimuli arranged in a heirarchy. If two stimuli are presented simultaneously, the infant consistently responds to the one highest on the heirarchy ladder and ignores the other. To illustrate, if the ventral, or front, portion of the newborn is not in contact with something to which he can cling he vocalizes and struggles vigorously. Once contact is achieved, the infant clutches the object firmly. One always finds a newborn sleeping on his stomach and if lifted from his bed he will make cries and struggle unless raised so that his stomach has contact with a hand, a diaper, or the like. However, if the infant is clinging to some object and one places something like a finger or a rod in his hand, this

elicits a grasp so powerful that the baby can be lifted and will support his entire weight with one hand for a long time. He protests vigorously at being dragged from his diaper but the grasping response has precedence over the clinging response and he cannot release his grasp despite the fact that he cries and kicks at being deprived of his warm diaper. These responses are probably arranged in heirarchy because of their adaptive significance. If clinging were stronger than grasping, mother monkey couldn't remove a baby who was clinging to her or some other object without risking squeezing or crushing the infant while prying him loose. So nature has provided a way of making life easier for mother monkeys who want to remove baby for cleaning and humans who want to take baby from a cage for testing. This grasping reflex is present in neonatal humans for a short period after birth also and is an example of the similarities between the two organisms.

Another example that further illustrates how adaptive are the responses of the newborn monkey is his response to sounds. He will always turn his head towards kissing sounds but not to taps on the table or to sung tones. The kissing sounds have high frequency components and irregular rhythms common to the sounds that mother monkey makes.

To be of any practical use, the infants have to be separated from the mother as soon after birth as possible. Separating a clinging infant from his mother is quite difficult, and the effort required to separate baby from mother for daily testing would cause more wear and tear on all concerned than the end result would justify. Even more important, the babies are extremely valuable and the mortality rate for infants left with the mothers is much higher than for those carefully attended by the lab's nursery staff. Unfortunately, some rhesus mothers, who do not seem to have heard that the maternal drives are supposed to be innate in monkeys, neglect their babies.

But the normal pattern is for mother to clean the infant and eat the placenta. She does not place the infant in the nursing position; it is his job to seek out her breast for his first meal. Should he prove too weak at birth to make the climb or be unable to locate the nipple, his survival would be unlikely. Then, too, there have been a few cases where the baby will not begin sucking when an attempt is made to feed it from a bottle and a nursery aid must manipulate his mouth to induce sucking motions before he receives nourishment. In a few days, such infants are feeding normally, but left with his mother such a baby would either learn to suck by himself or die. Of course, in the wilds this would be natural selection with only the best fit for monkey life surviving. In a laboratory, the desire is that every baby born should survive.

Because the infant does not have his mother's warmth, he is given a heating pad during his first week of life. It was noticed early that monkeys left alone after the removal of the heating pad survived with difficulty, but seemed to do better if given a diaper or some soft object to cling to. Then it became apparent that as he grew older, the infant dragged his happiness and security diaper around with him and was quite upset if it was removed for sanitary purposes.

It was decided to carefully observe and measure the attachment which the monkeys developed for an inanimate object present in their cage from birth. For this the surrogate mother was created. "Mother" is a welded wire cylinder wrapped in tan terry cloth and placed at the back of the infant's cage. She has a head with bicycle reflectors for eyes and is provided with a nursing bottle. In some cases, the monkey lived with two mothers--one made of bare welded wire and the other the terry cloth mother. Half of

the animals nursed from the wire mother and the others from the cloth.

Without exception, every animal spent most of his time, except for meals, on his cloth mother.

From the earliest day that baby left his warm heating pad and began to sleep on mother, she became a haven in times of stress. When a fearsome stimulus such as a toy bear which plays the drum (see photo o) is placed in the cage, the monkey runs to his mother and surveys the bear from there. If she is not present, the infant's emotional reactions are often acute, and he is likely to bury his face in his hands and refuse to even look at the disturbing object.

In an effort to measure the infant's attachment to his mother (see photo o) an ingenious device was constructed to ascertain whether the infant would do work to see his surrogate mother when she is placed out of reach behind a glass window. When the infant presses a lever, "mother" is lighted and becomes visible for ten seconds. Results showed that an infant reared with both a cloth and wire mother showed as high lever pressing response to the cloth mother as to another monkey, but showed almost no interest in the wire mother, even if he had been fed on this wire mother. Infants who were not raised with any surrogate mother in the cage found the cloth mother worth no more lever pressing responses than the wire mother and neither as interesting as another monkey.

This study is of interest for two important reasons. One is that the infant monkey develops some kind of attachment, call it love if you like, to his cloth mother so that he will work just to see her behing a glass screen. Another is that although affection in infants was long thought to be motivated and developed from satisfactions obtained from feeding itself, these studies seem to indicate that the attachment of an infant to his mother derives

primarily from the comfort and security of bodily contact, since no interest was displayed in the feeding wire mother but there was a high response to the more comfortable cloth mother.

The surrogate project is also used to investigate other variables which underlie development of affection in the monkey. An attempt is being made to answer such questions as: "Is a cloth mother which responds to the infant by rocking and playing Brahm's lullaby when he climbs onto her more attractive than a silent stationary mother? Does removing different parts of the brain at birth affect the growth of attachment to the surrogate mother?" and "What effect will a 'rejecting' cloth mother who automatically blows a blast of air at baby after he has been on her for a certain length of time have on his behavior towards her?"

It was noted early that an infant monkey exhibits a number of emotional responses in disturbing situations. He can make cooing or screeching cries, jerk convulsively (only present during first few months of life), rock up and down, sway back and forth, clasp himself, pull back his lips in what is called a fear grimace and suck his toe or themb.

Dr. John Bowlby, noted British psychiatrist, upon seeing the emotional reactions of the infant monkey, commented that he had seen the same reactions in institutionalized human infants--rocking, clasping, crouching, banging the head on the bed, and, of course, sucking.

Infants reared in normal homes come closest to a monkey-like display of emotion when they engage in thumb-sucking. The infant monkey shows rpolonged sucking behavior of the non-nutritive type, i.e., sucking which occurs apart from the times when the infant receives nourishment from his sucking response.[1]

Between the ages of 1 and 30 days nearly all monkeys engage in this non-nutritive sucking: this drops to about 70 per cent at six months and to 50 per cent by two years. However, each infant has his own characteristic and relatively stable level of sucking. There are three main determinants of the level of sucking shown by each infant. First is the inborn genetic differences between animals--such things as sex differences are important here. Male infant monkeys suck significantly more than female monkeys and interestingly enough Dr. Margaret Kunst has found the same differences between male and female humans. Reasons for this appear to be very complex; however, one approach ties it to the fact that sucking as well as masturbation may be erotic and infant male monkeys indulge in more masturbation than females do.

The second determinant of suckin level seems to be past experience. As an example, consider the sucking by a bottle fed versus a cup fed group. The group cup fed from birth shows significantly less sucking behavior than does the bottle fed group, but striking individual differences appear within each group that cannot be ignored. The same type of results have most often been reported for humans. However, there are those who would show contradictory data reporting that human sucking levels are not determined by mode of feeding. The fact that very careful studies on monkeys agree with some studies on humans in showing a difference would tend to make one suspicious of the studies which disagree until further replications have been done.

A third and important determinant of sucking level seems to be the nature of the situation in which measures of sucking are taken. It has been shown that in monkeys there is an increase in sucking as a function of hours since feeding, something which any mother knows holds true for infant humans.

When one sounds a mildly disturbing stimulus such as a pure tone or shines a light, sucking behavior increases in monkeys, but intense stimuli such as shock or a loud buzzer will cause a marked decrease in sucking.

Miss Smith feels that because sucking level is determined by so many factors, any theory which attempts to explain why infants suck in terms of one simple determinant (such as frustration of the oral drive to suck) is shaving too closely with Occam's Razor.

The foregoing discussion of sucking shows the complexity of emotional phenomena in the monkey. Certainly it does not follow that human emotional phenomena should be less involved, since man has always thought of himself as an even more complex organism than the monkey. It seems to me that theorists on the subject of human emotions could profit from the work psychologists have done with monkeys and admit that to draw simple causal relationships concerning human emotions is to be naive.

Contrary to popular opinion, the social responses of monkeys appear to be as complex as their emotional responses. The usual procedure at the Primate lab is to house the animals in indivudal cages, so that if social activity is ever allowed, its development can be observed in a controlled experimental situation. At times two older animals are put in the same cage because of lack of space or a desire to observe any changes which occur in their emotional behavior after "group" living. Recently the two infants #117 and #119 were placed together soon after birth. Photo o shows their typical behavior when someone approaches the home cage. This mutual clasping reaction has not been observed before in any tests conducted with animals raised alone at this lab from birth and placed together for short periods. However, it is a common sight to people who have observed young monkeys living in their natural environment. Mutual clasping has also been observed in animals captured with their mothers in the wild and separated from her

upon delivery to the lab. When two such captured animals as old as 300 days were placed in the testing cubicle, mutual clasping occurred. Yet such behavior had never been observed before in laboratory born animals.

Animals raised in relative isolation, having extremely limited contacts with other monkeys, differ in very significant ways from animals of the same age born in the wilds and later brought to the lab.

Nowhere is this better illustrated than in Dr. William A. Mason's work comparing the sexual behavior of the adolescent captive to the adolescent lab raised monkey. The rhesus monkey male becomes sexually mature between the ages of about four and five years while the female matures earlier, usually between three and four.

Dr. Mason concluded from work done at the Primate Laboratory, that while we see in the behavior of laboratory raised male monkeys most of the components of male sexual behavior, these were not combined into an integrated pattern and effectively applied to social situations. In a word, although aroused by the presence of a receptive female, the male seemed unaware of how to procede from there. Often completely inappropriate behavior such as climbing up the side of the female or running around and around her occurred. Even with a highly sophisticated partner this deficiency persisted.

Dr. Mason hypothesizes that as the male grows to adulthood this difficulty will increase, because as the sex drive becomes stronger, the subsequent frustration at being unable to make the appropriate response will be greater. The unfortunate male will probably make even more inappropriate responses such as attacking the female who solicits his sexual attention.

This makes one wonder what a human would do who had never read Kinsey or been briefed on the appropriate response. He would probably be quite inept, for Dr. Mason feels that social learning and experience are of fundamental importance in the development of primate social interactions.

It is his opinion that "the availability of monkeys born in captivity provides the intriguing opportunity of eventually tracing the complex interplay of innate predisposition and individual experience in the development of social behavior and in the evolution of social organization."

The social reactions of the adult rhesus are quite different from the infant. Beginning with adolescence and the attendant action of hormones, the affectionate infant changes. His reactions to humans become less predictable--sometimes he will show friendly behavior; at other times he will bounce around his cage when approached--biting his hands and arms. As he grows older the adolescent assumes the adult threat pattern whereby he no longer attacks himself in response to a human's approach but reacts directly to the person. (see photo o)

The untamed female adult monkey is usually quite predictably vicious toward strange human beings. She will rush up, shake her cage and often bark at you as you approach. However, if you do not appear frightened and walk straight up to the cage, most females will withdraw to the back and glower from there, or make sporadic lunges to the front, withdrawing again quickly.

The male however usually sits placidly unless you approach and try to bother him. He is most likely to react in a less showy way than the female, but you somehow feel he means business. I have at times been moved to pet a large male who presents his back for petting quite often. However quick motions on my part or disturbing sounds seem to turn him from a docile creature to an aggressive fighter, and if I let my mind wander while petting an adult male monkey, I risk losing a finger or two. Even tame monkeys may attack at the slightest disturbance. And let me stress that "tame" is a very relative word when applied to adult rhesus monkeys. Although the babies are gentle