NATIONAL ACADEMY SCIENTISTS REPORT

Babies Harmed in Solitary

Isolation deters normal social development, whether in an orphanage or a monkey cage, although isolated individuals learn effectively after proper schooling.

➤ SOCIAL ISOLATION, whether in an orphanage or a monkey cage, "injures personal adjustment to society and development of normal sexual patterns," a noted psychologist reports.

Dr. Harry F. Harlow, professor of psychology at the University of Wisconsin, Madison, told the 102nd annual meeting of the National Academy of Sciences in Washington, D.C., that researchers have turned to one of man's closest relatives, the monkey, to study the impact of social deprivation in humans.

"Monkeys and man are so closely related that the basic biological laws operating for one must operate for the other," Dr. Harlow pointed out.

In a study of the effects of total social isolation, the psychologist, who is director of the Wisconsin Regional Primate Research Center, and his associates sentenced 12 monkeys to solitary confinement for periods of three, six and 12 months after birth. The monkeys had no contact with any animal or human for their entire stay.

"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," Dr. Harlow said.

However, after recovery from initial shock, the three-months isolates were able to make effective social contacts with each other.

Complete social isolation for the first six months of life brought deep, lasting, and what appears to be irreversible damage to the infant monkeys, the psychologist reported.

While the six-month isolates failed to adjust to the level of normal monkeys and were enormously impaired in their play with each other, the 12-month isolates were complete failures.

Yet, despite their social failures, "all of the socially isolated monkeys learned effectively after being removed from the isolation cages," he said.

Therefore, Dr. Harlow cautioned, one must be careful in attributing mental deficiencies to social deprivation if adequate schooling, in monkeys or men, has been subsequently provided.

After 18 months, the same damaging effects were still evident. Many isolated monkeys were hostile toward adults and infants, a phenomenon never seen in normal laboratory-raised animals nor reported in the wild.

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Corning Glass Works

SUBMARINE RIBS—A Corning Glass Works machinist grinds reinforcing ribs in a hull section of a glass submersible that will be used for deep sea research for the Ordnance Research Laboratory of Pennsylvania State University. Corning forms the vehicle's sections in glass then converts them into white, opaque compression-resistant glass-ceramic material.

PHYSIOLOGY

Nerve Repair Possible?

➤ PROGRESS toward repair of human nerve injury is seen in a basic science report on animal experimentation.

Dr. Paul Weiss of the Houston Branch, University of Texas, told the meeting of the National Academy of Sciences that by localizing experiments to cells of the optic nerve in rats instead of working on the whole animal, the way is open for further studies of drugs, stimulation, disuse and other factors affecting the protoplasm of the nerves.

Dr. A. Cecil Taylor, also of the Houston Branch and of Rockefeller Institute told SCIENCE SERVICE that by learning more about the growth of nerve material, indirect application can be made to such a human disease as multiple sclerosis or any nerve injury.

By experimenting on the retinal ganglion cells of the optic nerve using radioactive leucine, an amino acid, the researchers found that the leucine became promptly "incorporated into the retinal cell proteins, with some endoneurial escape into the optic nerve that was soon fixed in glia cells."

The researchers could see through daily autoradiographs, used from one to six days, how the traveling crest of labeled protein advanced in the optic fibers at about one millimeter a day. Progressive broadening of the crest indicated differential spreading rates in different fibers, they found.

The opportunity to use both eyes, one for the test, the other for control, opens the way for quantitative studies of factors affecting the synthesis and flow of neuroplasm.

Dr. Taylor said that in some cases, one eye of the rat was darkened to prevent stimulation of the optic nerve.

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More Men Color-Blind

➤ BETWEEN ONE AND TWO percent of males have forms of two-color vision in which they confuse reds and greens. Only one woman in 5,000-10,000 have these defects, however, Dr. George Wald, professor of biology, Harvard University, Cambridge, Mass., told the meeting of the National Academy of Sciences.

A third form of color-blindness, called tritanopia, or blue-blindness, is rare, he explained, adding that it affects about one in 20,000 persons, but is almost evenly distributed among men and women.

The difference in male and female color-blindness is because the male has only one X-chromosome, while females have two X-chromosomes. Two of the genes, those for the red-sensitive pigment and the green-sensitive pigment, are in the X-chromosome. The commonest forms of color-blindness associated with lack of these pigments, protanopia, meaning red-blindness, and deuteranopia, meaning green-blindness, are inherited as sex-linked recessives.

Males, having only one X-chromosome, are color-blind if this chromosome carries either the gene for protanopia or for deuteranopia.

Ordinarily in females, who have two X-chromosomes, the presence of such a gene on one X-chromosome is balanced by the presence of the normal gene on the other X-chromosome. Since the latter is dominant, such a woman, though a carrier of color-blindness, has three-color vision.

The gene for the blue-sensitive pigment, however, is located on one of the ordinary chromosomes, non-X, called autosomes. Blue-blindness for this reason is not sex-linked and therefore affects males and females about equally.

Also it appears dominant to the normal condition. Its rarity seems connected with the fact that, like many other autosomal dominants, it frequently, although present, is not expressed.

Collaborating with Dr. Wald was Dr. Paul K. Brown, also of Harvard.

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