

PSYCHOLOGY

Baby's First Four Days Scientifically Important

➤ **FRUSTRATING NURSING** experiences during a baby's first four days may lay the groundwork for serious psychological problems later.

Two Medical School doctors at the University of California, Los Angeles—Drs. Arthur H. Parmelee, a pediatrician, and Justin Call, a psychiatrist—have independently studied this problem.

Dr. Parmelee conducted research with premature infants and found that nursing movements appear to be present from birth. He observed that when he pressed the palms of their hands they would turn their heads from the side position to the midline, flex forward, open their mouths and elevate their tongues.

This was a consistent response during wakefulness. It even occurred at times when a baby was drowsy or asleep. The fact that the response occurred consistently in premature infants indicates it is a primitive one, Dr. Parmelee noted.

Dr. Call studied mother-infant relationships during the first four days of life. He observed an anticipatory approach behavior on the part of the infant which consisted of mouth-opening, turning the head toward the breast or bottle, and bringing the hand to the mouth-nipple region before any touching of the face by the nipple occurred.

Thus it appears that the newborn is not nearly as helpless and passive as many believe. He apparently is well equipped with reflexes that help him to adapt to his environment, with the proper help from his mother.

Dr. Call believes that certain general attitudes of the individual throughout life may well have their roots in this critical, early period. These would include such things as anxious expectation, positive acceptance versus negative aversion to the environment, the attitude of trust versus mistrust, optimism as opposed to pessimism, and the capacity for poise or unpoise.

In fact, the gradual building up of a sense of reality and the capacity of the infant for future learning may be founded upon these early events.

• Science News Letter, 84:88 Aug. 10, 1963

CYTOLOGY

Cells, Just Like People, Show Discrimination

➤ **DISCRIMINATION** occurs among cells, the smallest independent units of life, as well as people, the most complex.

Two Yale University pharmacologists have strengthened earlier evidence that a cell favors a substance produced by itself over the same substance introduced from outside. The cell has a delicate mechanism that controls its life processes and decides how each substance shall be used.

"Biochemical research has made tremendous advances since scientists have been taking the cell apart and isolating enzymes to study cell processes," Dr. Jack P. Green

of Yale University told **SCIENCE SERVICE**. "However, it is time to utilize our information by studying the intact cell, rather than cell fractions."

Dr. Green and his colleague, Dr. Anthony V. Furano, experimented with amines in mouse cells, showing that cells react in different ways to a substance from outside the cell unit and the same substance produced inside the cell. The cell's regulatory mechanism is affected by the origin of the substance and its metabolic rate reacts accordingly.

"In studying the effect of a certain substance or drug on a cell," Dr. Green said, "one must consider its origin in analyzing the reaction."

Scientists have been using radioactive material to trace the breakdown of substances after they enter the cell. In order to be sure of the effects on the cell, the scientist should introduce not only the substance in question, but its chemical components also radioactive.

The cell will thus manufacture the same substance, and scientists can compare the difference.

The eventual goal of this type of research, Dr. Green said, is the combination of enzymes in the laboratory and simulation of the processes of the intact cell.

Drs. Green and Furano reported details of their cell investigations in *Nature*, 199:380, 1963.

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BIOCHEMISTRY

Deadly Mushroom Poison Found in Human Tissues

➤ **WITH THE FIRST** identification of deadly mushroom poisons in human tissues, scientists are gaining new insights into how these poisons destroy the human body.

Strengthening warnings against eating wild mushrooms, findings indicate that mushroom poisons act in the cells to disrupt normal life processes of producing and releasing energy.

This upset in metabolic processes, investigators said, is similar to the change in cells brought on by diabetes. Within the liver cells, Maj. S. K. Abul-Haj, Capt. Roger A. Ewald and Leo Kazyak of the Walter Reed General Hospital, Washington, D. C., found abnormal material containing fat and starch concentrations.

Damage to the circulatory and nervous systems, occurring quickly in mushroom poisoning, also paralleled degeneration seen in long-term cases of diabetes.

In the few cases of mushroom poisoning studied during the past 100 years, diagnoses were not always sure, since they depended on identifying the mushroom species and analyzing the portion eaten.

In the new tissue analysis mushroom poisons phalloidin and phalloin were identified in the body of an eight-year-old boy who had died of mushroom poisoning. The technique and case study were reported in the *New England Journal of Medicine*, 269:223, 1963.

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IN SCIEN

BIOCHEMISTRY

Body Chemical Improves Learning and Memory

➤ **TO LEARN** faster and remember longer try a daily dose of ribonucleic acid (RNA). Preliminary research on rats indicates this is the way to mental improvement.

Two groups of rats were tested to see how quickly they could learn to jump to a pole at the sound of a buzzer that came with an electric shock, and to see how long this response would last. The group that had daily injections of RNA for some weeks before the test was far superior to the control group that had only received injections of a plain, water-like solution.

A team of Smith Kline and French investigators, Philadelphia, said less formal studies have linked RNA to human learning behavior, but "direct evidence" that the administration of purified RNA can affect the behavior of animals was lacking.

RNA, a biochemical middleman, carries genetic information from the cell to particles between the cells where proteins are synthesized.

The investigators are now working to discover if RNA itself, one of its compounds or some impurity alone could account for the effect on learning and memory.

Drs. Leonard Cook, Arnold B. Davidson, Dixon J. Davis, Harry Green and Edwin J. Fellows reported their research in *Science*, 141:268, 1963.

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ENTOMOLOGY

Balloons Used to Spy On Sex Life of Fire Ants

➤ **BALLOONS**, anti-aircraft and radioactive tracers are interfering with sex, as far as ants are concerned.

A Louisiana State University entomologist is using low-flying vehicles in research tactics to spy on the sexual behavior of the imported fire ant, prevalent in the Southeast and Gulf area.

Winged nuptial flights, volatile sex attractants and multiple-mating of the fire ant are being considered as the answer to its population explosion and excellent adaptability to a hostile, unfamiliar environment.

Dr. Murray S. Blum, associate professor of entomology, is lofting into the air helium-filled balloons containing female fire ants. The ants are in cages that are coated with a clear adhesive that traps the males as they are attracted to the females.

Some of the ants are fed or sprayed with radioactive tracers as they emerge for their nuptial flights. So far the scientists have learned that the flights occur on balmy afternoons during the daily activity peaks of the males.

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CE FIELDS

OPTICS

Punctured Golf Ball Squirts Juice in Eye

➤ A PUNCTURED golf ball may cause serious eye injuries.

The American Academy of Pediatrics News Letter, Evanston, Ill., reported a small girl who managed to peel apart a golf ball and puncture the rubber core. The ball she dissected was one of the liquid-center types, and the highly compressed fluid inside the core squirted her in the eye.

The fluid itself is harmless—in fact, at one time, tapioca was used for this purpose. However, it may cause injury because it is under high pressure. Also, small particles of the core may become stuck in the eye.

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NUTRITION

Dogfish Tastes Better With Another Name

➤ DOGFISH as well as catfish is considered unfit for human consumption in many parts of the world.

The reason for the aversion to these nutritious fish is their names. People are psychologically disinclined to eat anything bearing the name of dog or cat, regardless of its merits.

The catfish's unsightly appearance also serves to repel many would-be consumers, the United Nations Food and Agriculture Organization in Rome was told. People were refusing to eat this fish, but when it was sold in a different form or under a different name, the demand for it was high.

In Denmark, the catfish became popular when sold in fillet form under the name "cutlet fish." West Africans eagerly consumed the once-spurned dogfish when it was marketed as "Fish 45," a made-up name representing the fish's protein content.

• Science News Letter, 84:89 Aug. 10, 1963

MEDICINE

Lung Cancer, Arsenic Linked in British Study

➤ A LINK between lung cancer and arsenic has been reported in London.

Six persons who had taken arsenic for medicinal purposes, two British investigators found, developed lung cancer in addition to skin cancer.

The association between arsenic and skin cancer is well established, but its relationship to lung cancer is highly controversial.

Drs. O. A. Robson of Middlesex Hospital in London, now at the Royal Victoria Infirmary, Newcastle upon Tyne, and A. M. Jelliffe of Middlesex Hospital and Mount Vernon Hospital, Northwood, cautiously side with the researchers who have said arsenic is guilty.

Since all six of the arsenic cases developed lung cancer and since only two had ever smoked cigarettes, they said more than coincidental forces were at work.

"It is clear," they reported in the British Medical Journal, "that the relationship between the therapeutic administration of arsenic and the later development of lung cancer is unproved, but it would seem reasonable to suggest that there was such an association in out-patients."

Arsenic, known mainly as a deadly poison that destroys the digestive tract and probably the nervous system, has long been used to treat such diseases as anemia, psoriasis, rheumatic fever and syphilis.

Drs. Robson and Jelliffe said their study is another good reason for "abandoning the therapeutic use of this poison." The link between lung cancer and arsenic has been shown in studies by other investigators.

Miners inhaling arsenic dust have been found to have a high incidence of lung cancer as do vineyard workers exposed to pesticides containing arsenic.

Holding back conclusive proof is the fact that arsenic has not been shown to produce cancer in experimental animals, and working with humans places obvious restrictions on research.

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ASTRONOMY

Scientists Seek Origin Of Outer-Space Particles

➤ SCIENTISTS are about to probe one of the far-out secrets of the universe.

Using a six-million-cubic-foot balloon, a 185-pound magnet and a spark chamber, they hope to discover the origin of the cosmic particles that bombard the earth's atmosphere by the hundreds of billions every second.

The scientists traveled to the Hudson Bay area of Canada, where they launched their balloon to a height of 23 miles. Carried aloft was equipment to count the number of electrons and positrons entering the upper atmosphere from outer space.

By counting these tiny electric particles, whose only difference is the sign of their charge, the scientists hope to determine how they were formed. If they were formed in collisions of atomic nuclei, as is currently believed, then there should be approximately the same number of each, since equal numbers are formed in collisions of this type.

However, if the electrons are far in excess of the positrons, then they are coming from other sources, such as supernovae—the stellar explosions that can be seen billions of billions of miles away.

The Canadian site was chosen because it lies near the earth's magnetic pole, where the magnetic field that protects the earth from cosmic radiation is close to the ground.

There it is possible to send a balloon above the magnetic field, where outer-space conditions are in effect.

The expedition will be led by Drs. Roger H. Hildebrand and Peter Meyer of the University of Chicago.

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DENTISTRY

Little Tooth Decay Found Among Ethiopians

➤ ETHIOPIANS from five to 50 and older show very little tooth decay in spite of ordinary diet and low fluoride content in their drinking water.

One explanation, Dr. Norman W. Littleton of the National Institute of Dental Research, Bethesda, Md., told SCIENCE SERVICE, is that Ethiopians do not use sugar and other refined foods as in the United States. Their high carbohydrate diet is made up of such foods as whole grains, which may give some protection.

"In contrast to the favorable condition of the teeth," Dr. Littleton said, "the supporting tissues around the teeth are poor." He associated this condition with poor oral hygiene, which he pointed out is prevalent everywhere, including the United States.

Dr. Littleton was the dentist who accompanied a team of U.S. and Ethiopian nutritionists, food technologists, biochemists and physicians on a health survey of 1,085 civilian males and females from five to 84 years of age. The survey was conducted by the Interdepartmental Committee on Nutrition for National Defense.

The major ethnic groups were represented in the examinations, which covered eight geographic regions. Little information has been available on diseases of the mouth in this area up to now, Dr. Littleton reported in Public Health Reports, 78:631, 1963.

Here are some of his observations:

Persons younger than 40 years averaged less than one decayed, missing or filled tooth per person.

Those older than 50 years averaged about three decayed, missing or filled teeth per person.

At a mean age of 23.9 years, 77% of the group studied was free of dental caries.

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GENERAL SCIENCE

Computer Deals Hands For Bridge Tournament

➤ THE FIRST tournament where the players' hands are dealt by an electronic computer is being held in Los Angeles—the Life Masters bridge tournament.

The computer has been programmed to deal out the 516 hands needed in an impartial and random manner. This should reduce the incidence of "freak" hands and give the best chance to the most skillful players.

If left to its own devices, once programmed, the computer could keep dealing virtually forever without a duplication, since there are approximately 55 billion billion possible bridge hand combinations. The computer being used to deal hands is the University of Southern California's Honeywell 800.

The winning two-man team of Life Masters automatically qualifies for the International Team Trials in November to decide who will represent the United States in international competition.

• Science News Letter, 84:89 Aug. 10, 1963