

OPHTHALMOLOGY

Need More Eye Research

► IN SPITE OF THE ADVANCES against blindness, more eye research is needed to prevent the present rate of 30,000 a year losing their sight in the United States.

Care for persons already blind costs this country an estimated one billion dollars a year, a report sponsored by Research to Prevent Blindness, Inc., revealed. Only about \$14 million goes for research.

An average investment of \$38 million each year over the next five years is needed to create the environment for effective eye research in the nation's medical schools, the report, called Ophthalmic Research: U.S.A., said. In the majority of institutions, ophthalmology is a subdivision of surgery instead of having full departmental status, and laboratory space is scarce.

In addition to the estimated 30,000 Americans who lose their sight every year, the report cites the following estimates as probable understatements of the problem:

Nine million persons in the United States have some malfunction of the eye.

Three and a half million persons have some permanent non-correctable visual defect.

One million persons are functionally

blind, unable to read newspaper type, even with the aid of glasses.

Dr. James E. Lebensohn, a prominent Chicago ophthalmology historian, summarized progress in eye research, beginning in 600 B.C. when Susruta of India introduced a treatment called "couching" for cataract. In this operation the lens is dislocated downward out of the line of sight.

In 1747, the operation of cataract extraction was introduced. The latest freezing technique eliminates rupture of the lens capsule. Other modern operations for cataract have been successful, but the cause of this disease has not been discovered.

Eight out of ten cases of blindness are the result of diseases whose causes are unknown to science, the report said. Among these, in addition to cataract, are glaucoma, detached retina and many others.

If the people of the nation should demand a full-scale, nationwide attack against blinding diseases, the report stated, the necessary funds for research would be easily doubled or tripled.

Dr. Thomas Duane of the department of ophthalmology at the Jefferson Medical College of Philadelphia, wrote the report.

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Dr. J. F. Watkins of the University of Oxford.

To a mixed suspension of "HeLa" cells derived from human cancer and a form of mouse cancer cells called "Ehrlich ascites," the scientists added a strain of virus called "Sendai" which induced rapid fusion of the two types of cells. The cells clumped together and the cell walls dissolved at the point of contact.

Although the newly created cells did not multiply, they continued to show signs of life in their new form by producing protein and RNA (ribonucleic acid), a substance which transfers information from parent to offspring, the scientists reported in *Nature*, 205:640, 1965.

Many cells retained more than one nucleus from their different parents. In other cells, however, the nuclei fused together to form one single nucleus which appeared to undergo division preparing to create new living offspring. This rare phenomenon might lead to production of colonies of mice-men cells.

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MEDICINE

Critical Junction Found In Muscle Disease

► THE POINT at which a nerve fiber transmits a signal to a muscle fiber may provide the crucial clue for unraveling the mysteries of the chronic, progressive disease associated with wasting of muscles, myasthenia gravis.

At a three-day conference on myasthenia gravis, sponsored jointly by the New York Academy of Sciences and the Myasthenia Gravis Foundation, New York, researchers from England, Canada and the United States discussed the role of this "neuromuscular junction."

Sufferers from the disease have extreme muscular weakness and "fatigability," especially in the muscles of the face, lips, tongue, throat and neck. They often "see double," have drooping eyelids, toneless voices and difficulty chewing and swallowing.

Although the myasthenia victim's muscles work properly after rest, with repeated use they become weaker and weaker. When the respiratory muscles are affected, breathing often becomes too tiring, and the patient dies.

At the neuromuscular junction, the end of the nerve fiber brings signals from the brain or spinal cord to muscle fibers which carry out voluntary actions. This nerve fiber is divided into a number of branches that extend into hollows formed by the surface of the muscle fiber.

Dr. A. L. Woolf of the Midland Centre for Neurosurgery and Neurology, Smethwyck, England, found that most people with myasthenia gravis have abnormal neuromuscular junctions.

In advanced cases, both the nerve and muscle portions of the junction are shrunk, he pointed out. Other types of abnormalities were evident in patients at less advanced stages.

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MEDICINE

Fingernails Aid Diagnosis

► FINGERNAIL AND TOENAIL clippings have been analyzed to provide a new diagnosis for cystic fibrosis.

By analyzing these clippings, Boston researchers have found the concentration of sodium and potassium to be elevated in persons with this disease.

Cystic fibrosis is a hereditary disease, usually appearing in childhood, but also found in adolescents and adults. It involves disorder of all the exocrine glands, which secrete outwardly and include those that are mucus-producing. It is marked especially by deficiency of pancreatic enzymes, by chronic lung disease and excessive salt in the sweat. One in 1,000 children, especially in civilized countries, is born with cystic fibrosis.

One of the principal diagnoses is based on increase in electrolyte concentration in the sweat, but this is not always reliable, and in some cases, especially in outlying districts, the "sweat test" is hard to give.

This is one of the reasons the measurement of nail sodium could make preliminary diagnosis easier, the investigators said in the *New England Journal of Medicine*, 272:504, 1965. Nail clippings can be mailed easily to laboratories.

Fifty-eight specimens of clippings used in this study were mailed to Boston from the Children's Hospital, Washington, D.C. Another eight specimens came from the Royal Children's Hospital, Melbourne, Australia. In all, 450 subjects took part in the nail-

clipping study. In 147 of the 149 patients with cystic fibrosis, elevated sodium levels were found.

The research was reported by L. Kopito, Dr. A. Mahmoodian, R. R. W. Townley, all of Children's Hospital Medical Center, Boston; Dr. K. T. Khaw, pediatrics instructor, Harvard Medical School, and Dr. Harry Schwachman, associate clinical professor of pediatrics, Harvard Medical School, and director, division of clinical laboratories and research, Children's Hospital Medical Center.

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PHYSIOLOGY

Mouse and Human Cells Fused by Scientists

► LIFE UNITS of mice and men have been fused by scientists.

By mixing certain cells of a human and those of a mouse together with a virus, British scientists have been able to mate the two different animal cells into a single cell that not only lives but also seems capable of dividing and producing more mouse-man cells.

The strange bedfellows are still in experimental test tubes, but the amazing thing is that the fusion took place. Usually, elaborate mechanisms of a living animal cell destroy any foreign cells that enter or approach it, reported Prof. Henry Harris and