

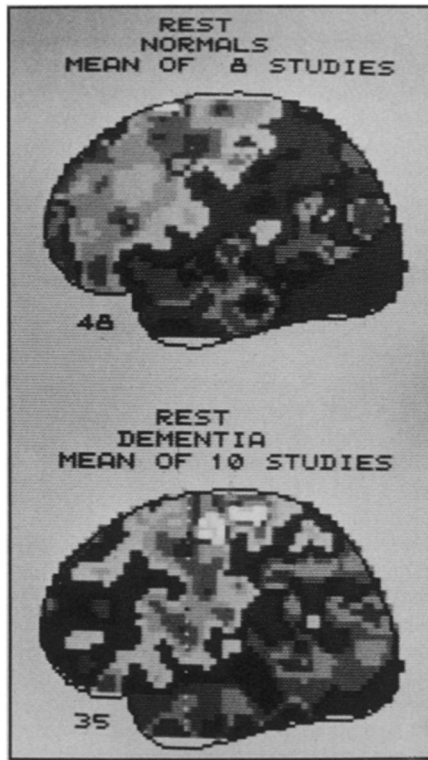
OLD AGE: WHAT IS NORMAL?

Research is shedding light on possible roots and mechanisms of senility. But scientists also are learning more about the emotional and physical states of the majority of the elderly who are not senile.

BY JOEL GREENBERG

Even in a youth-oriented society, being old may not be a crime. But is it a disease? Gerontologists, behavioral scientists and other researchers are asking this question and vigorously debating the progressively intriguing results of their study. Most concede that aging has been viewed historically as a sickness or something abnormal to the healthy human condition. But now, as one gerontologist says, scientists and others are learning that "the aged are people who happen to be old."

Nevertheless, some physical and emotional problems do appear to afflict older persons more often than they do the rest of the population. The most obvious of these is mental deterioration, or dementia — an organic disorder that strikes an estimated 4 to 6 percent of the elderly. But persons over 65 are also subject to depression and other emotional ailments that may be overlooked in a physician's expectation of senile dementia. Further clouding the picture is the occurrence of presenile dementia, which strikes persons as young as 40 or 50 years of age. To distinguish it from old-age senility, this form of dementia has been referred to as Alzheimer's disease. But the two conditions appear to be so similar that many scientists now use the term "Alzheimer's-type" to describe most dementia that strikes young and old persons alike.



Lighter areas of computerized brain mosaics show frontal regions of normal brain at rest (left part of top scan) have greater blood flow than the brain of a person with dementia (below). Similar results have been seen with "activated" brains.

Research into normal aging, organic disorders and emotional problems was discussed recently in New York at a meeting of the American Psychopathological Association. If there was anything the participants agreed upon, it is the state of confusion about health and illness among the elderly. "No diagnostic test reliably distinguishes between organic and functional disorders in the elderly," Vanderbilt University's Charles Wells says bluntly.

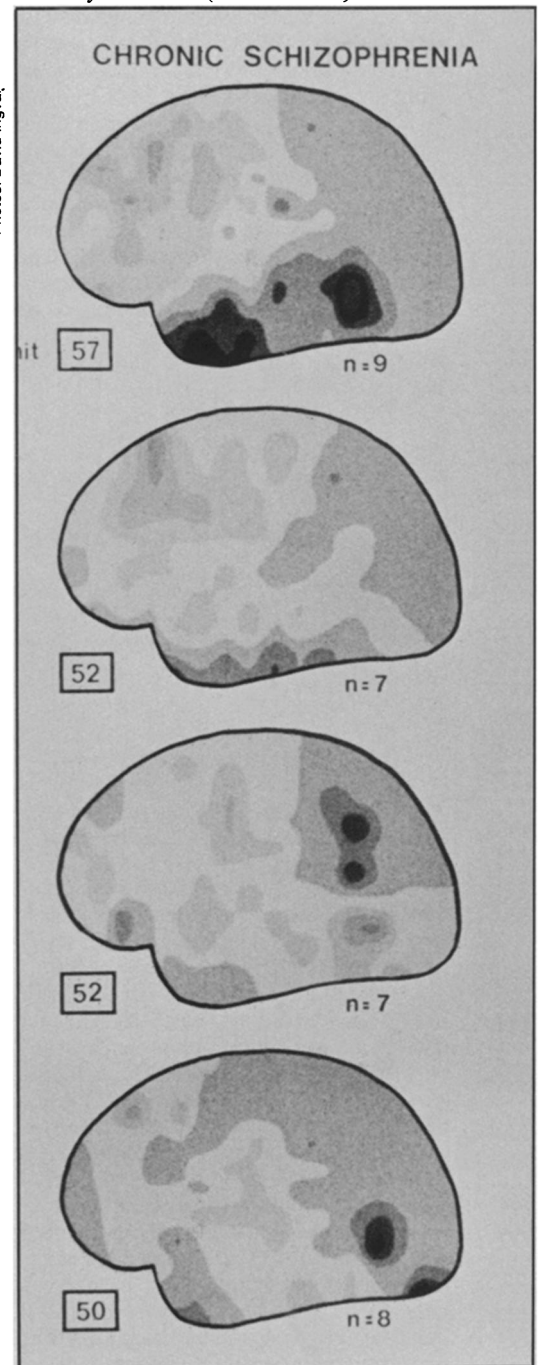
But as several of the reports indicate, some of that confusion may be clearing. In a sample of 108 elderly patients (average age 65), Nancy Miller of the National Institute of Mental Health compared emotional symptoms of patients with dementia to symptoms of depressed patients. "[Previous] reports suggest that senescent [pertaining to growing old] organic depression is not 'true' depression, but rather a shallow, transitory mood state that requires little therapeutic intervention," Miller says. "On the other hand, some say there are quite serious and persistent depression states in the elderly with organic disturbance. In fact, there is some evidence to suggest that the risk of suicide is equally as high in the elderly with altered brain function as in those with primary affective disorder [depression]."

The patients initially were categorized in one of the following areas: normal brain with low levels of depression; normal brain with moderate to severe levels of depression; organic brain syndrome (de-

mentia) but "undifferentiated" with regard to depression. Using personal interviews and various psychological and perceptual tests, Miller and her colleagues found "significant and identifiable levels of depressive symptomatology in patients with altered brain function. Many [dementia patients] did show genuine depressive affect over the course of interviews and testing sessions," she reports.

The findings are significant, Miller says, "because once a diagnosis of organic brain syndrome in an elderly person is formulated, it is quite unlikely that patient will

As schizophrenia increases in severity (from top to bottom) blood flow in frontal lobes (left portions) becomes subtly but observably restricted (darker areas).



Photos: David Ingvar

receive symptomatic treatment [for depression] or further subsidiary diagnoses. The problem is identifying the concurrent presence of both depression and dementia in a single person." Such a dual affliction may occur "with far greater frequency than do 'clinically pure dementing states,'" Miller adds, and is often overlooked because of the similarity of symptoms of dementia and depression.

Overall, however, depression does not appear to strike the elderly any more often than it does younger persons, reports George Winoker of the University of Iowa. It is family history of depression, rather than age of the individual, that may be critical in the occurrence of depression, he says. In a study of 90 elderly female patients diagnosed as having various types of depression, Winoker found some striking differences between persons with different family histories.

Previous studies have shown that when the drug dexamethasone is given to a non-depressed person, the body's glandular reaction is to lower the blood level of cortisol. In depressed persons, however, little or no dexamethasone-induced suppression of cortisol occurs. In his study Winoker found such abnormal suppression in 85 percent of the elderly who had a history of depression but no alcoholism in their immediate family. In contrast, abnormal levels of cortisol were induced in only 4 percent of depressed persons who had an alcoholic in their immediate family.

"Clinically, these [patients] look similar, but what we may be seeing are separate illnesses," depending upon whether the family has a history of alcoholism or pure depression, Winoker told SCIENCE NEWS. "This could have enormous meaning in treatment of such persons."

The possibility that two distinct diseases are involved in early-onset Alzheimer's and senile dementia in the elderly is also suggested in the work of the University of Minnesota's Leonard Heston. Neurologically, presenile Alzheimer's and the most common forms of senile dementia appear to be identical: Brain cells become knotted and tangled and dotted with plaques — patches of abnormal protein.

But Heston's findings indicate the genetics of the two ailments may be different. In his study, Heston examined the autopsy reports and family histories of 47 Alzheimer's victims (onset before age 65) and 68 senile dementia victims (onset after 65). He found that those who had been stricken earliest (ages 40 to 54), had the highest rate of either senile or presenile dementia disease in their immediate family — 18 percent. Victims with an onset between ages 55 and 70 carried an 11 percent familial risk, and the over-70 onset group had only a 1.5 percent risk among parents and siblings.

Moreover, the early-onset group members were found to have an incidence rate of Down's syndrome among relatives that is more than 10 times the risk rate of the

general population. In contrast, the later-onset senile dementia group had a Down's risk rate fairly close to the norm. In addition, the family cancer risks were also significantly higher among the early-onset patients.

"The [family] risk is so concentrated among the early-onset [group]," Heston says. "On genetic background, you can't exclude the possibility of two different diseases." He also suggests that some kind of "virus" may be involved. But, Heston stresses, even in families of early-onset Alzheimer's victims "very few people [family members] are affected" out of the entire population of such patients.

Whatever the primary cause of dementia, it seems apparent that victims suffer from restricted blood flow in the brain. David Ingvar of the University Hospital in Lund, Sweden, has shown that in an "at rest" condition, the brains of dementia victims show "significantly reduced" blood flow in the frontal regions (SN: 10/1/77, p. 219). The measurements are made by injecting an isotope and using a computer to analyze the flow pattern in the subject's brain.

Now, Ingvar reports similar results with brains in "activation." When presented with various stimuli — pictures, reading material and conversation — the brains of normal subjects "light up" in certain areas and display increased blood flow. Corresponding brain areas of senile dementia victims, however, show almost no reaction to such stimuli. In a somewhat surprising offshoot of this work, Ingvar has also "confirmed that the overall blood flow of chronic schizophrenics is normal." However, it appears that the more withdrawn, hallucinatory and severely debilitated the schizophrenic, the more restricted the blood flow in the frontal areas.

What causes such blood flow abnormalities is neuron degeneration that triggers a decline in brain metabolism, according to Ingvar. He suggests that corresponding abnormalities in electrical activity must also exist in senile persons. With computerized scanning and other techniques, Ingvar says that "in the future it will be possible to measure and localize the circulatory and physical events that underlie normal and abnormal functioning."

Another factor in Alzheimer's disease may be aluminum. Studies by Ohio State University's Leopold Liss and others indicate that dementia patients may be susceptible to the buildup of aluminum in their brain cells. Such results are still preliminary, however, and those attending the symposium agreed that further study of the apparent aluminum link is needed before any conclusions are drawn or preventive measures proposed.

As of now — although much progress is being made — the exact causes of dementia remain elusive. Says Ingvar: "Why suddenly some families are afflicted and others are not... we do not know at all." □

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DOWN'S SYNDROME: The Psychology of Mongolism — David Gibson — Cambridge U Pr, 1979, 366 p., chart & graphs, \$42.50. An attempt to integrate the vast behavioral literature in such a way that the traditional assumptions can be inspected and conclusions drawn in support of a multidisciplinary research and remedial approach. For the professional, the literate parent and the community worker.

FOOD WEBS AND NICHE SPACE — Joel E. Cohen — Princeton U Pr, 1978, 189 p., charts & graphs, paper, \$6.95. The mathematics of real food webs and niche space. (SN: 4/14/79, p. 250.)

GRASSES: An Identification Guide — Lauren Brown — HM, 1979, 240 p., illus., \$9.95. Grasses cover approximately one-half the area of the United States. Identification in this book is based on drawings and descriptive notes of the plants' distinctive features. The plants are organized by visual similarity, not always by taxonomic groupings.

HUNGER DISEASE: Studies by the Jewish Physicians in the Warsaw Ghetto — Myron Winick, Ed., translated from Polish by Martha Osnos — Wiley, 1979, 261 p., illus., \$15. A careful medical investigation of the clinical, metabolic and pathologic consequences of hunger and starvation in adults and children.

PROBLEM SOLVING AND COMPREHENSION: A Short Course in Analytic Reasoning — Arthur Whimbey and Jack Lochhead — Franklin Inst Pr, 1979, 258 p., diagrams, paper, \$8.50. Shows you how to increase your power to analyze problems and to better comprehend what you read and hear. Outlines and illustrates the methods that experienced problem solvers use in attacking complex ideas and then gives you practice in applying these successful methods to a variety of problems.

SCENT SIGNALS: The Silent Language of Sex — Janet L. Hopson — Morrow, 1979, 191 p., \$7.95. How scent affects our sex lives. The readable story of the search for human pheromones, involving both animal and human experiments. See p. 282.

VECTORS IN THREE-DIMENSIONAL SPACE — J. S. R. Chisholm — Cambridge U Pr, 1978, 293 p., \$33.50, paper, \$9.95. Deals with vector algebra and analysis and with their application to three-dimensional geometry and to the analysis of fields in three-dimensional space.

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