

Inflation, recession and mental health

Psychiatric admissions and the state of the economy are closely related. This was well illustrated several years ago by Harvey Brenner of Harvard University who examined 127 years of psychiatric admissions records in New York State. Even a relatively minor recession, he found, seemed to produce an increase in admissions to state and private psychiatric hospitals. The present recession is no exception, say Louis E. Kopelow and Frank M. Ochberg of the National Institute of Mental Health. In the Jan. 26 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* they report that current information obtained from telephone surveys of community mental health centers and state and private mental health facilities tends to support Brenner's observation. The survey showed an increased use of mental health facilities, especially crisis intervention services. Men 45 to 60 years of age seem to be most susceptible to the emotional impact of the economy. The occupational group most affected is the semiskilled operative, especially production workers on assembly lines.

An increase in the occurrence of emotional problems may be only part of the story. The same stresses that produce mental illness, the researchers caution, are also having an impact on the occurrence and severity of physical complaints. Research in psychosomatic medicine, for instance, suggests that various personality and stress conditions are contributing factors in the development of specific diseases, especially coronary artery disease and peptic ulcers. The recognition by all physicians of the interaction between emotional, physical and environmental factors on the occurrence of disease is essential, they conclude, "because economic depression added to psychological depression and physical disease are a deadly combination."

Changing attitudes: A campus survey

More than ever before, young women are pursuing traditionally "masculine" careers. One woman in six, upon entering college, is planning a career in business, engineering, law or medicine. This figure represents a two percent increase since 1974 but almost a threefold increase since 1966 when less than six percent of first-year women college students planned such careers. While more women are planning to enter formerly male-dominated professions, the percentage of men doing so is declining—from 48.9 percent in 1966 to 39.4 percent this year. The ratio of men to women planning to enter these fields has gone from eight to one to less than three to one.

These are among the findings of the tenth annual survey of students entering college. The survey was initiated in 1966 by the American Council on Education and is directed by Alexander W. Astin of the University of California at Los Angeles. Survey results are compiled from 186,406 questionnaires filled out at 366 institutions across the country.

Other findings of the survey: The percentage of first-year students planning to become teachers has reached an all-time low. Only 6.5 percent of the new students plan to become elementary or secondary school teachers. This is down from 8.2 percent in 1974 and from 21.7 percent in 1966. Despite reports of high unemployment among graduates with advanced degrees, the proportion of college entrants planning to take postgraduate work continues to increase. Half (51.1 percent) the first year students plan to pursue graduate or professional degrees, compared with 47.5 percent in 1974 and 42.3 percent in 1971, when reports of oversupply began to appear. Much of this increase can be attributed to women. Those interested in advanced degrees increased from 9.1 percent to 16.6 percent between 1971 and 1975. The parallel change for men was from 22.7 percent to 26.3 percent.

From our reporter at the meeting of the American Physical Society in New York

Hold the plasma

Tormac is not the name of a fast-food delight chanted by a Vietnamese refugee child in a certain comic strip. It is a new device that aims to improve the confinement of thermonuclear plasmas by combining features of two current approaches, the magnetic mirror and the tokamak.

The ideal way to confine a plasma in a magnetic field is to devise a field configuration in which all the field lines close back upon themselves, and there are no open-ended lines along which plasma particles can escape to the wall of the chamber and be cooled. Magnetic mirrors generally have a lot of open field lines. The devices called tokamaks avoid open field lines with a toroidal configuration in which the confining field lines are circular. But to make this configuration stable, preventing the development of wiggles that would hump the plasma to the wall, requires an auxiliary poloidal field imposed by magnet coils outside the chamber. The external field has to be very strong to confine a plasma of reasonable density.

M.A. Levine of the Lawrence Berkeley Laboratory proposed a combination of the two ideas, Tormac, which would produce a toroidal plasma with cusps along its edges and use only external coils. Preliminary studies were made by him and colleagues when he was at the Air Force Cambridge Research Laboratories.

Such a device has the potential of confining a plasma 25 times as dense as a tokamak with the same field strength. However, it will lose particles along the points of the cusps, and the operative question is whether the losses will be small compared with the bulk of the confined plasma. Wulf B. Kunkel of LBL reports that a one-meter pilot model has been built at LBL with support from the Electric Power Research Institute and is undergoing tests.

Electromagnetic fields in space

Electric and magnetic fields in interplanetary space are very weak, but their great spatial extent makes them important in the acceleration of cosmic rays and other particles. Kinsey A. Anderson and colleagues at the University of California at Berkeley have developed means of measuring such fields in the earth-moon region. Electric fields accelerate charged particles, and their strength can be determined by how far the particles drift into the field-free shadow of the moon. Magnetic field lines guide electrons toward the moon until they reach a point where the moon's surface is magnetized. They will then be reflected back, and the flux of reflected electrons will determine the strength of the lunar magnetization.

Anderson and co-workers determine that the electric field is always directed from the dawn to the dusk side of the magnetosphere. The average field strength is 0.15 volts per kilometer, and the voltage drop across the total field width (250,000 km) is about 40,000 volts. On the average, this field pumps a million megawatts of energy into the earth's magnetic field, enough to account for auroras, Van Allen belts and geomagnetic storms.

Lunar magnetic conclusions are: The maria are relatively free of fields compared with the highlands. Magnetized highland regions are small (5 to 100 km) and there are thousands of them. There are several much larger magnetized regions of elongated shape, 100 km wide by a few hundred kilometers long. On the backside there are two such large regions in heavily cratered highlands. One on the front side is associated in length and orientation with the rille Rima Sirsalis, one of the largest rilles on the moon.