

Mental Health. Though none of its recommendations have been endorsed by the Government, there are strong links between the Commission and NIMH.

Dr. Thomas F. A. Plaut, who wrote this first report, is assistant chief of the new National Center for Prevention and Control of Alcoholism at NIMH. And recently, NIMH, in a report of its own (SN: 10/21) made many of the same points on drinking habits as the Commission made, without its recommendations.

The report's main point is that alcoholism is strongly tied to cultural origin. Anglo-Saxons and the Irish roots produce high rates of alcoholism, while those of Jewish and Italian origin are relatively free of alcoholism. This is roughly the case with these cultural groups whether in the United States or their country of origin.

The Jewish and Italian groups integrate alcohol, specifically wine, into meals and religious rituals. Alongside this tolerance for alcohol and familiarity with it, there is strong disapproval of drunkenness.

By contrast, the Commission points out, Anglo-Saxons are plagued by conflicts over alcohol.

Rather than using alcohol during meals, Anglo-Saxons and Irish use alcohol to have fun or escape, all the while feeling uneasy about it, following the dictates of the old Puritan ethic.

The upshot is that people feel vaguely uncomfortable and guilty about drinking, young people drink out of rebellion and everyone hides the problem in the nearest family closet.

Most Americans are not going to suddenly adopt Jewish and Italian habits, says Dr. Plaut. Nevertheless, there are trends in the United States toward moderation that can be encouraged.

People now drink more in homes and private clubs than in bars. When men and women drink together, the result is usually greater moderation, says Dr. Plaut. Secondly, there is a striking increase in wine drinking.

Per capita consumption of whisky is only about half what it was in 1850 and has remained substantially unchanged since the turn of the century.

To encourage these trends, the Commission recommends that wine and beer advertisers tie in their products with food and family settings.

At the same time, the Commission feels that lowering the legal drinking age and instituting more consistent alcohol laws among the states and localities would minimize irresponsible drinking.

Predictably, the Commission recommendations prompted a range of opinions from cautious hedging to endorsement to condemnation within Protestant groups last week.

SINGLE CELL PROTEIN

For animal feed first

Single cell protein—the concentrated food stuff derived from such organisms as bacteria, yeasts, algae and fungi—can contribute to assuaging the world's hunger by acting first as an additive to animal feed. In this role it will replace more familiar forms of protein, and make them available for human use.

Eventually, single cell protein will itself become part of human diets, but the process will take a great deal of time. The purely technical problems of ensuring a safe, palatable form of SCP represent no more than half the battle; selling the product to the hungry who desperately need it will require sophisticated market campaigns backed by social studies of underdeveloped societies.

These conclusions emerge from a conference on the food product at the Massachusetts Institute of Technology, attended by scientists from more than 20 countries.

The use of SCP as a dietary supplement is not new; food yeast was eaten extensively in Germany and Great Britain during the two World Wars. It fell into disuse, however, as soon as the acute need diminished—it didn't taste good and was expensive. But today, colorless, odorless SCP can be produced at prices competitive with other forms of concentrated protein, such as soya and fish flour.

Much attention is now focussing on the use of petroleum fractions as the forage in SCP production. Pilot plants are operating in the Soviet Union, France and Scotland, and are moving past the planning stage in Taiwan, Communist China, India, Czechoslovakia and the United States. This process has great relevance to today's prob-

lems; many oil fields lie in just those parts of the world which support protein-poor populations.

Proteins from hydrocarbons have lived under the suspicion that they might cause cancer; toxicological research was featured prominently at the conference. A. A. Pokrovsky, director of the Institute of Nutrition of the Soviet Academy of Medical Sciences and G. H. Evans, manager of British Petroleum's Biological Research Division, both reported multi-generation trials on farm animals, using hydrocarbon-derived protein as a component of the feed. So far, these indicate that SCP is entirely safe as an additive for animal feed. The Russians have also tested the foodstuff successfully on monkeys.

Both scientists emphasized that they intend to use SCP primarily in animal feeds, although they expect the experience gained in this way to have value when the products are fed to humans.

So far, this stage has not been reached. And according to Sanford A. Miller, associate professor of nutritional biochemistry at MIT, present animal tests are rare and dubious in nature. Tests are carried out predominantly with healthy animals, neglecting the fact that the foods will eventually supplement the diets of the malnourished and sick.

In view of the market pressures, concentrated protein will probably have the best chance of acceptance as a food additive, rather than a food itself. In fact this applies to all new forms of protein, for the conference served to emphasize that no individual new source of food will nourish all the world's hungry. ♦

PLANT GENETICS

The new shape of agriculture

If scientists who spoke at a meeting at the National Academy of Sciences last week are right, world food production is headed not for a crisis but for a dramatic upward swing in the next few decades.

"Biological limits in productivity have not as yet been achieved with a single commodity," Dr. Sylvan H. Wittwer told the Agricultural Research Institute meeting at the Academy. "Major breakthroughs can be immediate and extraordinary in many areas within the near future," said the Michigan State University scientist. "But these will only open new vistas for further exploration which are now beyond our vision and

comprehension."

Though traditional methods of agricultural management—irrigation, fertilization as well as pest control—continue to play a vital role in high productivity, the future shape of agriculture may be changed by changing the shape of plants by either genetic or chemical means.

Umbrella-shaped soybean plants will be bred into pyramids and slender corn stalks will look like Christmas trees—their leaves horizontal at the bottom and vertical at the top, with cone-shaped cobs. The idea is to expose as much leaf surface as possible to sunlight to capture a maximum of solar

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energy for photosynthesis. Corn is particularly responsive to sunlight; the more it gets, the faster it grows.

Wheat, often considered the world's most important food crop, is also facing an upward rather than downward swing in productivity. Using a gene-altering chemical called Cycocel or CCC, scientists have produced a new variety of wheat with shorter stems and fuller grain heads—a hardy, drought-resistant type that grows in many areas of the world where normal wheat dies.

And recent work at the International Rice Research Institute in the Philippines, where scientists crossed tall tropical rices with short types from Taiwan, promises a 30 percent increase in yield. This new variety of rice grows successfully in Southeast Asia and matures in only four to four and a half months, making three crops a year possible.

In addition to changing the shape of plants to get more productive varieties, agricultural researchers are turning to carbon dioxide as a potential catalyst to improve crop productivity. For photosynthesis, plants annually extract some 16 billion tons of carbon dioxide from the atmosphere. But carbonates are also plentiful in the earth, constituting a sleeping giant just waiting to be harnessed by imaginative researchers, according to Dr. Wittwer. Adding carbonates to the soil or spraying them in water solutions directly on plant leaves could boost photosynthesis efficiency severalfold, as experience in greenhouses has shown. This approach should be used in the field as well, he says.

CANCER SOCIETY

Long way to go

Over the years inroads have been made against cancer, the research effort has multiplied again and again, and the results have been gratifying, to some, but hardly good enough. The delegates to the American Cancer Society's annual meeting in New York this month couldn't find time to pat themselves on the back for listening to accounts of unfinished business. Some incidence curves continue to climb, research targets may be inadequately defined, and there is a management problem. "We run the risk of seriously diluting our efforts," Dr. Richard P. Mason, the organization's senior vice president for research, warned.

Not nearly enough is known about the peculiarities of the cancer cell in contrast to the healthy one, he said, or about processes of growth of malignant cells and their ability to move through the body. More work is needed on the production of immune responses within the body as well as on the pecu-

liarities of viruses known to produce cancer in animals and suspected of doing so in man.

Research expenditures of the society have risen from \$1.2 million in 1947 to \$15.5 million in 1965. Other organizations' research grants continue to climb—the comparable figures for the National Cancer Institute are \$664,000 and \$72.8 million.

But if the present rate continues, more than 50 million Americans now living will eventually develop cancer.

Lung cancer leads the number of deaths, with 55,300 estimated for 1968, divided between 46,600 men and 8,700 women. From all cancers 172,000 men and 143,000 women are expected to die next year.

There is a bright side of the coin, in spite of the growing cancer rate. About 200,000 men, women and children will probably be saved from the disease in 1968; 100,000 more could escape death if they would go to physicians for earlier treatment.

Some 1.4 million Americans alive today have been officially cured of cancer; they show no evidence of the disease at least five years after treatment. Actually, there are more than 2 million Americans cured; some 700,000 former patients will not be counted until they complete the five years.

One of the most encouraging trends has been the decline of uterine cancer. Statistics are deceiving in this respect because the number of deaths this year—13,500—remains the same, but the population is rising. Over the past 25 years the death rate from uterine cancer has been cut in half.

SUPERCONDUCTIVITY

Theory diluted

Current theories on the causes of superconductivity—the flow of electric current without resistance at very low temperatures—have been in trouble because some predictions based on them haven't been backed up by experiment.

One prediction—that the temperature at which a substance becomes superconducting should be lower in the heavier of two isotopes of a given element—has been found to be way off, according to experiments reported in the Oct. 16 PHYSICAL REVIEW LETTERS. Uranium 235 was found to have a lower temperature than its heavier isotope, U-238 by Dr. Robert D. Fowler and four other physicists at Los Alamos Laboratory.

The test results were claimed to be "final proof that here a mechanism other than the phonon-electron interaction (as currently theorized) leads to superconductivity."