easy to predict and quite inescapable: it derives from population growth plus the desire of the affluent in advanced countries for meat instead of grain. (As a rule of thumb, it takes 7 pounds of grain to produce 1 pound of beef, a ratio which not only magnifies the affluence factor but leads to the peculiarly unfelicitous situation of bread being priced out of the poor man's mouth in order to feed the rich man's cow.) The matching increase in supply is harder to envisage and is far more vulnerable to unforeseen constraints or catastrophes. Moreover, the best that the optimists are offering is the maintenance or slight improvement of per capita diets for another few decades, which, they say, should be time enough to lick the population problem. That may not be enough to satisfy people's rising expectations. Nor is it a happy position to take that the Green Revolution may buy enough time for someone else to find a technological fix for the population problem. The only fix that has worked historically is economic development, and economic development in the developing countries, at least in those without oil, depends on a rate of growth of agricultural production that will both avoid the need to import food and provide enough exports to finance further development. To this extent, agricultural production is not the passkey to some magic cure for the population problem; it is the cure.

Famine Not the Only Constraint

The cure is not working too well at present. Agricultural production in the developing countries is increasing far more slowly than called for in the FAO plan and will have to grow at an unprecedented rate (more than 4 percent a year) for the rest of the decade if even present diets are to be maintained by 1980. Maybe this will happen. The early successes of the Green Revolution demonstrated that agriculture need not be an economic backwater but could contribute to development. Under Robert McNamara the World Bank has recently met the goal of quadrupling its loans for agriculture. And the events of the last year have made their impression. "What they have done is to sober up some governments, including the heads of state, so that they may start to take agriculture seriously," says Dale Hathaway.

Yet even if a serious effort is made and growth rates improve substantially, the risk of rural unemployment, income inequalities, and social unrest seems likely to grow in more or less equal proportion. The "difficulty of subsistence," which Malthus saw as the necessary check on population, may not be the first constraint to come into operation.

For the moment, however, the general world food situation seems quite stable, experts are agreed that 1972 was probably just a bad year, and, in the negative way that FAO director general Boerma likes to spread comfort about, "there is little likelihood of immediate, widespread famine." In the longer term, the world's agricultural capacity is clearly not yet stretched to its limit, and any deterioration in diet is likely to be quite gradual.

—NICHOLAS WADE

Mental Health: Establishment Balks at Innovative Psychiatrist

Any doctor who tangles with the politics of established medicine is likely sooner or later to get his wings clipped. Nowhere is resistance to change stronger than in small rural counties. Georges Reding, a psychoanalyst who spent 4 years setting up a community mental health program in Franklin County, New York, has learned this firsthand. Reding says he was forced out by the county government last year on the vague grounds that he had mismanaged the program's finances and spent too much money. More to the point, he antagonized small, but politically powerful, elements of the medical community. Even though he was supported by the county's mental health board, Reding's outspoken criticisms of some local doctors—he called one a "quack" and told another he should be restrained from the practice of medicine—proved too much for the county legislators. So, the county mental health program was forced to close, even though the board found no fault with its aims and achievements.

Reding's approach to medicine in general is a threat to the establishment. He is a psychiatrist who believes that a mental hospital is no place for a mentally ill person.

In line with this philosophy, Reding inaugurated a project that he believes to be unique in this country: the systematic placement of patients suffering acute psychiatric emergencies in the medical wards of general hospitals, rather than putting them in psychiatric wards or sending them to the state hospital. Mental health experts have been talking for years about the need to phase out mental hospitals and reduce psychiatric hospitalizations, but the belief still persists that the mentally ill should be segregated from people hospitalized for medical reasons. Reding's premise is simple. You go to the hospital when you are sick. "You don't admit people because of diagnosis, you admit people because of the acuteness of their condition." Therefore, in many cases there is no rationale for segregating people according to diagnosis.

Franklin County, whose biggest town is Malone, is a sparsely populated, economically depressed area near the Canadian border. Before Reding arrived, it had been the custom to send acute psychiatric cases to the regional state mental hospital because none of the three county hospitals has psychiatric facilities. When he became director of the county's mental health services, Reding arranged instead for the admission of such patients to the general hospitals.

In a recent article in the *New England Journal of Medicine*, he reports that the average hospital stay was brought down to about 8 days—a striking contrast to the average length of stay in state hospitals, which is 41 days, and to the average stay for people referred through the community mental health center system, which is 14 days.

Reding says that a total of 344 patients were admitted to the Franklin County hospitals over a 4-year period.

They suffered from acute schizophrenia or paranoid episodes, psychotic depression and suicide attempts, organic brain syndromes with psychosis, alcoholic psychoses, personality disorders manifested in violent behaviors, and mania. Of the 344, only 7 were sent on to the state hospital.

To orient hospital staffs to the project, Reding held discussions with them about the county mental health program and let them know he was not there to have mental patients dumped on him, but to actively cooperate with the medical staffs in their treatment. He also conducted a series of educational lectures on mental illnesses and their treatment. Nursing staffs were initially reluctant to participate, fearing that the mental patients would be disruptive and believing that facilities were inadequate to handle them. But Reding and his staff, made up of a mental health nursing coordinator, a psychiatric social worker, and a drug abuse coordinator, gave them support with some on-the-job training in psychiatric nursing.

Only Drugs Used

Patients were brought in by cooperating physicians or by Reding, the only psychiatrist. All apparently proved manageable with the aid of psychotropic drugs, antidepressants, and tranquilizers; neither physical restraints nor shock treatments were used. During the acute phases of their illnesses patients' beds were placed in the halls so that nurses could keep track of them at all times; subsequently, they shared rooms with the ordinary medical patients. Patients were treated by attending physicians, with back-up help from the psychiatrist. Reding says that most of the criticism of these procedures came from relatives of patients who were afraid it would be bad for auntie to have a crazy person for a roommate. In fact, says Reding, the pairing off of medical and psychiatric patients in the same room was therapeutic for both parties: it got the sick person's mind off his own aches and pains, and the mental patient, once he had improved enough to get out of bed, was helpful to both patients and nurses. Fears that the psychiatric patients would disturb the medical ones proved unfounded; on the contrary, it was the medical patients who woke up and complained during the night.

Reding cites two cases of the happy results of his approach. One, a 40-year-old mother of six, was carted off regularly to spend about 2 months a year in the state hospital as a result of acute paranoid episodes. After Reding arrived in Franklin County, he persuaded her to go to a general hospital during her next episode. She stayed only 6 days. In the past 4 years she has been admitted three times for short periods, averaging 5 days apiece. The rest of the time her behavior has been normal.

Reding is very proud of a recent achievement at the hospital in Coudersport, Pennsylvania, where he is now conducting the same kind of project. A patient was admitted in a state of mania that often lands people in state hospitals for months. The patient was released in 3 days. Reding attributes this to the continuity of care the patient received—he kept in touch with the patient's wife who alerted him early enough, and the hospital was familiar to the man.

Reding believes that the soothing atmosphere of general hospitals, and the fact they are situated close to the patients' communities are in large part responsible for the shortness of stays. In the regular wards, there is "constant negative reinforcement of antisocial behavior," whereas in a mental ward people are expected to act crazy, and disturbed behavior is highly contagious. The benefits of being treated in a normal environment, close to home, far outweigh whatever therapy is offered in mental hospitals. In fact, Reding believes that the only really hopeless disease is the "disease of institutionalization."

Needless to say, systematic follow-up of patients has to be an integral part of this program. Reding kept track of his patients through their regular doctors, who continued to supply them with medication, and members of his staff or public health nurses visited the released patients at their homes. Some of them stayed for a while at a halfway house and "sheltered workshop" run by the county.

Reding ran his project without benefit of a federally funded community mental health center program. Indeed, he thinks that community mental health centers are behind the times because they place too much emphasis on the medical model for care, and that centralized facilities are inappropriate for a sparsely populated rural county. He has come full circle from the days he spent as a psychoanalyst in Belgium and Switzerland. He now joins a small cadre of people, including Ralph Nader's mental health task force, who believe that mental health care belongs entirely in the realm of social services, except when medical intervention is required. Alternatives should be preventive care, better crisis intervention, and the use of "primary caretakers" as the front line of defense against mental illness. Primary caretakers are all who have authority among large portions of the population—teachers, police, ministers, nurses, and so forth. In this system, psychiatrists and psychologists would be used in a consultative capacity. Long-term therapy, says Reding, is for the 10 percent of the population that can afford it. It is now time to look after the rest.

Conflict with County

Reding, as may well be imagined, was constantly at loggerheads with the Franklin County government during his 4-year stay. They complained about excessive mileage because he drove 25,000 miles a year within the county checking up on patients. The medical community was also suspicious. He says that only about one in five doctors cooperated with the psychiatric hospitalization project and the rest "tolerated" it.

Reding's eventual departure seems to have been inevitable, given what he calls the "despotic" nature of the local government and the fact there was no strong community organization to back him up.

A series of disputes led to what he calls a "county level Watergate" that led to his departure.

He strongly criticized one doctor for being incompetent and a menace to the community because the doctor was continuously prescribing barbiturates to a woman who had become addicted to them. He inflamed the county government by forcing a health officer to shut down a small, private, and illegal methadone program he was running. Reding's outspoken personality aggravated the situation, but he says the cards were stacked against him anyway. The ruling powers had never liked the idea of spending money on mental health, and they interpreted Reding's public health approach—which holds the entire community responsible for the mental health of its members—as being an indictment of the community. A statement by the county legislators illustrates this attitude—"County officials have been labelled [by Reding] as uneducated.

Residents of the county have been described as having a mental or alcoholic problem with few exceptions. However, with all our failings, we have in general adapted ourselves to treat our fellow man with respect." (Unlike Reding.) Eventually, because the mental health board refused to fire him, the county withdrew its financial support from the $200,000-a-year program. So Reding and his staff left. So did Reding's wife, a psychiatric nurse who was running the halfway house because they couldn't find anyone else to do it.

As a final gesture, the county turned down an 8-year, $100,000-a-year federal grant for alcoholism services, which Reding had just obtained—for no other reason, says Reding, than that it was his idea.

Reding is now setting up a department of community mental health in a private hospital in Coudersport, Pennsylvania, situated in a rural, poor county in western Pennsylvania. His inpatient psychiatric policies have been adopted, and the project is apparently running smoothly. But he says he will have to leave soon so that he can put his children in good schools.

A person who wants to reform rural health care runs into enormous problems, ranging from personal logistics to the top ranks of organized medicine. Reding says his report of the Franklin County experiment was turned down by several psychiatric journals. Ironically, Reding says, the *Archives of General Psychiatry* refused to include the "meat" of the article, in which he accuses psychiatrists of furthering prejudicial treatment of mental patients and says: "The time has come for psychiatric hospitals to justify their continued operation." The article's final acceptance by the prestigious *New England Journal of Medicine* would seem to justify Reding's belief that the mental health profession is in need of some self-examination.

—CONSTANCE HOLDEN

New York Times: All the News That's Fit to Printout

The newspaper industry has acquired a reputation for being one of the more technologically backward of American industries. Craft unions have resisted automation as a threat to their jobs. Management has never shown much enthusiasm about investing in innovation. And, on the editorial side of the business, journalists' characteristic attitude toward modernization makes it surprising that they ever gave up the quill pen.

The *New York Times*, however, has recently taken a major step in pioneering computer applications by establishing an information bank for the storage and retrieval of material published in the *Times* and in other newspapers and magazines. The new system has been expensive to develop and is costly to operate, and the *Times* would hardly have gone ahead with it if there had not been sound commercial prospects in selling the service.

The new system was designed by IBM's Federal Systems Division in collaboration with the *Times*. The Federal Systems Division, as the name implies, does business principally with military and civilian federal agencies, but it also works with nongovernment customers that need big data processing systems.

The conventional newspaper information retrieval system is not very sophisticated. At the heart of it is the traditional "morgue"—file drawers full of envelopes full of clippings referenced by name and subject. Most morgues serve their purpose in a rough-and-ready way, but there are inherent limitations, not the least of which are that envelopes can be easily mislaid and clippings tend to drift away. The *Times* has run the largest newspaper morgue, but it still suffers from the generic defects.

Where the *Times* has had an advantage over other newspapers, however, has been in publishing the *Times Index*. The *Index* carries not only a citation for virtually every article and feature carried in the daily and Sunday *Times*, but also an abstract of the stories. The abstracting operation provides the essential inputs for the new information bank. As one *Times* information man put it, "What is in the *Index* in print is transposed into a system capability."

A user seated at his terminal can summon up on his screen an abstract of up to 150 words or so. He cannot, however, get the full text of an article from the computer. A decision was made early not to give the computer a "full text" capability. Feeding full texts to the computer would have created information storage problems. Furthermore, it was found that perhaps 80 percent or more of outside users making inquiries do not require the full text, and about 60 percent of in-house users are satisfied with the abstract.

Most users, both in the *Times* building and outside, can get a "hard" (paper) copy of the abstract via a printer that produces copies of abstracts displayed on the cathode-ray tube terminal.

To provide the full text of an article, the system relies on a development of microfilm techniques. In connection with the information bank, the *Times* has provided a new microfiche service. The actual size of the microfiche is 4 inches by 6 inches—the dimensions of a large postcard—but each fiche contains 99 frames. Each frame, in turn, is a microphotograph of a 9 inch by 12 inch sheet on which clippings from the newspaper are mounted. One microfiche contains all the news stories and editorial features of a daily *Times*; the Sunday *Times* takes four fiches.

The fiche number and frame number are included in the information that accompanies the abstract on the terminal screen. The full text from the microfiche can then be provided by several means. Inside the *Times* building, the text can be displayed on the terminal screen through closed-circuit television. A hard copy can be made by a photographic process. Or the fiche can be used on a reader, a machine similar to a microfilm reader. Some of these machines are equipped to make hard copies of the frames required.

In spite of the variety of options, the world of the full-text viewer is not