

participation, according to Dr. Blair.

These are airborne troublemakers such as fungi, bacterial spores, allergens and insects; drainage basins as large ecosystems; Eskimo populations as a measure of human adaptability; evolution in isolated Hawaii, and seasonal changes in plant and animal life.

Supporters of the IBP idea say man is now in a crisis with more dangerous implications than the bloodiest war. They say it is vital that he understand the long-term effects of changes he makes in his environment, lest these include the poisoning of the planet.

They quite seriously raise the possibility of human extinction and warn that man may now be putting the finishing touches on environmental changes that ultimately and inexorably will prove fatal.

Essentially an organization among United Nations members, IBP's task is to integrate existing scientific inquiry that may have a bearing on the problem, and to launch new research when and where it is needed.

Dr. Blair believes planning of the U.S. participation in IBP has now

reached the stage where action is necessary lest the effort lose momentum.

Noting that a year has passed of the five officially granted for the actual work of IBP, he says: "I don't want to be dramatic, but I really think we are reaching the stage where time is running out on us. I feel there is a real environmental crisis."

His program directors could use \$7.5 million, Dr. Blair says, though the \$5 million under consideration is enough to let the U.S. effort go forward.

But \$5 million appears to be \$5 million too much in new money; even if the resolution were reported favorably this year, over the Administration reservations; it is unlikely that it would be adopted—not because Congress is not in favor of IBP, but simply because there is no money available.

Thus no one, except apparently Dr. Blair, was surprised that Drs. Bennett and Haworth recommended delay in any major IBP funding.

What did surprise many was their contention that the U.S. participation is not well enough organized yet for funding. ◇

at Harvard University, says, "Our young people have been taught to be violent all their lives, so we should not be so surprised." A breakdown in personal restraints creates a society in which each is against all, he says. "It's depressing to be in a country where personal inhibitions and customary restraints have broken down." Elders have failed to communicate with their younger colleagues, says Dr. Farnsworth.

Adds Dr. Raymond W. Waggoner, president-elect of the APA: "The kind of thing at Columbia seems just impossible."

Western family styles — the small parent-child unit instead of larger family groups—have led to a situation in which adults can give their children only Western society to believe in, he contends. That is not enough; Dr. Waggoner characterizes youth unrest as an "infection that has gone around the world (along with Westernization) leading to revolt against authority."

To French psychiatrist Dr. Leon Chertok, youth protest represents a new, confusing phenomenon. He says he can find in it neither political nor economic factors that are traditional to revolutions.

The American problem has been attributed to three issues: Vietnam, racial struggles and drugs. But Dr. Chertok finds none of these explanations true of France, and yet "we are faced with the same unrest in an amplified way."

In the opinion of other psychiatrists, however, the political factors are just as much present in 1968 as they ever were, only more subtly and specific to each country. What is universal, they agree, is a loss of faith in the old value symbols—country, religion, scientific progress and modern government.

"There is an absence of something to believe in, to differentiate between good and bad," says Dr. Abraham Maslow, president of the American Psychological Association. "Not only youth but much of mankind is suffering from this illness."

Disagreement arises on the question of whether youth can find, or indeed, is even looking for new values.

To Dr. Robert H. Felix, former director of the National Institute of Mental Health, now at St. Louis University, youth protest represents the signs of health. "I submit we are not seeing a loss of values, but a creation of values. My plea is don't damn (the protesters) but say a prayer and bear with them. I think out of this will come a greater set of values than we have had before."

Young people are moving toward more universal, humane values, Dr. Maslow explains. Nationalism is being transcended. There is movement toward the idea of a single human species. Also the opportunities are greater in 1968—

EXPLORING UNREST

Impeccable ideals; stupid means

Adults have been lamenting for years the alienation, impersonality and materialism of modern society, the growth of oversized universities with their loss of individual options, the breakdown of family units and transfer of rearing functions to schools and the diminishing concern of one human being for another.

Now young people are acting on these ideas in protests at universities around the world (SN: 5/25, p. 493), much to the professed surprise of adults.

"Adults have been mouthing these things for a decade," says Dr. J. Robertson Unwin, psychiatrist in adolescent studies at McGill University's Allan Memorial Institute, Montreal. "What do they think kids are—just lumps of rock that will not react?"

Youth unrest and protest, in Dr. Unwin's opinion, offers a means for adult society to try out new ideas. As in Mao Tse Tung's Cultural Revolution, young people become, in effect, shock troops for their elders. Youth provides the idealistic commitment; dissatisfied adults provide the ideas behind their protest.

At their recent annual meeting in Boston (see p. 523), members of the American Psychiatric Association met with Dr. Unwin and psychiatrists from other nations to discuss international youth problems. The seminar was spon-



Wide World Photos

Parisian students: everyone's problem

sored by the Forest Hospital Foundation in Chicago.

Attitudes toward outbreaks at the Sorbonne, Columbia University and elsewhere ran the gamut from dismay to hope, depending on whether the protest was seen as the sign of a sick society or the mark of a struggle toward health.

Expressing dismay, Dr. Dana Farnsworth, authority on college health ser-

the chance for a united Europe, for example, and world government.

Their ideals are impeccable, says Dr. Maslow; their means, as in the Columbia incident, are stupid.

But if young people espouse new ideas, they did not create them, says Dr. Unwin, who believes sympathetic adults attribute to adolescents more certainty and moral strength than they really possess.

They are a "very bright, healthy mob," he says, but also unformed. The ideas behind youth protests are being articulated and thought out by older philosophers such as Paul Goodman, author of "Growing up Absurd" and Herbert Marcuse, professor at the University of California, San Diego, as well as Timothy Leary, high priest of the LSD movement.

Meanwhile adult society leaves kids "very much to continue what they are doing," says Dr. Unwin. Try to set up something to help hippies and it is sabotaged by adults, he declares. He says organizations carrying medical and nutritional help to hippie groups have been "blown apart."

Parents are disgusted when their children use marijuana, Dr. Unwin adds, yet two months later, they are asking for it themselves. This does not happen every day, but "I've seen it enough to amaze me."

Adults sense the need for new ways of thinking and acting, he continues, and are "using the elasticity of kids to test them out." ◇

ASTRONOMY

An optical pulsar

The astronomical radio sources which pulse about once a second fascinate astronomers: they reflect physical processes going at an exceptionally fast rate. Four such pulsars are now known to exist (SN: 3/16, p. 255).

Since the discovery of the first in July 1967 by Dr. Anthony Hewish and four co-workers at Cambridge University, theorists have supplied numerous speculations to account for the quick variations—pulsating neutron stars, white dwarfs and rotating binaries, among others.

Now the theorists will have to work even harder. They will have to fit into their theories pulsations in visible light that observers believe they have found in at least one pulsar, Dr. Hewish's first, which is now catalogued as CP 1919.

Searches for optical signals—and especially pulsed optical signals—from pulsars have been going on for several months. Some observatories report no success, but teams working at the Lick Observatory in California and at the

Kitt Peak National Observatory in Arizona during late April and early May have succeeded in detecting extremely faint optical pulsations in CP 1919, which is located in the constellation Vulpecula.

News of the discovery was first communicated to interested astronomers May 20 at the Goddard Institute for Space Studies in New York City. The report, by Dr. Stephen Maran of Kitt Peak, caused an immediate uproar among the theorists.

The next day, Dr. David Cudaback of Lick Observatory flew in to report on the California observations which had been made only a few weeks before. The results were still in a rough form. Dr. Cudaback had been at the computer all night for several nights. Finally he decided to fly to New York because this gathering of astronomers interested in pulsars was the most fitting place to report the unexpected results.

The observations at Kitt Peak, by Dr. Maran, Dr. Roger Lynds and Donald Trumbo, were made with the observatory's 84-inch telescope. The California work, done by Dr. Cudaback, Dr. Leonard Kuhl, Ned Conklin and Taylor Howard, involved simultaneous observations with the 120-inch optical telescope at Lick and the 120-foot radiotelescope at Stanford University.

The optical fluctuations are far too faint to be distinguished from background light by using any existing telescope. The only way to discover the wave-like pulsation was to store and add up photomultiplier-tube data from a large number of cycles.

The Kitt Peak group assumed that the optical period would be twice the 1.3-second radio pulse. To accomplish the storage and the adding, they divided the known period of a radio fluctuation

JAPAN JOINS CLUB

Proliferation of plutonium

As debate on the nuclear non-proliferation treaty continued in the United Nations last week, news that Japan has produced bomb-quality plutonium without foreign technical assistance underlined the importance of quick action if the treaty is to be effective. Several other nations, including India, have already produced plutonium.

The Japan Atomic Energy Research Institute disclosed production of 18 grams of plutonium 239 of an estimated 95 percent purity at its Tokai Village laboratory, 70 miles northeast of Tokyo.

The successful reprocessing of used uranium reactor fuel means Japan now has technical potential to make an atomic bomb with domestically produced Pu-239. The institute termed

into 400 subperiods. The light intensity seen by the telescope in each subperiod was recorded and stored in a different element of an electronic memory. As each one-second period went by, the brightness from the first 400th part went to memory element 1, that from the second 400th part to element 2 and so on. Over thousands of periods background light would build up evenly in all 400 elements, but any periodic fluctuations would show up as much greater intensity totals in particular memory elements. And that, in fact, is what happened, reports Dr. Maran. Differences too small to see in one cycle added to noticeable totals in thousands of cycles.

The California observers did not assume any particular relationship between radio and optical periods. From the output of their photomultiplier tubes they generated an electrical current that would represent changes in the brightness of the light and examined this for low frequency fluctuations. The radio pulses are constant, but the rates of optical pulses were found to vary. This was a surprise because optical pulses had been expected to have rates as constant as the radio ones.

The two observations do not necessarily conflict, says Dr. Cudaback, since the method used at Kitt Peak would have suppressed evidence of fluctuations at any frequency but the selected one.

Dr. Cudaback stresses the roughness of his data. The timing of the conference did not allow him time to work them over as thoroughly as he would like. "I may be dead wrong," he says, "but I don't think so."

Possible optical pulses from other pulsars are being investigated. Kitt Peak has looked at the one called CP 0950, but so far without result.

the first home made weapons-grade Pu-239 an experimental sample. The experiment began last March in the Tokai laboratory.

Pu-239 is one of the two sources of nuclear energy for atomic bombs, the other being uranium 235. Plutonium is an artificial element created in atomic power reactors as a by-product of the fission of uranium; when used uranium fuel rods are withdrawn from reactors for reprocessing, the plutonium can be extracted.

Control of plutonium produced in booming nuclear power plants around the world, including international inspection, is a central aim of the non-proliferation treaty.

Under her own law, which limits the