

easy to imagine Titov as a member of the American group of astronauts, or Glenn as one of the Soviet cosmonauts.

These men could probably qualify as members of a new worldwide brotherhood. I listened in Moscow to an interview with Titov soon after his flight, as well as to the interview with Glenn after his return from space, and the similarity between the two men was striking. And yet these heroes serve, faithfully and intelligently, two political powers that face each other with deep enmity and hope for the collapse of each other. It is easy to imagine the same type of man carrying, if so ordered, megaton nuclear bombs to obliterate Moscow or to incinerate New York. These new world heroes of the age of science are obedient servants of prescientific national states. I read once, I do not remember where, a novel describing the ultimate revolt of flyers of all countries who refused to continue slaughtering innocent people from the air and formed an international government of the air age. But chauffeurs and pilots are even less likely to rebel against those who own the machines they are driving or flying than the scientists and engineers who discover the laws on which these machines are based, and build them at the bidding of their governments.

Scientists, too, form a single fraternity, and engineers and technologists the world over are similar in their attitudes and outlooks—even if they are not so accustomed to worldwide cooperation as scientists. They are all potential useful citizens of a peaceful united world, as are the test pilots and the astronauts, but tradition keeps them all subservient to the power interests of the separate states. They serve these states in constructive pioneering work and ex-

ploration, as well as in the development and use of new weapons of man's destruction.

The scientific revolution of our time has made national states obsolete, whether they are based on race, tradition, creed, or ideology; but before mankind has realized this obsolescence, this revolution has provided the leaders of the different states with technical facilities sufficient to destroy their own societies, and to drag all mankind down into obliteration with them. It has given man a source of energy sufficient to produce an adequate standard of living for all, or to incinerate the largest city in a single explosion. It has given man vehicles which could be used to explore the universe far beyond the dreams of any preceding generation, or to carry megaton bombs from one end of the earth to another with the precision of an archer hitting a target at fifty yards. It has developed men who are ready to do both. These are the heroes of our time—the Gagarins, Titovs, Glenns, and the many others following in their footsteps. Societies are as yet only dimly aware that they must use these men (and their machines) for a common effort on behalf of humanity as a whole, and not for their internecine fights. The exchange of telegrams between Khrushchev and Kennedy after Glenn's flight, both agreeing to the desirability of international collaboration in space exploration, are good words; but are the two societies ready to follow them with actions? In 1961, I wrote in the *BULLETIN* that a Russian and an American astronaut flying together toward some cosmic objective would do more for the mutual understanding of the two nations than could years of diplomatic wrangling. This day seems a little less impossible now than it was a year ago. —ER

The Politics of the Nervous System



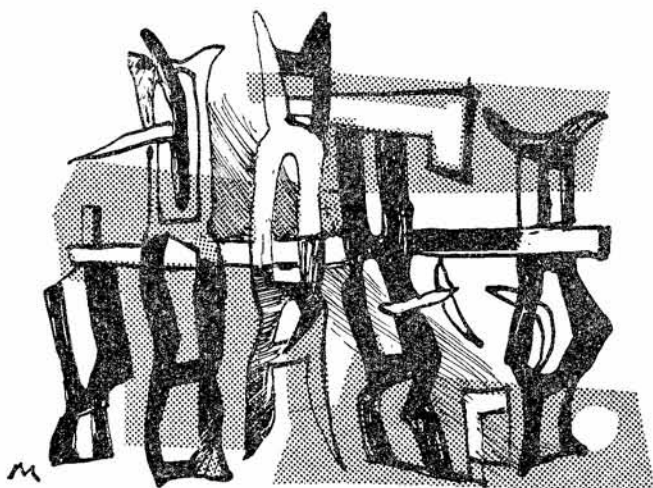
THE ARTICLE by Dr. E. James Lieberman, entitled "Psychochemicals as Weapons" (January, 1962 *BULLETIN*), could lead to serious confusion in the minds of a credulous public and of a credulous military. The author seems to be moved by admirable democratic sentiments, but he has mixed together an astonishing combination of psychiatric folklore and chemical warfare fantasy. The results are misleading.

The so-called "psychotropic weapons" emphasized in this article are lysergic acid diethylamide (LSD), mescaline (the synthetic of the "divine peyote cactus"), and psilocybine (the synthetic of the sacred mushroom of Mexico). The author, a psychiatrist, warns that "catastrophic damage that would be neither reversible nor humane" might follow the ingestion of these drugs.

Dr. Lieberman has presented one of the many sharply divergent viewpoints about the interpretation and application of these drugs. Many psychiatrists believe that LSD,

mescaline, and psilocybine produce psychiatric symptoms—anxiety, depression, detachment, confusion, suspicion, psychosis. Many other investigators have come to the conclusion that these symptoms exist mainly in the mind and eye of the psychiatrist, and that conscious-expanding chemicals, far from being dangerous weapons, may produce dramatic changes in personality leading to unprecedented peace, sanity, and happiness.

Perhaps it depends on what you are trained to look for. Most psychiatrists who have experimented with such conscious-affecting drugs report danger. Most non-psychiatrists see these drugs as great benefactors of mankind. Included in the latter group are Albert Hoffman, the brilliant biochemist who first synthesized LSD and psilocybine; Alan Watts, author and philosopher; Robert S. de Ropp, biochemist; Aldous Huxley, novelist and philosopher; and the great American psychologist and philosopher, William James. Also included among those who hail the humanistic



promise of consciousness-expanding drugs are a few psychiatrists who have seen beyond psychopathology to the adaptive potential of the human brain.

So much for the controversial. Research and not words will resolve these issues. But let us look next at the secure knowledge which exists concerning mescaline, LSD, and psilocybine. What are these substances? Sacramental foods? Devilish weapons? Wonder medicines?

It is easier to say what they are not. They are not addictive, nor sedative, nor intoxicating. There is no evidence for any lasting and very few transient physical effects. Everyone agrees on one factor—they dramatically alter consciousness and expand awareness.

There is a second generally shared conclusion. Set and suggestibility, expectation and emotional atmosphere account for almost all of the specificity of reaction. If the drug-giver is supportive, open, relaxed, then the results will usually be positive, educational, dramatically insightful. If, on the other hand, the drug-giver is secretive, depersonalized, himself fearful of the drug, then the reactions will probably be anxious and unpleasant.

As members of a research project studying the effects and application of consciousness-expanding drugs, we have had the opportunity during the last 18 months of observing the behavioral and phenomenological reactions of over 300 subjects. A glance at some of our results suggests that the military applications of consciousness-expanding drugs may be limited. Ninety-one per cent of the Americans who have participated in our research report pleasant, inspirational experiences. Even with no attempt to be therapeutic, and with only one ingestion, over 60 per cent of our subjects report subsequent life changes for the better.

During the past 12 months we have used these drugs for rehabilitation purposes in a maximum security prison. During more than 100 individual ingestions with hardened criminals we have witnessed dramatic insight and behavior change reactions.

Like any product of our advanced technology, the consciousness-expanding drugs can be used to manipulate, to dominate, to frighten or to benefit mankind. A hypodermic syringe of LSD or Salk vaccine in the hands of an enemy can become a frightening weapon. However, the greatest enemies of mankind are ignorance and fear. In the hands of the unfriendly, these weapons—ignorance and fear—can paralyze and destroy.

What are the protections? Accurate information, openly shared, and calm, courageous response to the evidence.

Psychiatrists and physicians on whom Dr. Lieberman calls for rescue from danger, perhaps imaginary, can help to the extent they are collaborative, open, fearless with their fellow men. If the American people are frightened by psychopathological obsessions, psychiatric superstitions, and ill-kept chemical warfare secrets, they can be hurt. We are least vulnerable and strongest when we are well-informed. Facts are the defense against any weapon, and particularly the psychological weapons of fear and helplessness.

The facts about consciousness-expanding substances are not all in yet, but some things are clear. Physiologically these substances act mainly on the brain stem, disinhibiting certain regulating, selecting, screening, and controlling mechanisms that constantly guide our perception and thinking. The higher, conscious centers are free temporarily from these artificial restrictions. Behaviorally the main effect of these substances is relaxation. Most of our subjects are very happy just to sit and enjoy the world. There is much less talking, much less superficial movement or conversation. Let us be clear, almost all of our subjects could function very adequately if called on. They choose to relax. Psychologically these amazing substances expand your awareness, they open your mind. The kaleidoscopic and complex world that has always been there, the powerful sensations from every part of your body and the unusual connections of thoughts and feelings that are normally ignored come dramatically into consciousness.

Of course these experiences can be frightening. If you are not prepared, if you do not know what is happening to you and your brain, if you are struggling to maintain complete verbal control over your senses and your awareness, you will certainly be frightened and angry. But if you are prepared, if you know what kind of a chemical you have taken and what to expect (which most subjects participating in psychiatric research with these substances do not), if you do relax, then the experience can be wonderful, enlightening, and life-changing. If an enemy does drop LSD in the water supply and if you are accurately informed and prepared then you have two choices. If you have the time and inclination you should sit back and enjoy the most exciting educational experience of your life (you might be forever grateful to the saboteur). If you don't have the time or the inclination for this pleasant and insightful experience, then swallow a tranquilizer, which is a good antidote, and you'll be back to the prosaic reality. Tomorrow the drugs and the counterdrugs may be different, but the prescription is the same.

If an enemy introduced a consciousness-expanding drug into a military command center, our leaders—if they are accurately informed and experienced about the potentials of expanded awareness—might find that men in certain key positions could function better. In fact, we must assume that these substances are now being used by our space agency for the preparation of astronauts, who will certainly undergo altered states of consciousness in space exploration.

Your brain is your own. Intelligent, open collaboration can expand your mind—with words and with drugs. Only ignorance and misinformation can allow someone else to control it—with their own words or with their drugs or with their imaginary fears.

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