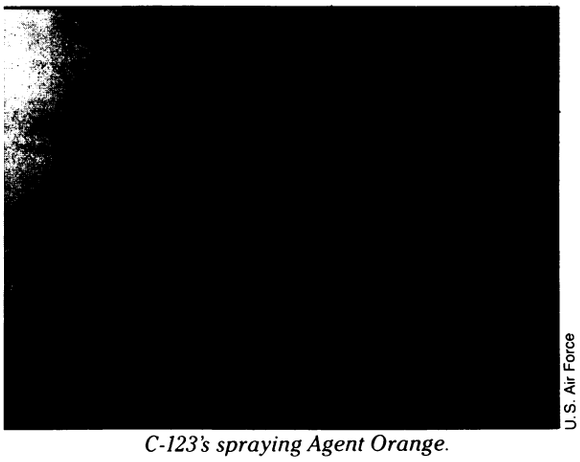
no earthly use to anybody." But if the technique works to produce any of a broad spectrum of antibodies, its applications will be numerous. The specific antibodies could be used to rapidly diagnose viral and bacterial infections, cancers and damage due to heart disease. They could also be used in making vaccines, bolstering the efforts of the immune system and carrying drugs to specific sites within the body.

In addition to determining the range of substances that will provoke specific human antibodies in laboratory cells, Olsson and Kaplan plan to investigate use of cells that can be obtained more easily than spleen cells. Human blood cells called beta-lymphocytes make antibodies, and the researchers suspect that such blood cells could be used to supply the antibody-making ability to hybrid cells. □

Reprieve for Agent Orange



U.S. Air Force

C-123's spraying Agent Orange.

The C-123's would swoop down low over the jungle, dispensing a fine mist of 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and trace amounts of a contaminant, 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (dioxin). Within a few days, the lush jungle would be eerily nude, sometimes exposing vast warrens of hospitals, kitchens and warehouses snugly dug into the earth. The Viet Cong, if not already rousted by the loss of camouflage, could be sought and destroyed with less hazard to U.S. troops.

Agent Orange, the potent herbicide used to strip the Vietnamese countryside of protective coverage, has left its manufacturers and the U.S. government a legacy of lawsuits and countersuits (SN: 3/17/79, p. 166; 1/26/80, p. 59). Veterans' groups say that exposure to Agent Orange has led to birth defects in their children, loss of libido, cancer and various neurological problems.

One of the nagging scientific questions has been whether exposure to Agent Orange really does affect a male's offspring born years later. A study released late last week by the Department of Health and Human Services indicates that there are no significant effects on mating, fertility or health of offspring in male mice fed the components of Agent Orange. Researchers James Lamb, John Moore and Thomas Marks did find evidence of liver and thymus gland toxicity in the treated animals, but the problems disappeared when the mice returned to a normal diet.

"We saw no significant decrease in fertility or survival of offspring, and no increase in birth defects," Lamb told SCIENCE NEWS. The doses, he says, were somewhat higher than what humans may have been exposed to in Vietnam, but veterans' exposures have not been well established.

When told of the study, Samuel S. Epstein, a long-time researcher into the hazards of dioxin, said that while it appeared fairly solid, some of the data that showed an apparent inversion between dosage and response in mating frequency were bothersome.

"The findings are consistent with two things," he says. "The fact that in the literature there are fairly clear-cut indications of toxic effects, and that it's been known for some time that the effect of dioxin in general is not mediated by a dominant lethal effect." There are bacterial data indicating dioxin is mutagenic, he notes.

But whatever the problems from Agent Orange, they may be mixed in with other effects of the war. A report issued last week by a government task force set up to coordinate Agent Orange research called for a study to determine whether service in Vietnam, rather than solely Agent Orange exposure, places veterans at high risk of developing health problems. While noting that dioxin's carcinogenicity in animals has been confirmed, the report called for further study to define the health risk posed by Agent Orange.

Specifically, it recommended long-term studies, since the health effects may not show up for 15 to 20 years, and verification of five European studies (SN: 4/12/80, p. 230) that show a correlation between the components of Agent Orange and cancer in exposed workers.

The task force concluded that a significant increase in knowledge is not likely to be realized for several years, but important information may come from studies (due to be released this month) of U.S. workers accidentally exposed to 2,4,5-T and dioxin, from work on congenital malformations conducted by the Center for Disease Control, and from a proposed study of Air Force personnel involved in Agent Orange application.

But in view of all the planned studies, it may be some time before the effects of the fallout from one of the United States' more potent weapons is fully quantified. □

The machinery of depression

It is generally accepted among psychiatrists that serious, "endogenous" depression — in which depression seems to envelop the person, regardless of life events — is rooted, often genetically, in a person's biochemistry. At the other end of the spectrum is environmentally induced, "normal" depression — a finite episode triggered by the loss of a loved one or by other disturbing situations. Somewhere in between lie various combinations of depression of various origins and severities.

All this has been inferred theoretically from years of experience and numerous studies — primarily statistical ones, such as Seymour Kety's twin studies in Copenhagen (SN: 10/7/78, p. 244). Laboratory experiments have also suggested that the brain's natural opiates, enkephalins and endorphins, play significant roles in human depression, or lack of it (SN: 11/25/80, p. 364).

Now, University of Iowa researchers report biochemical confirmation of the existence of distinct forms of depression, each mediated by the body's hypothalamic, pituitary and adrenal systems. Reporting in the July ARCHIVES OF GENERAL PSYCHIATRY, George Winokur, Michael A. Schlesser and Barry M. Sherman utilized the "dexamethasone suppression test," which previously has been shown to distinguish clinically depressed from nondepressed persons (SN: 4/28/79, p. 285). The nondepressed person's response to the drug dexamethasone involves a lowering, or suppression, of the body's cortisol level. The depressed person, however, exhibits no such suppression.

Through the test, the researchers say they could distinguish not only among depressed persons and "normal" controls, but among patients with primary depressive illness — significant depression or manic-depression accompanied by no other psychiatric diagnosis — and secondary depressive illness; nonsuppression was found in nearly half the primary population but in *none* of the 151 persons with either secondary or no depression.

Moreover, the test was able to distinguish among "the three familial subtypes of primary unipolar depressive illness," the researchers report. Nonsuppression was found in 75 percent of those who had a first-degree relative with depression and no related disorder such as mania, alcoholism or antisocial behavior; in 44 percent of those depressed persons with no first-degree relative with a psychiatric illness; and in 7 percent of those with a first-degree relative with alcoholism and/or an antisocial personality disorder. The latter finding indicates that depression in a person from such a family may be the *result* of alcoholism or antisocial personality, rather than the cause of them. □