MEDICINE

Link Mind and Cosmos

➤ SCIENTIFIC SUPPORT for the old idea that emotional disturbances are linked with the seasons and with the phases of the moon was presented by Dr. Leonard J. Ravitz of Duke Medical School, Durham, N. C., at the meeting of the Southern Medical Association in Dallas.

Scientists have long known that each of us, like a battery, gives off electrical waves. At Duke, Dr. Ravitz has been measuring these "electrical potentials" in insane and normal persons for two years. In plotting the day-by-day results he found marked changes coinciding not only with sun-moon phases but with seasons.

"This doesn't mean," Dr. Ravitz said, "that we can diagnose insanity, but now we can definitely diagnose the changing degrees of mental disturbance."

The most severely ill mental patients are much more emotionally disturbed during the phases of the new or full moons and in the spring or winter. Dr. Ravitz measured one patient for five months and on the basis of the results made a mathematical prediction of his behavior for the rest of the year. The prediction, he said, stood up in the patient's later actions.

With psychotics, readings are consistently higher than in normal persons, Dr. Ravitz said. However, since normal and abnormal respond to the same "field" influences, readings of both follow the same pattern and the same cycles.

As further evidence of the link between emotional and cosmic change, Dr. Ravitz said that there invariably is more unrest on the psychiatric wards at Duke Hospital and the Veterans Hospital, Roanoke, Va., during periods of the new or full moons than at other periods.

Origin of the theory goes back to 1935 when Dr. Harold S. Burr, E. K. Hunt professor of anatomy, and Dr. F. S. C. Northrop, professor of philosophy at Yale University, evolved the "electrodynamic theory of life," based on field physics.

Dr. Ravitz worked closely with Dr. Burr, who worked out experiments for testing the theory.

According to the theory, a universal electrical field imposes its design on both living and non-living matter. In turn, all living matter, from bacteria to man, responds to the universal field and exerts its own influence on it.

Science News Letter, November 17, 1951

CHEMISTRY

Sugar Beet Chemical

➤ BY FERMENTATION of sugar beet molasses, scientists at the National Research Council of Canada are now producing a chemical, butylene glycol (2,3-butanediol), on a pilot plant scale. This chemical is promising for use in resins, and as a non-drying and blending agent.

With the yearly increase in Canadian sugar beet production, a more stable demand for the molasses by-product would be created if the new process were adopted by commercial interests.

In the process, molasses, diluted with water and supplemented by the addition of an inorganic phosphate, is fermented by suitable strains of bacteria. Both *Aerobacter aerogenes* and *Pseudomonas hydrophila* give high yields of butylene glycol. Gradual improvements in pilot plant design and operation have resulted in yields of about 175 pounds of butylene glycol and 40 pounds of ethyl alcohol from each 1,000 pounds of molasses. Lesser amounts of other organic compounds are also produced but these are not recovered.

In preparing the medium, a continuous method of mashing, sterilizing and cooling is used. This procedure is more practical for industrial use than batch sterilization and gives satisfactory mashes for fermentation. Following the fermentation, the mash is concentrated by evaporation. Butylene glycol is then separated from the residual solids of the molasses by continuous steam stripping under pressure and finally removed from the resulting water solution by a series of distillation operations. Ethyl alcohol may be recovered immediately following the fermentation, by the method used in alcohol distilleries.

The initial impulse to the investigation was a war-time demand for butadiene in the synthetic rubber program. Although butadiene can be produced from butylene glycol, other synthetic procedures have proven more practical. Butylene glycol is however a highly versatile compound and scientists have investigated other possible uses for the substance.

Although closely related to ethylene glycol, the widely-used antifreeze, the isomer of butylene glycol produced from molasses is not useful for this purpose. Among possible applications for the chemical are the prevention of rapid drying in a variety of materials from tobacco to printers' ink, use as a blending agent for such products as ointments, pastes, dyes, wood stains, etc., as an intermediate in the synthesis of diacetyl for flavoring butter or other foods, and as a component of alkyd and polyester resins.

The butylene glycol fermentation is only one of Canada's National Research Council projects involving the use of agricultural and industrial wastes and surpluses. Among the current investigations is research on sulfite waste liquor, a waste product of the pulp and paper industry.

Science News Letter, November 17, 1951

PSYCHOLOGY

Lower Animals Can Show Man How to Live in Peace

➤ MAN SHOULD go to the lower organisms, germs, plants and animals, to learn how to abandon some undesirable primitive traits that keep the world in conflict, Dr. Paul R. Burkholder, chairman of the department of plant science at Yale University, has told chapters of the Society of Sigma Xi, national society for the encouragement of scientific research.

After explaining the way that organisms, such as the microbes, act on one another and on higher forms, Dr. Burkholder urged the application of the findings of "coaction theory" as it is called to human sociology.

"The important practical prescription appears to be not the intensification of the class struggle, as put forward by some advocates," Dr. Burkholder observed, "but rather the systematic conversion of negative into positive coactions."

For instance, among plants and animals oftentimes friendly cooperation in groups affords great advantages for survival and advancement, he has found.

There are nine kinds of "coaction" possible between weak and strong organisms, ranging from symbiosis in which there is mutual aid, to a mutual depression or dying together, called synnecrosis, in which weak and strong both lose.

Science News Letter, November 17, 1951

CHEMISTRY

Weedkiller Attacks Grass And Broad-Leaved Weeds

➤ A WEEDKILLER that attacks both grasses and broad-leaved weeds, leaving only bare soil in its wake, has been developed.

Known as CMU, the chemical developed by the Du Pont Company, Wilmington, Del., has been field-tested in every state as well as in Canada, South America and other places. It is not flammable or corrosive, and it is safe for use around warm-blooded animals.

Potential uses for CMU include prevention of grass and weed growth on railroad roadbeds. It will also get rid of growth that can be a fire hazard around lumber yards, gas storage tanks and arsenals.

The chemical is 3-(p-chlorophenyl)-1,1-dimethyl-urea. Small commercial quantities will be available next year.

Science News Letter, November 17, 1951