

generative process, folic acid and vitamin B₁₂ are required.

In discussing the history of research on the metabolism of single carbon units, Dr. Jukes indicated that, about 22 years ago, Best and collaborators at the University of Toronto discovered that choline was needed by rats for the prevention of fatty livers that developed on diets low in protein and high in fat. It was soon observed that the amino acid, methionine, had the same beneficial

effect as choline on rats receiving the low-protein diet. Moreover, choline and the related compound, betaine, were found effective in enabling animals to produce methionine from homocystine, a related amino acid. These changes involved the transfer of a labile methyl group.

The availability of radioactive carbon has permitted the metabolism of the labile methyl group to be studied intensively, said Dr. Jukes. Several investigators have shown that a single

carbon unit is transferred in various biochemical systems and, in some instances, becomes a labile methyl group. Formate, the CH₂ group of glycine, and the CH₂ OH group of serine are among the many sources of the single carbon unit. Moreover, the two vitamins, folic acid and vitamin B₁₂ have been found essential for many of these biochemical transformations—processes that are of such tremendous importance in normal growth and metabolism, said Dr. Jukes.

Algae Might Find Indirect Use as Fuel

Probably could be fermented to produce methane for use as fuel in conventional equipment

MADISON, WIS.—The possibility that algae may be grown for later fermentation to produce methane was voiced by R. L. Meier of the University of Chicago at the Symposium on the Utilization of Solar Energy held on the campus of the University of Wisconsin here Sept. 12 to 14. The propagation of algae was one of the broad topics discussed by the approximately 40 scientists invited to the symposium to discuss long-range research plans for the application of solar energy in the future. The general consensus of opinion at the meeting seemed to be that eventually man must resort to solar radiation rather than fossil and nuclear fuels as his primary source of energy.

The advantage of converting algae into methane would be that methane is a conventional fuel which could be used with existing equipment. From published data on the composition of algae Dr. Meier has concluded that it could be fermented by the ordinary microorganisms employed in sewage disposal and thus produce methane. Some of the pigments found in the algae, such as chlorophyll, are not fermentable but there is no reason to believe that these pigments should cause any difficulties. It is generally agreed that such a process is technically feasible, but much investigation would be needed to make it economically attractive.

The discovery some months ago by Jack Myers of the University of Texas that an alga similar to chlorella grows at an optimum temperature of 40° C. instead of about 25° C., (the optimum temperature for most algae) may change the economics involved in growing algae on a large scale. One of the important costs encountered in operating the Arthur D. Little, Inc., chlorella pilot plant was for supplying sufficient cooling water to keep the algae at the optimum temperature. The use of organisms growing at 40° C. would lessen the need for much of the

cooling water and thereby lessen the cost of the process. As far as it is known there is no large scale algae experimentation under way in this country since Arthur D. Little finished its research project for the Carnegie Institute. Hiroshi Tamiya of Tokugawa Institute in Japan is at present carrying on large scale work.

Natural Ponds. Another possible means of cultivating algae is the use of natural lakes or ponds rather than the plastic tubes currently described in most pilot plants. An investigation of Lake Maricabo in Venezuela, has been carried out by a Venezuelan group. This large lake is the natural habitat of abundant quantities of algae. The findings of the group indicate that changing salinity in the water in this particular lake has upset the ecological equilibrium. This fact renders harvesting of the algae unlikely, but it is not impossible that there are other lakes where such a project might some day become profitable.

Weather. The meteorologist can contribute much towards the effective use of sunlight. He can do this, according to R. A. Morgan of the National Science Foundation, not only by making long-range weather predictions, but also by actually changing the local weather by cloud seeding, etc. If it were possible to cause the snow to melt as little as two weeks earlier in the spring, the advantage to the farmer in earlier planting time would be immense. This might not be as difficult as it sounds. It might be accomplished by sprinkling some substance on the surface of the snow.

Solar Cooking. Solar energy is now being used for cooking in India. Preliminary results indicate that a cheap device recently placed on the market there is practical, according to M. L. Ghai, National Physical Laboratory of India. At the present time cow dung is used extensively in India as a cooking fuel.

By diverting this material back to the land as fertilizer agricultural productivity would be increased. While solar cooking is probably desirable in India where fuel is scarce and the percentage of sunny days is high, it would not be so in the United States today.

Industry

Monsanto Forms Agricultural Chemicals Department

Two new reorganization moves in the field of agricultural chemicals have been recently announced by Monsanto Chemical Co. One is formation of a new department combining the sales groups of soil conditioners, agricultural chemicals, and special chemicals into a single agricultural chemicals department. The new department will handle sales of insecticides, herbicides, and soil conditioners. Herbert C. Koehler will be the manager of the department. Since 1945 he has been manager of the agricultural and special chemicals sales group.

Roy L. Brandenberger, general manager of the Monsanto's merchandising division has announced the formation of an application research department and an increase in the activities of the development department of the merchandizing division.

The research group will study the formulation of new products for the home gardener and agricultural chemical fields, as well as products for household use.

The development department will study new markets for soil conditioners and also evaluate other new products for consumer sale.

NAC Planning Program to Promote Use of Herbicides

The National Agricultural Chemicals Association has announced a program aimed at expanding the use of herbicides in the United States. The program is expected to get under way as soon as NAC finds a herbicide specialist to join its staff.

His duties will include, among others, the collection and dissemination of information pertaining to the use of herbicides for all purposes. Consideration will be given to control of weeds in grains, cotton, fruits, and other crops, as well as weed and brush control in pastures, utility rights-of-way, and industrial sites.

Lea S. Hitchner, NAC executive secretary, states that the program provides for an economic study of the importance of herbicides to growers and the dissemination of that information directly to county agents and other agricultural specialists.

American Can Opens Multi Million Dollar Plant

American Can Co. has opened a new container manufacturing plant at Lemoyne, Pa. The company's 58th container manufacturing plant, it will have a rated capacity of 4 million cans per year and eventually employ about 4000 people. The plant is intended to serve canners in the Pennsylvania, Maryland, and Virginia areas.

Government

Malathion Approved for Use in Dairy Barns

The U. S. Department of Agriculture and the Food and Drug Administration have approved malathion as safe for use in dairy barns. Previously the USDA had approved the use of this organic phosphate as a fly control insecticide in cattle barns housing livestock other than dairy cattle.

On The Cover

The Search for Basic Knowledge Guides Progress

The research scientist, unseen by the farmer, is a fundamental part of the foundation of modern agriculture. The fight against pests, which is getting increasing attention, is limited by our knowledge of pests and the agents we use to combat them. To strengthen our fight we must probe deeper. The ideas become more complex, and cooperation of scientists in various fields becomes increasingly necessary.

Pictured on the cover is P. J. Linder, Bureau of Plant Industry, USDA, at work in studies of the action of herbicides on plants, with the use of radioactive materials. The knowledge gained is of use to the plant physiologist, the herbicide specialist, the processor of agricultural products, and many others who cooperate in producing food.

Various state experiment stations and the USDA have recommended malathion as a residual surface active insecticide. One recommendation calls for 10 pounds of malathion in a 10% sugar solution to be applied to the walls of dairy barns.

The Interdepartmental Committee on Pest Control has approved the name malathion as a coined name for the *o,o'*-dimethyldithiophosphate of diethyl mercaptosuccinate.

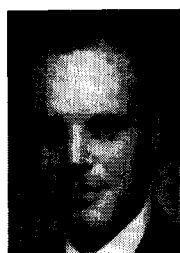
People

NFA Announces Staff Changes

Delbert F. Rucker has been appointed director of information for the National Fertilizer Association, replacing William E. Chace, who resigned from NFA to become Washington representative for Group Attitudes Corp. Mr. Rucker, who has been in information, public



D. F. Rucker



J. F. Gale

relations, and administrative work with USDA for the past 12 years, will edit NFA's biweekly publication, *Fertilizer News*, and handle press and radio contacts. **John F. Gale**, NFA staff writer and economist, has been named editor of NFA's official publication, *National Fertilizer Review*. He will also edit and assist in preparing NFA's educational pamphlets, brochures, motion picture scripts, and the like.

George F. Leonard, retired executive vice president of Tobacco By-Products & Chemical Co., was honored with an honorary life membership in the National Agricultural Chemicals Association at the recent 20th anniversary meeting. He received the first individual membership of its type in the group. Mr. Leonard served as president of the association from 1946 to 1949 and as a director from 1934 to 1953.



Louie E. Doxsie has been appointed materials and methods superintendent for A. E. Staley Mfg. Co. Replacing Doxsie as production superintendent is **James G. Dustin**, former senior chemical engineer. **Oliver R. Etheridge**, methods superintendent since 1944, has been

appointed to the newly created position of technical consultant.

William J. Haude has been made vice president in charge of marketing for Grace Chemical Co. He has been president of Pittsburgh Agricultural Chemical Co. since 1948, having been vice president in charge of sales for John Powell & Co. before that. His headquarters will be in New York.

Trevor A. Steele has been appointed agronomist with the sales staff of American Potash & Chemical, with responsibility for technical sales requirements of potash, agricultural borax, and related products in Oregon, Washington, Idaho, Montana, and British Columbia. He has been an agronomist for the Civil Aeronautics Authority.

Francis P. LaBelle and **Clyde B. Orr** have been appointed assistant chief engineer and chief chemical engineer, respectively, of the phosphate division of Monsanto Chemical. LaBelle has been chief chemical engineer for the division in Anniston and Orr has been serving as assistant manager of the process section of the general engineering department.

Letters to the Editor

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be an incentive to continued over-production does not appear warranted. There is the possibility that some distillers would welcome the proposed 2-year program involving \$200 million of government funds. Good management and vision, however, suggest that it would be best to build up markets on the basis of sound domestic economics.

3. Grain alcohol derived from 50-cent corn cannot compete with methanol, ethanol, or propanol from petroleum refineries as a gasoline additive. Furthermore, distillers are not equipped to take care of denaturing, mixing, blending, and transporting problems involved in the production and distribution of motor fuels.

4. We would not be reluctant to take exception to the Administration's policy of making shipments of wheat and other foodstuffs to impoverished nations if we found fault with it. As a matter of fact we like it. So does the Congress of the United States. We believe, along with the advisors to the President, that the delivery of surplus wheat and foodstuffs to needy nations to build up international good will is a good investment. On the other hand, we do not believe that Rosten's proposals will lead to any permanently fruitful results.

P. H. GROGGINS
Consulting Editor