

GENERAL SCIENCE

Synthetic Future Forecast

Man's scientific future foreseen as bringing clothing made from coal and oil, cures for any human ills and people "kittenish" at 100.

► MANKIND'S SYNTHETIC future forecast by a leading organic chemist, Dr. Roger Adams of the University of Illinois, foresees:

People happy, healthy and kittenish at the age of 100.

Clothing made from coal and oil.

Cure of any human ailment by a variety of drugs and medicinals.

Storage of the sun's energy for man's use.

Fish ranches in fenced-off water, rivaling cattle ranches.

Deliberate molding of people, mentally and physically, by drugs.

Pears, apples and oranges the size of grapefruit.

And even interplanetary football matches and celestially-anchored hot-dog stands along rocket ship routes.

Dr. Adams, principal speaker and retiring president of the American Association for the Advancement of Science meeting, projected at that organization's annual meeting in Philadelphia the chemical discoveries of the past to logical achievements in the future.

Pointing out that a century ago all materials used by man were derived directly from the natural sources of plants, animals and minerals, he explained that the chemist can now determine the atomic patterns in nature's substances and assemble atoms to his own design. Man creates new, better and cheaper compounds.

Already dyes are 99% synthetic, drugs and medicinals are 75% synthetic and natural gums and resins account for only 5% of the 2.3 billion pounds of plastics produced last year in the United States. Half the paint, half the rubber and a fifth of the textiles are synthetic. A billion pounds of synthetic detergents are produced annually, although more soap than that is still consumed.

Titanium is the metal of the future, in Dr. Adams' opinion, since it is the fourth in abundance of all metals and its ores are widespread. It is only half as heavy as steel, ductile in pure form, valuable in alloys, heat and chemical resistant, even to sea water and in jet engines. High price due to difficulty in separating it from its ores is the problem, and Dr. Adams predicts that a cheaper way will be found and it will come into wide use.

Mineral deposits of ores of less common metals, such as copper, lead, zinc, manganese, chromium, tungsten and tin, will be

found deeper in the earth and under lakes and seas, he forecast.

The sea, from which magnesium, bromine and salt are now extracted commercially, will be mined in the future for other elements.

Exhaustion of the supplies of oil, natural gas and coal in the earth's crust has been predicted periodically for three decades, but Dr. Adams observed that still new reserves continue to be discovered, though with greater difficulty and at increased expense. He prophesied that when the time of exhaustion finally arrives scientists will have found substitutes or this kind of fuel will no longer be needed.

Industry has now turned to petroleum for a substantial portion of its chemicals for the synthesis of dyes, drugs, plastics and synthetic fibers. Just a decade or two ago these were made largely from coal tar, the volatile liquids obtained when coal is coked.

Future power for the world will come from the use of solar energy, in Dr. Adams' opinion. The energy that reaches

earth from the sun is over 30,000 times that of all the fuel and water power now used. Algae growth in water which can quintuple the yield of the best land growth may be one successful method of collecting the sun's energy. Replacement of the green chlorophyll of the plant by synthetic dyes and inorganic chemicals in the method of artificial photosynthesis appears promising. Energy absorption by glass shows promise of surpassing the best agricultural capture of sun energy. And phosphorus might be employed to absorb energy from the sun during the day and for illuminating purposes at night, Dr. Adams suggested.

An extraordinary development of synthetic polymers, the chemicals that are giant molecules manufactured from very simple molecules, was predicted, added to the amazing plastics and fibers now commercially available or about to come out of laboratories.

The future will see, according to Dr. Adams, transparent plastics that will not gradually discolor and the surface of which will not scratch or craze, finishes for wood and metals which will remain durable for long periods of time in the presence of sunlight and salt air, transparent, flexible, waterproof and moistureproof film which will be as strong as desired.

A rayon will come on the market with a basic structure so modified that it has strength when wet equal to that of natural fibers.



JET-PROPELLED LABORATORY—The nation's first jet-propelled "laboratory," now placed in operation for the high-speed flight testing of turbo-jet engines, is shown here in flight. The test engine is housed in the nacelle under the bomb bay. The plane is equipped with hundreds of special instruments which will record every phase of the test engine's performance in flight.