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A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH

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Dear Sir:

A nuclear reactor especially designed for pilot-plant studies in the preservation of food by irradiation will be constructed for the U. S. Department of Defense, with the financial aid of the USAEC, Willard F. Libby, USAEC Commissioner, told a conference on radioactive isotopes in agriculture at Michigan State College last fortnight. Dr. Libby said that in the next two or three years the Department foresees irradiated food requirements of the order of 1,000-tons a month for study purposes. (Other FOOD IRRADIATION news, p. 4 this LETTER.)

An $8,242,895 contract to furnish nuclear reactor compartment components to the U. S. Navy has been awarded by that service to Westinghouse Electric Corp. Whether the components are for new underseas craft, or are replacement parts for previous construction, is not known. Westinghouse built the nuclear reactor power plant for the Navy's first nuclear-propelled submarine, the Nautilus. (Other BUSINESS news, p. 2 this LETTER; NUCLEAR SHIP PROPULSION news, p. 5)

Axe Science & Electronics Corp., an investment fund with its assets in the nuclear, electronics, and other scientific fields, will pay its first dividend to shareholders this March, according to Mrs. Ruth H. Axe, president. The amount was not specified. Axe Science, which is listed on the American Stock Exchange, showed an appreciation in market value of $775,000.00 in securities held at the end of 1955 as compared with their acquisition cost for the 10 months the fund has been operating. In reporting an increase in uranium mining company stocks held by the fund, Mrs. Axe said it was intended to continue investment in these equities which on December 31st, 1955 constituted 14.3% of the corporation's portfolio as against 9.6% on June 30th, 1955; the total portfolio represents an investment of approximately $25 million. (Other FINANCIAL & MUTUAL FUND news, p. 3 this LETTER.)

A premium price contract covering the sale of $29,754,800 worth of high grade uranium concentrates has been given Faraday Uranium Mines, Canada, by Eldorado Mining & Refining, the Canadian government purchasing agency, with the major portion of the concentrates destined for the United States. Faraday, in the Bancroft area of Eastern Ontario, expects to have the mine in production prior to March, 1957. Design of the mill, which is well advanced, is being done by the Canadian firm of Kilborn Engineering Co.

A nuclear detonation of low explosive force last week at the USAEC's weapons proving ground near Las Vegas, Nevada, was the first in its current series of tests now underway. A small low altitude cloud bearing minute amounts of radioactive debris resulted from the detonation. These tests are to determine the sensitivity of nuclear weapons and experimental devices to accidents during storage or handling.

Two one-month institutes for science teachers will be conducted next Summer by the Oak Ridge Institute of Nuclear Studies, under the sponsorship of the National Science Foundation. One institute--for secondary-school teachers--will be held June 11th through July 6th. The other--for college and university teachers--will be presented July 9th through August 3rd.

ATOMIC ENERGY BUSINESS NEWS...

SYNDICATE FORMED TO UNDERWRITE RADIATION HAZARDS:- Members of the syndicate, comprising seventy capital stock casualty insurance companies, announced last fortnight in New York that insurance coverage would be offered on industry-operated nuclear reactors. Although tentative at the moment, it is expected that the syndicate will assure $50 million in coverage for each of the private nuclear power projects now underway in the U. S. Actual coverage will be for "third party bodily injury and property damage liability insurance against loss or damage caused by radiation". According to J. Dewey Dorsett, general manager of the Association of Casualty and Surety Companies (a special committee of which developed the program), the coverage will greatly assist private nuclear power plant construction, since this is the first such insurance available.

PRICE RAISED ON THORIUM METAL:- The price of thorium metal has been raised by the USAEC to $43.00 a kilogram, from its previous $25.00 price, in an attempt by the USAEC to get "full cost recovery", which is the Commission's stated policy. The price is FOB the USAEC's Feed Materials Center, Fernald, Ohio. National Lead Co., which operates the Center under a USAEC contract, buys most of its raw material (to produce thorium there) from Lindsay Chemical Co., Chicago rare metals producer. Production of thorium at Fernald is limited. The increase in price may enable Lindsay Chemical to produce and sell thorium profitably, a company spokesman said. The USAEC intends to get out of thorium production when it is available commercially. (The $55 million nuclear power plant Consolidated Edison Co., New York, will erect will have 8,100-kg. of thorium in a blanket around the uranium fuel.)

CRITICAL FACILITY PLANNED BY ALCO PRODUCTS, INC.:- This firm (formerly American Locomotive Co.), said in Schenectady, N.Y., last fortnight that it will build a $230,000.00 critical facility for experimental work in conjunction with design and development of nuclear power plants. First use of the facility will be in the design of a small nuclear power plant it is building for the U. S. Army, the firm stated.

NEW PLANT FOR RADIATION MACHINE MANUFACTURER:- Construction has been started by High Voltage Eng. Corp., Cambridge, Mass., on a new $2 million plant in Burlington, Mass., Denis M. Robinson, company president, said last week. Dr. Robinson, who said he expected to occupy the plant in Sept. 1956, pointed out that facilities at Burlington will include enough radiation test vaults to test 16 of the firm's Van de Graaff particle accelerators simultaneously. One half of the plant will be used for manufacturing, with the remaining space for test, engineering and research; offices; and other laboratories and departments.

EDITOR'S NOTE:- Our attention has been called to two errors recently appearing in the December 27th, 1955 issue of this LETTER. We stated that Amperex Electronic Corp. was founded by Mr. Sam Norris. We are advised that this is incorrect and that Electronics Laboratories, Inc., which subsequently became Amperex, was founded in 1932 by Mr. Nicholas Anton, now head of Anton Electronic Laboratories, Inc. Mr. Anton was president of Amperex when it was sold to North-American Phillips in 1945, and left in 1948 to form Anton Electronic.

The other statement brought to our attention was that The Beryllium Corp. is the largest U. S. beryllium producer. This statement should be clarified, since, as it has been pointed out to us, it may be misleading. The facts are these: Brush Beryllium Co. has been the only commercial producer of nuclear reactor-grade beryllium metal since 1939, supplying over 99% used by the USAEC and exported to those foreign countries permitted by law to receive it. The Beryllium Corp. does, however, produce a larger tonnage of total beryllium products, primarily beryllium-copper alloys. Brush also produces beryllium-copper alloys, but a lesser amount. While Brush sells its beryllium-copper alloys to other firms for fabrication, the bulk of The Beryllium Corp.'s output of such alloys is subsequently fabricated by that company.

SUIT INSTITUTED BY FIRM IN NUCLEAR FIELD:- A lawsuit has been started by General Dynamics Corp. (whose several divisions are engaged in nuclear development and production work), against Dynamics Corp. of America to enjoin the latter firm from using the word Dynamics in its corporate name. General Dynamics claims that the similarity causes "confusion and misunderstanding among investors, customers, and the public generally".

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ATOMIC ENERGY FINANCIAL NEWS...

MUTUAL FUND IN ATOMIC FIELD SHOWS GAINS:- A 31% increase in assets for the quarter ended Dec. 31st, 1955 boosted resources of Science & Nuclear Fund (Philadelphia) to $941,217.00 with net asset value of $10.76 per share at the year's end. This compares with $713,115.00 in assets Sept. 30th, 1955. The Fund made new common stock investments in Great Northern Paper and High Voltage Engineering during the last quarter of 1955. It also increased its investments in the common stocks of Air Products, American Cyanamid, Algom Uranium, Beckman Instruments, Dow Chemical, General Electric, General Dynamics, Phillips Petroleum, Chas. Pfizer, Philips Gloeilamp, Radio Corp., and Sprague Electric. The Fund then had approximately 60% of its assets in companies carrying on nuclear activities, and 35% in companies in related scientific fields.

FEW GAINS IN ATOMIC ENERGY ISSUES REGISTERED:- On the Canadian stock exchanges, uranium issues found little support during the last fortnight, even good news for Faraday (new sales contract) and Can-Met (property expansion) not arousing enough interest to prevent losses in these stocks. Greatest gains were made by Nesbitt LaBine, which in two days of hectic trading reached a 2-year high. No explanation could be found for this rise in Nesbitt LaBine, the company denying all the rumors which were responsible for the stock's upward movement..... On the New York and American stock exchanges, interest in the Ford stock offering took interest away from most issues; a slump at the week's end found such "atomic" industrials as General Dynamics, General Electric, etc., showing losses of a few points. Atlas Corp. (NYSE), and Preston East Dome (AM), both with large uranium mine holdings, remained steady. Atomic Development Mutual Fund, (OTC), reflecting the slump in the "atomic" industrials, showed fractional losses..... Trading in uranium shares in Salt Lake City continued at the 500,000-share daily level of activity, with no excessive liquidation of positions, but no substantial gains either.

INCREASE IN SPENDING FOR USAEC IN 1957 FISCAL YEAR:- The U. S. Atomic Energy Commission requires $1,945,000,000.00 for the fiscal year 1957 (June 30, 1956 to June 30, 1957) President Eisenhower told Congress last week in his Budget Message. This is $230,000,000. more than it required in fiscal 1956, he said. Operating expenditures will increase from $1,400,000,000.00 in the fiscal year 1956 to $1,600,000,000.00 in 1957. Greater quantities of uranium ores and concentrates will be purchased, the President stated. Production of (fissionable) material from the USAEC's plants will increase, but at reduced unit costs as the expanded facilities, soon to be completed, come into full operation, he observed. Research and development work, in numerous areas, both civilian and military, will be expanded, he said. While capital expenditures in the fiscal year 1957 will decline from 1956 levels, new construction is planned for 1957 principally for improvements to existing production plants and for research and development facilities. Research will be stepped up on controlled thermonuclear reactions, as new discoveries may justify, the President stated. Since basic research is fundamental to further advances in nuclear energy, the USAEC will increase in fiscal 1957 its support of basic research in the physical and life sciences, including development and design studies of high energy particle accelerators, he said.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear energy subjects...

Atomic Power; prepared by the editors of Scientific American magazine. A splendid collection of articles which originally appeared in the Scientific American; written by authorities for the layman, not the physicist. 180 pages. --Simon & Schuster, Rockefeller Center, New York, N.Y. ($1.00).

Regulation of Radiation Exposure by Legislative Means; Handbook (NBS) No. 61. (25¢)..... X-ray Protection; Handbook (NBS) No. 60. (20¢)..... Radioactive Contamination in Radium Therapy Clinic; Public Health Service Reprint No. 3265. (5¢) -- Sup't. of Documents, Wash. 25, D. C.

You and the Atom, by Gerald Wendt. A highly simplified account of atomic energy developments. 96 pages. --Whiteside-William Morrow & Co., New York 5, N.Y. ($1.95)

Annual Review of Nuclear Science; Vol. 5. Of value to the physicist and nuclear engineer. 448 pages. --Annual Reviews, Inc., Stanford, Calif. ($7.00)

Nuclear Notes for Industry; issue of Jan. 13th, 1956. A guide to USAEC information of special industrial interest. USAEC, Tech. Info. Serv., Oak Ridge, Tenn.(n/c)

RESEARCH & DEVELOPMENT NEWS...current activities in the field...

FOOD IRRADIATION INTERESTS DEPARTMENT OF DEFENSE:- The nuclear reactor which the U. S. Department of Defense will use in developing methods for preserving food through irradiation, and which President Eisenhower said would be a forthcoming project of the USAEC (during his budget message to Congress last fortnight), was elaborated on by Willard F. Libby at a conference at Michigan State College recently. Dr. Libby, a USAEC Commissioner, said that since refrigeration costs for the Armed Forces are estimated at $40/man/year, a saving of $20 million per year can be achieved in a 2 million man army if radiation preservation of perishable foods can be successful (assuming radiation sterilization costs 25% that of comparable refrigeration preservation methods). He noted that the Food and Container Institute of the Army Quartermaster Corps is handling the radiation sterilization program and expects to spend on research between $10 and $15 million in the next few years with studies aimed toward pasteurization as well as complete sterilization. He said that a program of feeding irradiated foodstuffs to human volunteers is well under way and that preliminary reports indicate the food to be palatable, with apparently no ill effects. The shelf life of fresh meat is extended from three or four days to two weeks or more, Dr. Libby pointed out. (North American Aviation recently announced that it had an Army Quartermaster Corps. food irradiation contract covering electron accelerators, radioisotopes, used reactor fuel elements, direct nuclear reactor radiations, and radiation from reactor coolants.)

NUCLEAR REACTOR DEVELOPMENT PROGRAM LARGE UNDERTAKING AT LOS ALAMOS:- The very large amount of research and development work on nuclear reactors at Los Alamos Scientific Laboratory was revealed last fortnight by Norris E. Bradbury, director of the Laboratory. Dr. Bradbury pointed out that at the Laboratory, which is operated under a prime USAEC contract by the University of California, there is active research, design and construction now under way on five nuclear reactor projects: (1) Omega West Reactor, a heterogeneous type reactor for research purposes. Its active core is a number of solid, enriched uranium fuel elements; it is forced water cooled. Completion is expected this Spring. (2) Lapre I, an experimental power reactor now in the final assembly stage. It is a homogeneous type with forced fuel circulation, utilizing an enriched uranium, phosphoric acid and water solution, and is cooled by forming steam in a heat exchanger. It is expected that this reactor will be the first to produce high temperature superheated steam suitable for modern power plant turbines. The design is capable of being scaled up substantially for full-scale applications. (3) Lapre II, a simplified experimental power reactor with no moving parts, is designed for safe operation without an attending operator and is especially suited for "package power" applications. It is a homogeneous, convection cooled reactor, and uses an enriched uranium, phosphoric acid and water solution for fuel. (4) Los Alamos push-pull critical experiment is a small scale test of a method of producing forced circulation of fuel solution in a reactor without using pumps or other moving parts. (5) Los Alamos molten plutonium reactor experiment uses a molten plutonium alloy, and is a design showing great promise. High temperatures will be possible with this system, and a breeder reactor using such a fuel is potentially feasible.

AIRBORNE NUCLEAR REACTOR USED IN EXPERIMENTAL WORK:- As part of its work on the development of a nuclear reactor powered aircraft, Convair Div. of General Dynamics Corp. has installed a nuclear reactor in the nose of a modified U.S. Air Force B-36 bomber. Test flights have been made to investigate the problems of shielding against radiation on aircraft, materials, and systems and to develop airborne nuclear instruments. Installation of the reactor and modifications to the aircraft are done at Convair's Fort Worth, Tex., plant.

MEETINGS & CONFERENCES...covering nuclear energy subjects...

MILITARY-INDUSTRIAL CONFERENCE:- The technology of defense against nuclear weapons will be discussed at "National Survival in the Nuclear Age", a joint military-industrial conference being held Feb. 9-10, 1956, Chicago. Further information from: Lenox R. Lohr, chairman, Military Industrial Conference, 140 S. Dearborn St., Chicago, Ill.

METAL POWDER ASSOCIATION MEETING:- The twelfth annual meeting in Cleveland, Apr. 10:12, will hear H. H. Hausner, Sylvania Elec. Products, Inc., discuss The Applications of Powder Metallurgy in Nuclear Engineering.