ATOMIC ENERGY

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Dear Sir:

Contract for a second nuclear reactor powered submarine has now been awarded the Electric Boat Division of the General Dynamics Corp., Groton, Conn., by the Navy's Bureau of Ships. General Dynamics, under the contract, will do all design, engineering, and construction of the hull, which will utilize the special nuclear reactor being constructed by General Electric Co., at the USAEC's Knolls Atomic Power Laboratory, near Schenectady, N.Y., which is operated for the USAEC by G-E. This second hull will be of the same general design as the first, the keel for which was laid at Groton recently, and which has been christened the Nautilus.

The first unit in the Tennessee Valley Authority's Widows Creek Steam Plant (in northeast Alabama) went into commercial operation the first of this month, some two years after construction started. Capability of the plant is 125,000 kilowatts. Five more units are under construction at the plant. Principal objective of this and other TVA installations is to adequately supply the large power needs of the U. S. Atomic Energy Commission's present and projected facilities.

Civil defense measures designed to protect New York City's civilians from an atomic bomb attack were reported last week by Arthur W. Wallander, that city's Director of Civil Defense. Mr. Wallander made public a report covering major accomplishments since the organization of the civil defense office in New York two years ago. The report shows that the city has established public shelters in 888 buildings, capable of sheltering some 562, 529 persons. There are also 1,018 emergency shelters in schools, private and public buildings, community centers, hotels, churches, and other places. Among other measures are ground observation posts, which supplement the radar network maintained in the city by the armed forces. These ground observation posts have been set up in three confidential locations, and are manned twenty-four hours a day, the report notes.

A second United States patent has recently been granted the Radio Corp. of America on a method of obtaining electrical energy directly from nuclear energy without the use of fissionable material. (The first such patent, No. 2,517,120 was granted August 1st, 1950. Subsequently, on April 29th, 1952, disclaimers were filed by RCA to 6 claims of this patent.) This most recent patent, U. S. number 2,598,925, is an 18 claim patent, which incorporates some of the claims dropped from the earlier patent. According to the teachings of the patent, a radioactive source of alpha and beta particles is surrounded by a spherical conductor when direct current is desired. For alternating current, the radioactive source is surrounded by a shaped collector which can be proportioned to resonate at the desired frequency.

A program on atomic energy, especially designed for chemistry students whose major problem it will be throughout their professional careers, will be staged as part of the Seventh National Chemical Exposition in the Chicago Coliseum, Saturday, September 13th. Principal item on the program will be a demonstration lecture on "Atomic Energy: Weapon for Peace."

Subscription rates: United States, U.S. possessions, and Canada, $18.00 a year. Latin America, $20.00 a year. All other countries, $25.00 a year.

AT ATOMIC CITIES & CENTERS...in the United States...

PADUCAH, Ky.- A $459 million addition to the gaseous diffusion plant now being built near here is to get under way at once. The new uranium-235 separation facilities are to be built within the present borders of the Paducah site, and by the same prime contractor who is building the facilities now being erected: F. H. McGraw & Co., Hartford, Conn. According to S. R. Sapirie, manager of the USAEC's Oak Ridge Operations, as much of the work as possible will be performed by competitive bid, fixed price contracts, provided it does not delay the tight construction schedule. The proposed project will about equal in cost the current construction program, which got underway early in 1951. Upon completion, the new plant, like those being built, will substantially increase the U.S.'s production of fissionable material. The expansion is not expected to increase employment over the present level of about 23,000 workers. Giffels and Vallet, Inc., Detroit, are doing design and engineering supervision of the new process plant; Sargent and Lundy, Inc., Chicago, are handling design of the high-voltage power distribution and switching systems and stations. Carbide and Carbon Chemical Co. will operate the new gaseous diffusion facilities along with those now being built; Carbide also operates the USAEC's production plant and laboratory facilities at Oak Ridge. In addition to operating the new plant, Carbide will do process development and process design. The greatly increased power requirements of the expansion will be met jointly by Tennessee Valley Authority and Electric Energy, Inc., (a joint operation of several utility companies). Each of these agencies is presently building a power plant to supply half of the million kilowatts needed for the facilities now being built. Of the new plant's requirements, TVA is expected to furnish 75% and Electric Energy 25%.

OAK RIDGE, Tenn.- Construction of an addition to the gaseous diffusion plant here is scheduled to begin immediately. To cost $464 million, the new unit, which will produce uranium-235 by the gaseous diffusion process, will be built by Maxon Construction Co., Dayton, O., and other contractors and sub-contractors. The new plant, which will be known as K-33, will be in the K-25 (another gaseous diffusion plant) area. The design and supervision of construction of the plant will be done by Giffels and Vallet, Detroit, while the design of the high-voltage power distribution systems and substation will be done by Sargent and Lundy, Chicago. Much of the actual construction will be performed by specialty contractors, according to S. R. Sapirie, manager of Oak Ridge Operations for the USAEC. Two such firms have already been selected; Edenfield Electric, Inc., Nashville, which will erect and install some of the electrical equipment, and Kaighin and Hughes, Toledo, which will perform some of the mechanical work. The greatly increased power demands involved in this expansion of plant facilities will be met by the Tennessee Valley Authority, which is the sole supplier of electric energy to Oak Ridge through TVA's large expansion, in steam power and other facilities.

RICHLAND, Wash.- Results of a survey by the Bureau of the Census, as recommended by the USAEC Panel on Community Operations (the so-called Scurry Panel), at this town, which exists for the plutonium production plant at Hanford here, shows that 64% of lease holders, or around 4,250, would buy residential property in Richland. Now, the town is administered by General Electric as contractor for the USAEC, with all property belonging to the Federal government. In addition, the poll showed that some 57% of all adult residents indicated they want to incorporate Richland and have self-government. Up to 90% of the residents agreed that private developers should be permitted to buy land in Richland and construct homes, stores, or industrial buildings to be rented or sold.

SAVANNAH RIVER PLANT, Augusta, Ga.- For the third time since the beginning of construction, a new world's safety record for the construction industry has been established at the Savannah River Plant by du Pont employees; du Pont is the prime contractor for the hydrogen bomb materials plant which it is erecting here, for the USAEC. The period from May 8, 1952 to July 3, 1952, was worked without a single disabling or lost time industrial injury, an accumulation of a total of over 10 million continuous safe man-hours.

IONIZING RADIATION...investigations & notes...

HEALTH TESTS MADE:- Over 1100 workers in the uranium mills and mines in Colorado, Utah, New Mexico, and Arizona have been given detailed physical examinations which have revealed no evidences of health damage from radioactivity, according to an interim study by the Public Health Service of the Federal Security Agency. The examinations are part of a survey of occupational health conditions in the uranium industry that have been under way since 1950. In studying environmental conditions in the mines and mills, Public Health Service investigators evaluated the dust problem; determined the nature and extent of exposure to uranium, vanadium, and other mineral constituents of the ore; and evaluated exposures to radiation. In instances in which the investigators encountered dangerous amounts of radiation, the mine operators were immediately advised not only to reduce the levels of radiation in the mines, but also to take additional steps to protect the health of the individual workers. Among these steps have been the adoption of proper ventilation practices, as well as other measures to reduce the dusts found in the mines. Specific recommendations made to the mine and mill operators for the control of radiation, dusts, and fumes include provisions for (1) adequate ventilation to keep radiation at a low level; (2) wet drilling, wetting of muck pile, and other dust suppressive measures to keep the atmospheric dust concentration at a minimum level; (3) dust and fume control systems to be used in activities where uranium and vanadium dusts or fumes are liberated; (4) approved dust respirators to be worn as added protection whenever necessary; (5) the practice by workers of good personal hygiene, including daily showers and frequent change of work clothes, to minimize skin contact with radioactive dust and other substances; and (6) pre-employment and periodic physical examinations for all workers. It was pointed out that these are interim findings, and that the study is expected to continue for the next several years. The miners and millers will be re-examined periodically, and continued checks will be made of the working environment. Cooperating with the Public Health Service in this study are the Atomic Energy Commission, U. S. Bureau of Mines, Los Alamos Scientific Laboratory, Navy Radiological Defense Laboratory, U. S. Bureau of Standards, and state health departments of Utah, New Mexico, Arizona, and Colorado.

RADIOISOTOPES IN TRACER STUDIES:- Now under way at the University of California College of Agriculture is a project which is attempting to determine how much of a micronutrient a plant needs to grow. Under a USAEC grant, the Division of Plant Nutrition is to study the uptake of certain minerals through the use of radioactive tracers. Iron, manganese, zinc and copper are the principal micronutrients in question. Others that may be studied are chromium, cobalt, nickel, molybdenum, and vanadium. While these minerals are usually present in fertile soils, the exact amount necessary for different plants and trees to grow has not been fully worked out. Culture solutions, synthetic soils, and purified clays of known mineral composition will be tagged with radioactive micronutrients for growing the test plants.

IMPORTANT ATOMIC ENERGY AFFAIRS...in the United States...

To direct construction and operation of the projected billion-dollar plant for production of uranium-235 a major new area under the U. S. Atomic Energy Commission's Oak Ridge Operations office has now been established. Designated temporarily as the Site III Area, the office will maintain headquarters for a short time in Oak Ridge. After selection of the site for the plant, which will be located in the Ohio River Valley, the office will be renamed and moved to its permanent location. Kenneth A. Dunbar will be manager of the new organization; he had been manager of the Paducah, Ky., area. Deputy manager will be Robert A. McCulloh. (Two other major areas under Oak Ridge Operations are the Paducah Area, site of a huge uranium-235 separation plant, which is now under construction, as well as a new $459 million addition, soon to get under way; and the Dayton, Ohio, Area, with basic and developmental research facilities at Miamisburg and Marion, O. Also at Oak Ridge is the unit designated Oak Ridge Construction Area, which is directing construction of the new $464 million addition to the gaseous diffusion plant there and all other building activity at Oak Ridge.) In addition to Dunbar and McCulloh as the top two personnel for the Site III Area, other key officials for the Area include B. W. Menke, who will be chief of the Administrative Division; William A. Minsch, who will be legal counsel; W. W. Wells, who will be chief of the engineering and construction division; and W. C. Youngs, Jr., who will be chief of the operations division.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES- To assist the search for uranium-bearing ore bodies, the U. S. Atomic Energy Commission is now publicly releasing information concerning location of surface areas of unusual radioactivity that have been disclosed by aircraft-borne instruments. The information will relate only to locations at which anomalous radioactivity has been observed from the air, and of course may not necessarily indicate the presence of uranium on the ground. (Information developed from ground investigations of anomalous areas will be made available only to persons presenting proof of ownership of the mineral rights of the areas concerned.) The release of information started July 15, 1952, and will be made the 15th of each month (or the first succeeding working day, if the 15th is a Saturday, Sunday or Federal holiday). On that day, index maps showing the anomalous areas are being posted, simultaneously, at noon, Mountain Standard Time, at the following offices of the USAEC: New York Raw Materials Office, USAEC, New York City; Denver Federal Center, Denver, Colo.; Hot Springs Sub-Office, USAEC, Hot Springs, S. Dakota; Bureau of Mines Office, Rapid City, S. Dakota; U. S. Geological Survey Office, Custer, S. Dakota; Grand Junction Exploration Branch, USAEC, Grand Junction, Colo.; Grants Sub-Office, USAEC, Grants, N. Mexico; Salt Lake Exploration Branch, USAEC, Salt Lake City, Utah; Richfield Sub-Office, USAEC, Richfield, Utah; and the Butte Sub-Office, USAEC, Butte, Montana.

CANADA- An increase in the capitalization of Goldfields Uranium Mines, Ltd., from 3,000,000 to 5,000,000 shares, has been approved by shareholders of that company. The intensive exploratory program mapped out for its 284-claim, 17-group holdings in the Goldfields area, north shore of Lake Athabaska, Northern Saskatchewan, includes three groups slated for immediate attention: Work at Dinty Lake, 20 miles east of Goldfields; work on the firm's Rix 62 showing, which so far is the most promising; and work on the Emir fault zone where four holes have shown a 200-ft. length averaging 0.17% uranium oxide across 5.7 feet.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Chemistry and Physics of Radiation Dosimetry. A joint Department of Defense and Atomic Energy Commission report. No.-PB-105-925.--Office of Technical Services, Department of Commerce, Washington, D. C. ($4.75)

Industrial Dispersion Guidebook for Communities. The third on the national industrial dispersion program issued by the Government; first two were issued by the National Securities Resources Board. This most recent volume explains how national dispersion standards, as a defense against atom bombing, may be applied to any particular metropolitan area. --Department of Commerce, Washington, D. C. (20¢)

RADIOSIOTOPES...medical applications...

Use of radioactive lanthanum (lanthanum-140) in the treatment of cancerous tissues was reported last week in Paris at the second session of the Congress of Biochemistry. The report was given by Dr. Kurt G. Stern, adjunct professor of biochemistry at Brooklyn Polytechnic Institute and consultant in the division of neoplastic diseases at Montefiore Hospital, The Bronx, N.Y. Now in their third year, the experiments conducted by Dr. Stern and others at Montefiore are based on the fact that lanthanum has an affinity for the nucleic acids; and rapidly growing cells, such as cancerous cells, have a high turnover of nucleic acids and a high radiation sensitivity. Thus far, experiments on mice have prolonged the life span of cancerous animals two to three times that of untreated mice, although all have, of course, died in the end. Dr. Stern said it was not yet clear whether the lanthanum had failed to reach some cancerous cells, or had reached all but had left some merely damaged and able eventually to continue their activity. He found the method of administration most fruitful and least toxic to be to introduce the isotope directly into one of the body cavities, such as the chest, or abdomen, where cancer is found. Once injected into a cavity, the lanthanum-140 tends to stay there, instead of dispersing throughout the body. This distribution characteristic has been found to be substantially the same in humans as in mice. The experiments are continuing, and other rare earth isotopes will be used, in addition to lanthanum.

ATOMIC PATENT DIGEST...latest U. S. grants & applications...

Radioactive photographic articles. In part, the method of irradiating an object with radioactive radiations. Comprises the steps of taking a photographic image of an object, causing the said image to become radioactive by treating it with radioactive material, and applying the thus treated image to this object. U. S. Pat. No. 2,603,755 issued July 15th, 1952 to Jack De Ment, Portland, Oregon.

Ionization gauge regulation. In part, accomplishing this by electronic means in an ion vacuum gauge circuit in which the ion current is held constant and the electron current indicates pressure. U. S. Pat. No. 2,604,514 issued July 22nd, 1952; assigned to United States of America (USAEC).

Method of preparing facsimile transmission copies for degraded reception. The method of preparing a message copy composed of alphabetic characters for reduction of character confusion by interference in reception in an electrical facsimile system employing optical copy scanning for signal pick-up for transmission, which comprises, in part, printing on a suitable support letters which have no common confusable characteristic of form. U. S. Pat. No. 2,604,552 issued July 22nd, 1952 to Montford Morrison, Rochester, N. Y.

Ionization chamber for neutron flux measurements. A radiation measuring system comprising in part, an elongated housing, a series of longitudinally extending plates forming four ionization chambers, and means for coupling these plates to provide an indication of neutron flux. U. S. Pat. No. 2,604,598 issued July 22nd, 1952; assigned to United States of America (USAEC).

Radiation detector. Comprising, in part, several plate members forming a cathode, a wire anode, in an ionizable medium, and an ionization responsive circuit connected between these members. U. S. Pat. No. 2,604,600 issued July 22nd, 1952; assigned to Well Surveys, Inc., Tulsa, Okla.

Control circuit. Comprising, in part, an electric discharge device, a second electric discharge device coupled to the first electric discharge device so that these discharge devices operate only on opposite half cycles, and means for applying an out-of-phase voltage to these discharge devices to control the periods of their operation in each cycle. U. S. Pat. No. 2,604,612 issued July 22nd, 1952; assigned to United States of America (USAEC).

NOTES:- A claim filed by one Helmut W. Schulz, Charleston, W. Va., under provisions of the Atomic Energy Act of 1946 for "compensation, award and/or royalty" for disclosure of a theoretical design of an ultra-centrifuge for the separation of isotopes has been denied by the USAEC's Patent Compensation Board (J.V.L. Hogan, Casper W. Ooms, and Isaac Harter), following hearings in Washington. Mr. Schulz presented a paper on the subject of separation of isotopes by centrifugation in 1940. He filed a patent application for his process in 1942, and received a patent (U. S. No. 2,551,815) in 1951. His claim covered disclosures in the paper, in the application, and in the grant. In denying the claim, the Board found that none of the alleged inventions described in these documents have been used by the USAEC, its predecessor Manhattan Engineer District, or their contractors, employees, etc. It stated: "...that the paper, the application, and the grant do not disclose any idea or teaching which is useful in the production of fissionable material, or in the utilization of fissionable material, or atomic energy for a military weapon". Hence, Schulz's disclosures do not satisfy the statutory requirements for the granting of an award under the Atomic Energy Act. "Only further experience in the field of isotope separation can demonstrate whether or not the thus far unverified expectations of Applicant can be realized with that apparatus," the Board observed. It left the way open for Schulz to apply at a later date for an award. The Board also noted that actual experiments had been conducted with a number of models which had been built and operated before Schulz did any work in the field.

Sincerely,

The Staff,
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