yielded somewhat inconclusive results, but both the tests and typological study suggest at least contemporaneity or precedence for Sandia man. In the case of Lewisville and the Clovis type, two separate radiocarbon tests of different charcoal from two different hearths yielded identical results of "more than 37,000 years."

Among other very early American sites, apart from the Folsom and Sandia finds, are unidentified human fire-hearths near Las Vegas, Nev., dated at some 23,000 years ago by the radiocarbon method, and unidentified hearths on Santa Rosa island off California, dated at about 30,000 years ago by the same method. The artifacts and human remains at Midland, Tex., and the bone artifacts, possibly human, at Potter Cave, Calif., also seem quite old, but they have not yet been effectively dated. At present, Lewisville seems to be the oldest surely dated find in the New World.

Nuclear Notes

One of the best-kept secrets of the World War II atomic bomb project—the process for extracting plutonium—has been revealed some 13 years after the method was developed. The disclosure has been made in a chapter of a new book, *Progress in Nuclear Energy, Series III, Process Chemistry,* published by the Pergamon Press, London, and in an announcement by the University of California. The process—which worked in defiance of chemical principles then known—may well have given the United States the bomb a year or more ahead of expectation.

The disclosure of the process, which has been generally superseded and is now only of historic importance, also pointed up the important role played by Stanley G. Thompson, a chemist in the Radiation Laboratory of the University of California. During the postwar period, Thompson has earned a reputation because he was codiscoverer of five synthetic elements—97, 98, 99, 100, and 101. But even his fellow chemists, except for a few colleagues, did not know that he had been chiefly responsible for the break-through that helped bring early success to the bomb project.

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In a recent speech Willard F. Libby, commissioner, Atomic Energy Commission, urged chemists to learn a way of adapting the plutonium in atomic weapons for peaceful power uses. He challenged scientists to discover a way to "burn up" plutonium for fuel, should the day come when the weapons stockpile is considered large enough.

The fact that plutonium is highly dangerous has so far hindered its use in power development. Plutonium, like radiostrontium, emits alpha rays and accumulates in human bone. The need for increased safety precautions has so far made plutonium less attractive to experiment with than enriched uranium-235, the current source of power fuel.

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The successful conclusion of an unprecedented power demonstration by an atomic ship propulsion reactor has been announced by the Atomic Energy Commission. The nation's first practical reactor power plant, a land-based prototype of the one used in the *Nautilus* at the commission's National Reactor Testing Station in Idaho, was routinely shut down on 8 Aug. at the end of what is believed to have been the longest full power run ever completed by any type of propulsion plant—land, sea, or air.

On a single charge of uranium fuel (and using only part of that charge) the nuclear reactor operated at an average power of 100 percent for 66 days and nights. The test was designed to prove the reliability and stamina of pressurized water reactors for ship propulsion. The prototype of the reactor now in the *Nautilus* met the demanding test requirements that were placed upon it.

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Work has started on Bulgaria's first atomic research center near Sofia, which will house a 22,000-kilowatt reactor that is being provided by the Soviet Union. Foundations have been laid for a building in which 500 natural scientists and technicians will live and work while workmen are busy on the site of the reactor building.

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The West Berlin city government has decided to buy a research reactor, set up a nuclear research institute, and engage two atomic scientists to organize a program in the peaceful uses of atomic energy. The program will be planned by an advisory commission that is made up of representatives of private industry. Max von Laue, a Nobel prize winner and head of the Max Planck Institute for Physical Chemistry in West Berlin, is chairman of the commission, which also includes the two newly appointed natural scientists—Karl Eric Zimen, formerly director of the Institute for Nuclear Chemistry at Gothenberg University, Sweden, and Arnold Flammersberg, at present lecturing at Göttingen University in West Germany.

In a recent lecture Zimen pointed out that Berlin should really be in the forefront of nuclear research because of its decisive contributions in the past. He recalled that decades of research in Berlin culminated on 22 Dec. 1938 in the first splitting of the atom. On that day Otto Hahn, Lise Meitner, and Fritz Strassmann demonstrated fission of uranium.

Zimen also commented that Hahn was concerned from the first that his discovery might be used for destructive purposes, and that he tried to keep the experiment a secret. He even attempted to disprove his own theories, although they had been proved by successful experiment.

According to the city government's plan, work on setting up the research institute is to be started next year, the reactor is to be put into service in 1958, and an accelerator is to be added. The establishment is to be put into full operation by 1959.

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Australia is the fourth nation to sign an agreement with the United States on the exchange of atomic energy information in the classified field. As a major supplier of uranium, Australia has entered into a pact that is similar to this country's agreements with Britain, Canada, and Belgium.

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In a recent interview with the press, Ralph E. Lapp of Washington, D.C., physicist and private consultant on atomic energy, commented that "it is rather ridiculous to have Japanese scientists, rather than Americans, putting out most of the news about U.S. atomic blasts in the Pacific." Atomic Energy Commission practice has been to make only short announcements of its Pacific tests before they are held, then to report afterward that they have been successfully concluded. Most of the information released has appeared in news stories from Japanese natural scientists who keep a close watch on nuclear explosions through monitoring devices.

Rabbit Embryos from One-quarter of an Egg

F. Seidel has published an analysis of the capacities of individual blastomeres (cells) of the rabbit egg to differentiate at the four-cell stage [*Naturwissenschaften* **13**, 25 (July 1956)]. In operating on eggs, he destroyed one cell at the two-cell stage by puncture; when the remaining cell divided, he destroyed one of its daughter cells, thus obtaining a single one of the four cells of the four-cell stage. After operation, the eggs were implanted into uteri for from 7 to 9 days of further development. Eighteen out of 30 were recovered.

Two results occurred: the single cell either gave rise to a complete and symmetrical embryo with normal extra embryonic tissues or to a mere blastocyst with no organized embryonic region. Seidel interpreted the first result to mean that a single cell of the four-cell stage may have the capacity to form an entire embryo along with its extra embryonic tissues. The failure of some single cells of the four-cell stage to differentiate an embryo implied that the capacity to form