samples that are contaminated with large amounts of common lead. The Pb^{207}/Pb^{206} ages are not presented at this time because this age calculation is even more sensitive to common lead corrections than the Pb^{207}/U^{235} ages.

As shown in Table 6, the calculated ages of the

TABLE 6

Pb^{206}/U^{238} AGE OF URANINITES FROM THE COLORADO FRONT RANGE AND FROM THE COLORADO PLATEAU

Locality	Pb^{206}/U^{238} age in million years*
Wood Mine, Gilpin Co., Colo. (*6*)	57.3
Wood Mine, Gilpin Co., Colo.†	60
Gilpin Co., Colo. (*6*)	59.8
Iron Mine, Gilpin Co., Colo.‡	70
Happy Jack Mine, San Juan Co., Utah	65
Shinarump No. 1 claim, Grand Co., Utah	75

* These ages have been corrected for common lead, using the isotopic composition of the lead in the wulfenite and vanadinite (*4*).

† Specimen from the U. S. National Museum (USNM 83629), courtesy George Switzer. Analyzed chemically by U. S. Geological Survey. Isotopic analysis by Carbide and Carbon Chemicals Co., Y-12 Plant, Mass Assay Laboratory, Oak Ridge, Tenn. Age expressed to nearest 5 million years.

‡ Specimen collected by George Phair, U. S. Geological Survey. Analyzed chemically by U. S. Geological Survey. Isotopic analysis by Carbide and Carbon Chemicals Co., Y-12 Plant, Mass Assay Laboratory, Oak Ridge, Tenn. Age expressed to nearest 5 million years.

uraninites from the Shinarump conglomerate of Utah are of the same order of magnitude as the early Tertiary age of uraninites of the Colorado Front Range. However, using the geologic time scale proposed by Holmes (*6*), the Shinarump conglomerate is estimated to be approximately 160 million years old.

If the ages calculated from the foregoing data for the uraninites in the Shinarump conglomerate, and the average age (77.3 million years) for the carnotite deposits of the Salt Wash sandstone member of the Morrison formation (Upper Jurassic), are close to the true ages of these ores, then these uranium-bearing minerals were probably formed in the sediments in late Mesozoic or early Tertiary time. This interpretation differs markedly from the earlier conclusions, based on field evidence, by Hess (*7*), Webber (*8*), and Fischer (*9*), that the uranium minerals were introduced into the sandstones of the Colorado Plateau during or soon after deposition of the sandstones. Careful study is continuing in order to resolve the uncertainties in interpretation of both field and laboratory data so that a satisfactory hypothesis of origin of these ores may be established.

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The Isolation of Progesterone from Human Placentae[1]

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Progestational activity has been detected by biological methods in the placenta (*1*), the urine (*2*), and the blood (*3*) of pregnant women and also in the blood of nonpregnant women (*4*). Attempts to isolate progesterone from human tissues, however, have hitherto been unsuccessful (*5–8*).

We are reporting the isolation of progesterone from normal postpartum placentae. Since the greatest yield yet reported has been obtained by treatment of whale corpora lutea with diute NaOH, we have utilized this procedure (*9*). Two characteristics served as guides in the isolation: first, progestational activity as measured by the Hooker-Forbes microassay technique (*10*); second, the unsaturated α-β structure in Ring A, as determined by its absorption maximum at 240 μ. It was later found that all fractions that showed more than traces of progestational activity also demonstrated an absorption maximum at 240 μ. Other minor fractions had peaks at this wavelength but did not exhibit significant progestational activity.

Placentae were frozen in the deep-freeze and finely ground before being completely thawed. The tissue was then treated with approximately equal volumes of 5% NaOH for two days at room temperature. The resulting liquid was extracted five times with equal volumes of redistilled ether, back-washed with water until neutral, and then evaporated to dryness. Approximately 3 mg of neutral lipids was obtained from each gram of crude tissue.

Ketones were separated from the neutral ether extract by means of Girard's Reagent T (*11*). Preliminary chromatography on Magnesol: Celite (ratio 5:1) was followed by fractional chromatography on activated alumina (Merck) and Hyflow Supercel, using, for elution, mixtures of hexane, benzene, or alcohol in various proportions. In the final stages, the

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mixture was acetylated and chromatographed on alumina and then Magnesol: Celite, using a hexane-acetone system. Details of the chromatographic procedures will be published subsequently. The compound was crystallized from acetone: pentane, and the final purification was achieved by sublimation in high vacuum.

The white crystalline solid finally obtained melted at 124°–125°; mixed mp with progesterone, 123.5-5-125° (progesterone mp 123°–125°). The derivative made with dinitrophenylhydrazine melted at 288°–294° as compared with known progesterone *bis*-dinitrophenylhydrazone, which melted at 287°–297°. The amount of isolated progesterone was roughly 1 mg/kg fresh tissue and seemed sufficient to account for the known progestational activity of the starting material.

From the biological point of view, the isolation of progesterone from placentae provides evidence in support of the concept that this organ secretes progesterone during the latter part of pregnancy. Since progesterone has been isolated from tissues of the whale, sow, and steer, it also suggests that the human has adopted the same chemical structure as other mammals for progestational action.

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Effects of Whole Body Exposure to Irradiation upon Subsequent Fertility of Male Rabbits[1]

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The biological action of ionizing radiation on the functional activity of the sperm has been the subject of a number of studies in recent years. Most of the interest, however, has been centered on the effects of direct irradiation of the sperm *in vitro* (*1–3*) or of localized radiation of the testes (*4–9*), with the major parts of the body protected by a lead shield. Few studies have dealt with the effects of whole body exposure to relatively low levels of radiation, prior to mating, upon the subsequent fertility of the exposed male (*10, 11*). Most of the observations concerning the effects of whole body exposure to radiation on fertility have been incidental to other studies.

The data in this report are the results of a preliminary investigation of the effects of whole body exposure of male rabbits to x-rays upon their subsequent fertility when mated to normal females.

The mature male and female rabbits used in this study were purchased from commercial rabbit breeders. All males were test-mated prior to treatment to insure the use of potentially fertile males.

An estimate of the effects of irradiation of the male on his potential fertility was obtained by comparison of the data obtained from normal (test) females bred to irradiated males with similar data obtained from normal (control) females bred to nonirradiated males. The evaluation of the potential fertility of each male was based on (1) the initial fertilization rate of ova as determined 28–72 hr after mating, (2) the fetal death rate as determined between the 9th and 24th day of pregnancy, and (3) the litter size and the viability of the young.

The initial fertilization rate of ova was studied only in matings made within the first 2 weeks of the male post-treatment period, and the data on fetal mortality, litter size, and viability of young born were obtained from matings made throughout the 108-day experimental period. Three females, in which none of the eggs were fertilized, were excluded from the summary of data on the initial fertilization rate.

Abdominal palpations of all females, not sacrificed within 72 hr after mating, were done on the 10th day after mating and at weekly intervals thereafter for evidence of pregnancy (*12*). No females diagnosed as not pregnant on the 10th day were sacrificed for the determination of the fetal mortality rate. Although this may have introduced a slight error, every effort was made to prevent unduly penalizing the male by charging him with the failure of fertilization when, in fact, the female may have been at fault.

Eight males were bilaterally exposed to whole body irradiation administered with a General Electric Maxitron x-ray machine. Three levels of radiation, measured in air, were given: 2 males received 100 r, 4 received 200 r, and 2 received 300 r. The factors of radiation were 250 kvp, 30 ma, hvl 0.4 mm copper, inherent filtration 1 mm aluminum, added filtration 3 mm aluminum, TSD 93.7 cm, rate 48 r/min.

Experimental matings to test females (nonirradiated) were started as soon after irradiation as possible, and all males were mated at least one time during the first week after exposure. The frequency of postirradiation matings was determined by the availability of estrous females. Matings of 3 nonirradiated males provided the control data.

The chi-square test for homogeneity was used as the test of significance (*13*).

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