been published (*5*). Detailed publications will be forthcoming from the various investigators and will appear elsewhere.

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A Dominant, Sex-Linked Mutation in the House Mouse

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Evidence for sex-linked mutations in the mouse has been presented by Hauschka *et al.* (*1*), Chase (*2*), Bittner (*3*), and Strong (*4*). Only one of these reports (*1*), however, involved a morphological mutation. The results of matings of a new dominant mutation in the mouse, Bent-tail (Bn), suggest that this mutation may be sex-linked.

The expression of Bent-tail in the female may range from a single, almost imperceptible kink to a series of well-defined kinks. In some extreme cases, the tail is bent back on itself and may be pressed against the body. In females, the tail is usually normal in length; in males, however, the tail is usually half the normal length, and the kinks are generally restricted to the end of the tail. Except for the kinks and shortness, the tail is apparently normal.

A single Bent-tail male was found in a litter of 7 mice resulting from a mating between a normal female of the Namru strain (*5*) and a bald, hr^{ba}, male (*6*).

TABLE 1

A SUMMARY OF MATINGS OF BENT-TAIL AND NORMAL MICE

Parents		Offspring				
		Bent-tail		Normal		No. of litters
Female (phenotype)	Male (phenotype)	Female	Male	Female	Male	
24-A (+)	24-1 (Bn)	23	0	2*	13	4
24-A (+)	Namru (+)	0	0	7	4	1
Namru (+)	24-1 (Bn)	4	0	0	2	1
Namru (+)	24-1 (Bn)	3	0	0	6	1
Namru (+)	24-1 (Bn)	3	0	0	4	1
130 (+)*	Namru (+)	2	1	3	1	1
131 (+)*	Namru (+)	1	1	3	4	1

* Phenotypically normal, genotypically Bent-tail.

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This male, 24-1, mated with a normal sib, 24-A, produced Bent-tail females and normal males, suggesting that the mutation was dominant and apparently sex-linked. Two females could not be positively identified as Bent-tail because of the poorly defined single kink. These 2 females when outcrossed to normal Namru males yielded Bent-tail and normal mice. When the original normal female, 24-A, was outcrossed to a normal Namru male, only normal mice resulted. Finally, the original Bent-tail male, 24-1, was outcrossed to 3 normal Namru females. These matings also indicated that the mutation was sex-linked and dominant. The results of all these matings are summarized in Table 1.

The aberrant sex ratio in litters from the original matings between 24-A and 24-1 has been interpreted as being due to a lethal gene in one of the sex chromosomes of the female (*1*). Matings are in progress to test the validity of this hypothesis. Additional matings have been initiated to determine whether homozygous Bent-tail females occur.

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Uraninite from the Grey Dawn Mine, San Juan County, Utah

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Massive chunks of primary uraninite have been found intimately associated with carnotite-bearing ores from the Grey Dawn Mine located on a small tributary of La Sal Creek near the southeast flank of the La Sal Mountains, San Juan County, Utah. This spectacular occurrence of uraninite was brought to the attention of the writer by Ace Turner, operator of the Grey Dawn Mine, when he reported uncovering approximately a thousand pounds of some black ore, "heavy as lead," and assaying about 64% U_3O_8.

Although uraninite has been recognized by Gruner (*1*), Kerr (*2*), and others (*3*) in other sedimentary and igneous rocks on the Colorado Plateau, this discovery is believed the first in carnotite ores from the Salt Wash sandstone member of the Morrison formation, which currently contributes the major proportion of our domestic production. Its presence in these ores may modify the present concept of the origin of the carnotite-bearing sandstone deposits of the Colorado Plateau as interpreted by Fischer (*4*).

A field examination of the mine revealed three pod-like occurrences of uraninite-bearing ore in separate

parts of the mine. The largest pod occurred as a mass 18″–24″ thick by 4′ wide and 10′ long. The massive uraninite, 3″–5″ thick, rested on 6″–8″ of black vanadium ore commonly designated as corvusite. This was followed by 8 or more inches of a yellow carnotite-type ore, which was topped by 6″ of powdery red hewettite.

The specimens of uraninite-bearing ore that have been collected show a black central core of uraninite, in part laced with delicate seams of yellow, orange, and green uranium minerals, and the whole surrounded by carnotite. Although some of these minerals have been tentatively identified, there are many others that have not.

The Bureau of Mines at Salt Lake City, Utah, made a preliminary microscopic and chemical examination of one specimen in August 1951. It consisted of half black oxide and half yellow alteration products. The chemical analysis of the material as a whole gave 66% U_3O_8, 4.8% SiO_2, 7.7% H_2O, and 0.95% copper. There was considerable vanadium present, as well as a minor amount of arsenic. Regarding the identity of the minerals, Harold L. Gibbs states:

> The minerals tentatively identified in this small rich sample are uraninite, beta-uranotil, carnotite, and gummite. An X-ray photograph of the black uranium oxide by Allen King of the University of Utah gave the lines of uraninite. The beta-uranotil was observed as thin 100 plates with parallel extinction, gamma = 1.685, and strong pleochroism, yellow to colorless. Grains in cold concentrated HCl leave a silica residue. Intergrown with the beta-uranotil in all cases was an extremely fine yellow mineral, index more than 1.74, tentatively identified as carnotite because of the presence of vanadium in the same grain. Two yellow isotropic minerals, one of low index near 1.60 and one near 1.73 are tentatively identified as gummite. The nature of the copper and arsenic occurrence was not identified.

Some of these minerals are new to the mineralogy of the carnotite deposits, and it is expected that others will be found and identified by the U. S. Geological Survey following examination of other specimens from this deposit. When the USGS studies have been completed it is believed that there also will be more information on the nature of the uraninite and its alteration products.

The Grey Dawn carnotite deposit is similar in many respects to other carnotite deposits of the Salt Wash sandstone except for the presence of uraninite, gummite, and β-uranotil. It has individual ore pods that are lenticular, irregular in shape, and essentially parallel to the gentle dip of the sandstone bed. Tiny northwest-trending fractures cross the favorable bed in the vicinity of the ore bodies and are believed to be one of the structures influencing the deposition of uraninite. Although there is no surface indication of the Grey Dawn deposit at the rim outcrop, nevertheless some 120′ back of the rim a combination of favorable host rock and structure resulted in forming an ore body.

In the carnotite deposits of the Salt Wash sandstone, no original mineral has ever been found the alteration of which could produce carnotite. The discovery of massive uraninite in the Grey Dawn Mine suggests a source for the uranium, and an unidentified black mineral high in vanadium collected here, as well as in other mines, suggests a source for the vanadium. Not only does the uraninite offer a solution to the origin of carnotite, but it supports the theory that the carnotite-bearing deposits are the product of the alteration of ores of hydrothermal origin. Evidence connecting the deposits with igneous activity is not conclusive, but the presence of the laccolithic La Sal Mountains near the Grey Dawn Mine suggests a close association. The world occurrences of uraninite are listed as associated with heated solutions, and as the Grey Dawn uraninite is not of placer or detrital origin, the possibilities of a hydrothermal origin for the uraninite seem exciting and well worth testing. From the data that are being assembled it appears that a new classification of uraninite-bearing ores is being developed on the Colorado Plateau.

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An Effect of Proteins and Proteoses on the Cellulase of *Myrothecium verrucaria*[1]

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During work on purification of the cellulase of *Myrothecium verrucaria* Alb. et Schw., strain USDA 1334.2, a marked stimulation of cellulase activity by the addition of proteins and proteoses has been observed. Protein effects on enzymes are well known but the present evidence suggests that the mechanism of the effect on cellulase is unusual.

The enzyme preparation ("Fraction 80") on which the effect has been most studied was obtained from a culture filtrate by concentration and repeated fractional precipitation with ammonium sulfate (*1*) and stored as a freeze-dried powder. From subsequent evidence its cellulase content has been estimated to be approximately 40% of the total protein. Enzyme activity was assayed from the micro-Somogyi titer of the reducing sugar formed during incubation of enzyme in 20 ml of assay medium for 17 hr at 35° C, with continuous rotary shaking. The assay medium consisted of a 1% dispersion of cellulose substrate in 0.05 *M* acetate buffer of pH 5.6, with sodium pentachlorophenate as antiseptic. The cellulose substrates have been previously described (*1*): "precipitated cellulose," a finely

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