UTAH FIELD HOUSE OF NATURAL HISTORY
VERNAL STATE PARK
VERNAL, UTAH

STATE PARK AND RECREATION COMMISSION

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TECHNIQUES USED FOR CASTING DIPLODOCUS

1. Molds are clean and ready to use for the most part. A few may have been slightly broken during storage and transportation, but can be repaired with plaster of paris (add plaster to water to make a mixture the consistency of thick cream). The inside of the molds should be smooth and well shellaced so that when greased they will not adhere to the casting material.

2. Before filling the molds with the casting mixture, they should be opened and the inside brushed with lard oil or with a mixture of 1 part stearic acid, 4 parts kerosene, and 1 part powdered mica. When lard oil is used, if it is too thick, it may be thinned with kerosene.

3. If the inside of a mold is damaged, it should be repaired with plaster of paris and re-shellaced before casting begins.

4. Some of the more complicated vertebrae and other pieces require an internal glue mold to be made before the regular cast can be poured. Lard oil is probably the best for greasing the inside of the plaster molds before pouring the liquid glue. The glue mold does not require any greasing, or separating material, however, as it is pliable and can be separated from the cast without difficulty. Flake or ground glue can be purchased for this purpose. We ordered 100 lbs but did not use all of it in our casting. Sometimes when the glue is poured into the mold it leaks out through the joints and may require some quick dobbing up with plaster of paris or modaling clay or some other material.

5. To make these glue molds, pour dry glue into water in a kettle and heat, preferably over hot water (like a double boiler) instead of over direct heat, to prevent scorching. A little experimenting will tell you how much glue and water to use to make a fairly heavy liquid. Next, pour the liquid glue into the greased plaster mold and let set for several hours or until dry (not sticky). It may take a little longer in your area where there is more humidity in the air, but the glue molds should not be left too long as they begin to shrink. We often poured them before leaving at night and stripped them in the morning. The internal plaster form was removed, the glue mold was put back into the outside plaster mold and they were ready for the cement casting mixture. When pouring the glue, considerable care should be taken to have the outside plaster mold as tight as possible, otherwise the liquid glue, as mentioned above, seeps out through the joints. In fact, in some instances, the latter may have to be sealed temporarily with plaster or other material on the outside of the plaster mold. If the glue is cooled down as much as possible before pouring, it helps in controlling it. The molds which have an inside glue mold can be recognized by a wooden handle attached to a wire that runs to the inside plaster form of the mold. Generally, they are large vertebrae, but there are some smaller ones and others, also.

6. If cement is used as the casting material, the proportion of ingredients to make it weather resistant is:

For the majority of the casts:

1 part cement
3 parts aggregate (such as aragonite (onyx)
1 part fine, #0; 2 parts medium, #1

For the large casts (leg bones, large vertebrae, etc.)

1 part cement
2 parts coarse aragonite, #2
3 parts cinders

For small and thin pieces, small tail joints, etc.

1 part cement
2 parts # 0 aragonite (fine)
3 parts # 1 " (medium)

7. For coloring the casts, dry mix masonry dye (water soluble) was used:

1 lb. black
1 lb. red ochre per 100 lbs. of cement
1 lb. yellow ochre

8. Each mold has a number, but some of the original numbers have been covered by patches of plaster which have been added in making repairs.

9. The neck vertebrae (cervicals) have the letter "C" plus a number, C-1, C-2, etc. The numbers start at the shoulders. They are much longer than the other vertebrae and largest at the base of the neck. These vertebrae are very complicated. The only other long vertebrae are the tail joints, and of course they are much smaller than the cervicals.

10. Thorax or body vertebrae (dorsals) have the letter "D" accompanying the numbers. Each large vertebra, whether cervical, dorsal, or caudal, has many parts (neural spines, transverse processes, etc.). Each part of the same vertebra has the same numbers: D-5, etc.

11. Tail (caudal) vertebrae also have the letter "C", but by shape they can be easily distinguished from the cervicals which are much more complicated.

A publication that will be very helpful to you and which you can probably obtain from Carnegie Museum is : "THE OSTEOLOGY OF DIPLODOCUS MARSH"
By J. W. Holland, Carnegie Memoirs, Vol. II, No. 6