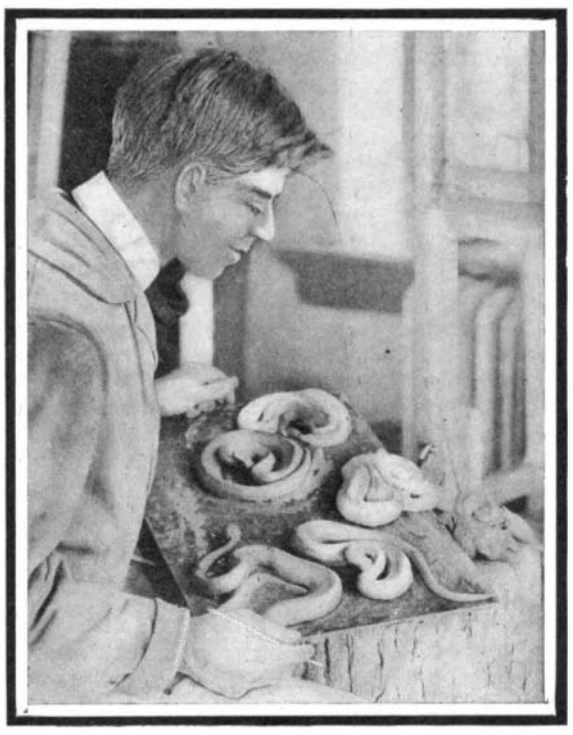
THE MOUNTING OF REPTILES FOR MUSEUM EXHIBITION.

Representations of nearly every animal in existence—and some of creatures that have been extinct for thousands of years—never cease to attract the interest and excite the admiration of the visitor to the exhibitions. The exhibits are not always mere reproductions of the animal they represent. In our larger museums, and especially in the American Museum of Natural History in New York, the aim to a lesser or greater extent is to show the habits, environment, habitat, and mode of existence of the subjects. These details are carried out with such skill and are so true to life that they are really works of art. The reproduction of the vegetation, soil, rocks, water, etc., is often a remarkable achievement, and it has been only in the last decade or so that this art has been so highly developed.

We have become accustomed, from seeing the specimens which abound in the collections, to think of all such representations as stuffed, and we are quite sure that it is the taxidermist's business to stuff animals, as the derivation of the word itself would suggest. A glance into the studios and laboratories of the Department of Preparation, American Museum of Natural History, is sufficient to convince the most casual observer that some radical change has taken place in the field of taxidermy. It is no longer a stuffing of skins; it has become a plastic art employing the very methods and devices of the sculptor's studio. Instead of the chopped straw, excelsior, or the like which we look for, we find here boxes of clay, barrels of plaster, and the sculptor's armature of iron and lead framework, used to hold the heavy wet clay out of which he fashions his creations. The modern taxidermist has to be more than the term implies. He must be an artist, an anatomist, a naturalist, an artisan, a worker in clay, papier-maché, and plaster, and the success of his work depends to a great extent upon the skill with which he fulfills these various vocations.

The reproduction of reptilian life has always been a task of extreme difficulty. Slight defects that might be hidden under fur or feathers in another case are immediately apparent under the glistening, scaly covering of the snake or lizard. Besides, the pecuiar nature of the skin—its toughness, rigidity, its lack of what the taxidermist calls "stretch," the tendency of the plates or scales to curl up and even fall out on drying—all formerly seemed to have combined with the antiquated methods of taxidermy to render any attempt to mount a snake a failure. So great have the difficulties seemed, that formerly most of these snake representations were mere plaster casts, made from the dead animal itself and colored in a manner as nearly true to life as possible. The results of this method are not very satisfactory, and to-day in the best work in reproducing reptile life the actual skin is used.



Making Sketch Models from Life.

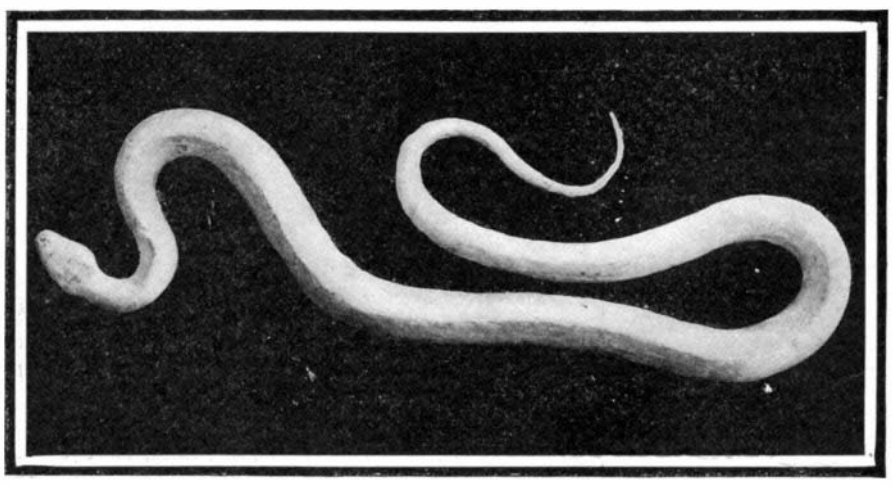
Drawing the Prepared Skin upon the "Manikin."

The methods employed in the mounting of reptiles in the Department of Preparation at the American Museum are based on two very simple ideas, and in these two respects differ from the old methods. In the first place, the snake or reptile of whatever kind is modeled, and secondly the skin is never allowed to dry out. That these innovations in the manner of preparing the specimens are successful, needs no further proof than the groups on exhibition at the Museum.

First the snake itself, if possible, or one of the same species, is usually carefully modeled in clay from life until, being studied with care, its postures, actions, curves, and the modeling of its form are mastered. The illustration shows Mr. Klein of the Department of Preparation making clay sketches of a number of copperheads. If a group is to be constructed, models of the group are made until one that satisfies the worker is obtained. The sketch models show the surroundings and groupings, and are often very artistic. Furthermore, for the purpose of study, the dead snake or snakes are now posed in various positions till several that are considered good are obtained, and plaster casts are made of separate parts that need especial attention, for instance, the head and neck. When a snake curves its body, wrinkles are sometimes formed on the inner side of the curve; and that the reproductions may be as nearly life-like as possible, casts of different curves are made, to allow the taxidermist to study them fully. This will give the layman some idea of the nicety of the work.

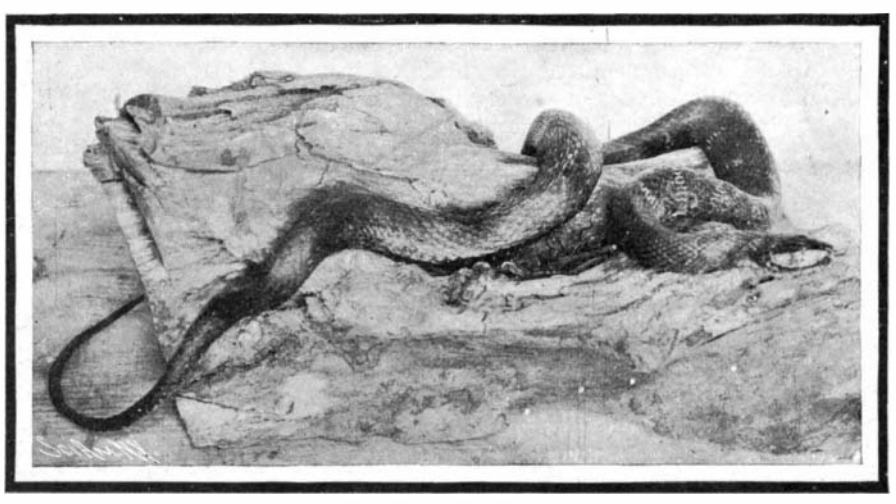
When a sufficient number of casts have been made, the skin is removed from the body and prepared for mounting. The preparation consists of a tanning process, for which either a weak solution of sulphuric acid and glycerine or for more delicate specimens a solution of tannic acid and glycerine is used. This latter, the glycerine being taken up by the moist skin, and after repeated applications nearly saturating it, has the property of keeping the skin moist to a slight extent and soft and pliable. It prevents the drying out and the incidental contraction and curling up of the smooth, scaly covering, to

Plaster Casts for Study.



Finished "Manikin."

Removing the Skin from the Body of the Snake.



Completed Specimen.

THE MOUNTING OF REPTILES FOR MUSEUM EXHIBITION.

which so much of the peculiar fascinating beauty of the snake is due. The skin is now subjected to a process of shaving down, which leaves it quite thin.

The manikin upon which the skin is to be drawn and glued is begun. If the snake is a large one, the manikin may be built up upon a cast of the dead body of the snake posed in the desired position, or it is carefully modeled by hand to measurements taken from the specimen, plaster, papier-maché, and glue being used till the desired form is attained. The tanned skin is now tried on the manikin, and when the result is satisfactory is left on, the final touches being given after the skin is on, while the papier-maché is still soft, by pressing it into shape with the fingers.

Fig. 1.—Organistrum.

The glue in the papier-maché causes the skin to adhere, and the specimen is ready to be added to the group.

THE HOW AND WHY OF THE MODERN KEYBOARD.—II.

BY THE REV. F. W. GALPIN, M.A., F.L.S.

(*Continued from page 443, December 17.*)

In dealing with the keyboard as applied to stringed instruments, we have to retrace our steps, for although the manual of the organ and the keyboard of the pianoforte are now practically identical, their origin was quite different and distinct. The earliest form appears about the ninth century, attached, strange as it may seem, to an instrument played with the bow or its substitute. Old medieval manuscripts and architectural adornments show us the organistrum, of which an early example is given in Fig. 1, from a church in Normandy. The strings, no longer vibrated by the bow, are set in motion by a rosined wheel, the handle of which one of the performers is turning. His companion manipulates the keys, which consist of six little tongues of wood armed with a projecting spike or tangent which, when pressed on the string, "stops" it in the same way as the finger on the violin. This same instrument is known in the present day as the vielle or hurdy-gurdy. Many attempts have been made to perfect the application of keys to bowed instruments, and Fig. 3 represents one of these, called the claviola; but at present they are failures, the delicate movement of wrist and arm being unattainable. Now if the hurdy-gurdy key is forced sharply on the tightly-stretched string, a faint musical note is produced, merely by the percussion of the key tangent and without turning the vibrating wheel. We can not but suppose that this effect was observed by the early musicians, and gave rise to the first form of true keyboard-stringed instruments, which we can recognize shortly after 1400 A. D. under the names "manicordium" and "clavicordium." The keys, unlike those of the first organ keyboards, were not hinged at the further end, but were "balanced" on a center pin, so that when the finger was placed on a key the other end rose, and being provided with a small tangent, something like those described above, struck the string stretched immediately above it. The

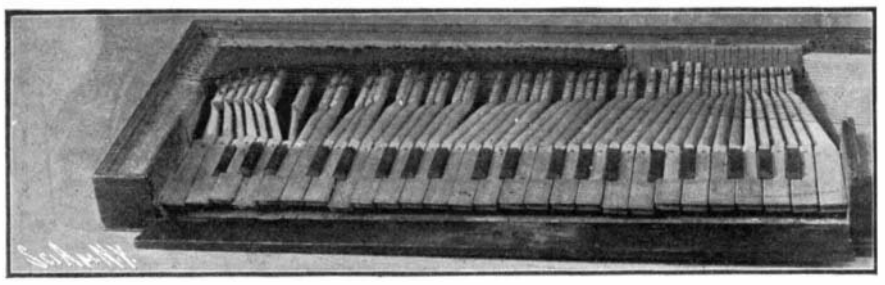


Fig. 2.—A Fretted Clavichord.

clavichord continued in general use till the last century, and as a further proof of its primitive origin, it is interesting to remember that until about the year 1720 several of these little tangents acted on the same

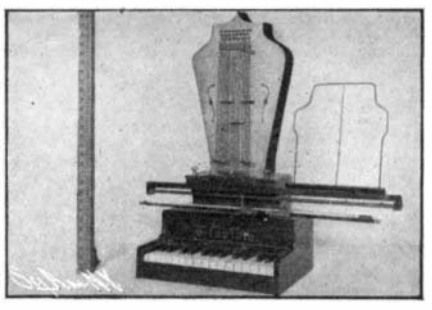


Fig. 3.—Claviola.

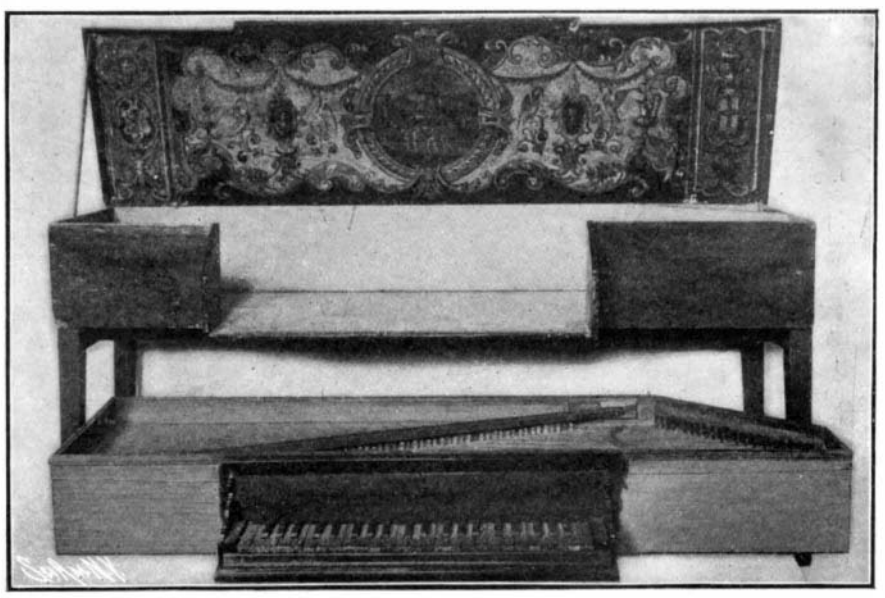


Fig. 4.—Virginal and Case (XVI. Century).

set of strings, sometimes as many as four of them, so that when the note of the fourth key was being sounded, it was impossible to obtain the notes of the first, second, and third keys. A good example of the mechanism of these so-called "fretted" clavichords is displayed in Fig. 2, the key shafts being cut at various angles to bring the tangents to bear on the required set of strings. Here too we see the "balanced key," and it seems most probable that this form was first used for the keyboards of the stringed instruments, and that toward the end of the fifteenth century, when the roller board was invented for the organ, as described in a previous article, it was applied to that instrument, also completely superseding the "hinged key" except in the smaller instruments.

Side by side with the clavichord, though perhaps originally of later invention, we find in use throughout the middle ages a keyboard instrument derived from the ancient psaltery, and under its varying forms called the spinet, virginal, or harpsichord. In all these the mechanism is almost identical. The balanced key, instead of having a tangent fixed at the further end, has in its place a slip of wood called a "jack" working in a grooved register and furnished with a small quill or "spine," hence, some say, one of its earliest names. When the key is depressed, the jack is raised, the quill plucks the string stretched above and sets it in vibration in the same way as the "plectrum" of the mandolin. As the quill is attached to a little movable tongue, when it returns on the finger being removed, it repasses the string without causing it to sound. In Fig. 4 the little "jacks" will be noticed under the railboard, which keeps them from jumping out of the instrument at the touch of too vigorous a player. In England this oblong form of the spinet was often called the virginal, being extremely popular with young ladies; in the sixteenth century, as shown in the illustration, the actual instrument could be removed from its decorated case. Fig. 10 represents a spinet of the same century, with a curious arrangement of the tuning pins immediately over the keys (*spinetta traversa*). Double virginals are sometimes found, and a very rare and valuable specimen is depicted in Fig. 9. The two instruments are quite distinct, the smaller one, tuned an octave higher, being removed and placed on a table for performance. The harpsichord, called also the clavicembalo, was always made in wing shape like the modern grand piano. Fig. 5 is an illustration of a seventeenth century instrument with one keyboard, while Fig. 8 shows the two-manual harpsichord. Mrs. Brown's collection is fortunate in possessing a three-manual instrument. The various keyboards had separate "jacks," and acted on different or additional sets of strings. Upright harpsichords were also constructed, as in the highly ornamental specimen shown in Fig. 7. The reader may have noticed in the illustations of the keyboards given in these two short articles, that in the older instruments on the extreme left of the keyboard there appears to be an odd natural. The reason of this is as

Fig. 5.—Harpsichord (XVII. Century).

Fig. 6.—Cristofori Pianoforte.

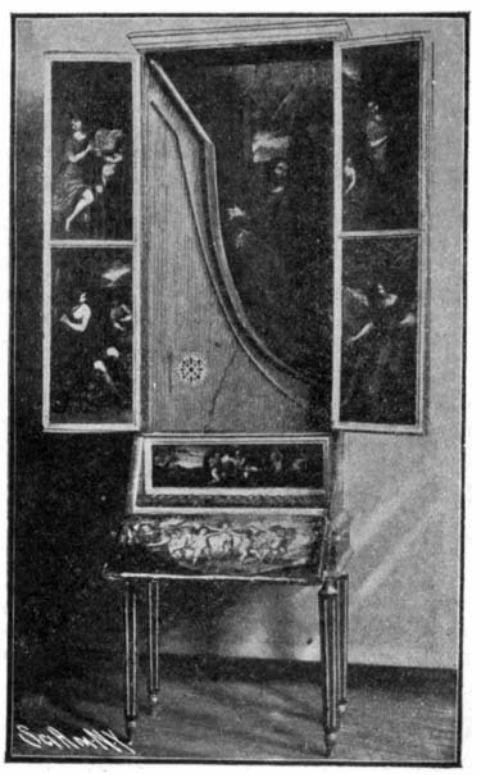


Fig. 7.—An Upright Harpsichord.

THE DEVELOPMENT OF THE MODERN PIANO.