MAKING FOSSILS POPULAR IN THE STATE MUSEUM

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Popularizing fossils sounds simple enough until the work is actually undertaken. When the present State Museum was ready for the installation of exhibits the Hall of Invertebrate Paleontology was turned over to Doctor Ruedemann, now State Paleontologist. Very little had been done in the old Geological Hall (the former headquarters of the Museum) in the way of exhibiting fossils, so that Doctor Ruedemann had upon his hands the installation of an entirely new invertebrate exhibit. The various types of cases had been carefully chosen even before the Museum was ready. One type of case was used for the whole synoptic collection, and here maps showing the extent of the sea during the different periods, and also charts, each showing the outcrops of one formation with its different facies, were used to make the exhibits more intelligible. Exhibits of special groups, such as trilobites, eurypterids, crinoids etc., were displayed in another type of case. Wall cases were used to supplement the synoptic exhibit and also for special exhibits. Gradually still other types of cases were introduced as they were found necessary for particular displays. The aim throughout was to avoid monotony caused by too much sameness in the cases and to strive for the most interesting forms of display. Small and more technical labels were numerous, of course, but these were supplemented by larger explanatory labels of a more general nature. We tried to make an attractive and interesting exhibit of fossil material, and from comments made by scientists and others felt that we had succeeded rather well.

As time went on, however, from watching the persons who visited the Museum, we began to feel that we had perhaps catered too much to the scientists and those already with some training in or understanding of fossils. It was not very flattering to have a group of persons enter the Hall of Invertebrate Paleontology, give a quick look around, and say, "Let's go out; there is nothing but dead things in here." It was quite evident that we needed to increase our efforts to make our exhibits intelligible and interesting to the general public. Our fossils must be made to live. With this in mind restoration groups and explanatory cases are gradually being introduced among the fossil exhibits.

Of the latter kind are the two cases explaining "What is a Fossil?" planned by Miss Goldring to give the unscientific visitor a background which will permit him to study the fossil exhibits with more understanding. These cases stand near the entrance of the hall. A label with a full but simplified definition of a fossil is placed at the top of one case. This case shows examples of all the different ways in which a fossil may be preserved. Likewise in this case is a series of specimens showing various stages in fossilization from loose shells on a sea beach or river bank through loosely consolidated specimens to completely cemented fossil-bearing rocks. Examples of the effect of partial and complete weathering on fossil-bearing rocks are also shown. Clay concretions, often mistaken for fossils because of their odd shapes, likewise have their place here, as well as pseudo-fossils which are of inorganic nature — either stains from decaying vegetable matter or branching mineral incrustations often mistaken by the uninitiated for fossil mosses or ferns.

The second case has various illustrations of the preservation of organisms according to their original composition. Here are shown the effect of conditions of preservation upon the original form, also fragmentary preservation and the distortion of fossils by movements of the rock beds in which they are preserved. In this case belongs also the explanation of types, models, restorations, "squeezes" of various kinds, thin sections, natural and polished sections which are so often seen in fossil exhibit cases and not always comprehended.

It has been said that a museum should be a collection of labels illustrated by specimens; and that idea has been carried out in these cases. Very full explanatory labels accompany all the examples; but for those who wish to spend less time there are subheadings with the specimens, which with the full title label permit them to gain something from these cases with a quick survey.

The results obtained from these two cases have been very gratifying. They have attracted wide attention not only from the general public but also from scientific visitors. Because of the success of these cases, a similar exhibit has been installed in the new Peabody Museum at Yale University. Dr F. A. Bather of the British Museum was much impressed with the cases when he visited our Museum a couple of years ago and has since then written a short paper in which he points out the need for such a case in every museum.

Another educational case, "What is a Geological Formation?" has recently been installed by Miss Goldring as a companion to the "What is a Fossil?" exhibit. It has been placed near the entrance

to the Hall of Invertebrate Paleontology at the beginning of the series of synoptic cases, and has already attracted considerable attention.

The case was designed to give a better understanding of the meaning of a geologic formation. On top of the case is a title label giving a comprehensive and understandable definition of a geological formation, and in the case is a large, very full explanatory label. Six geologic maps of the State are shown. One map gives the surface distribution of the rocks of all the different ages. Each of the other five maps shows one of the important divisions: the present outcrop of the rocks of that age; the former extent of the rocks, which erosion has decreased; and the extension of these rocks southward under the younger beds. Five cross sections made through different parts of the State show the undersurface conditions: the relations of the beds of the different ages, their general slope and thickness. A geologic column is used to show in more detail the succession from the oldest to the youngest beds in the eastern and western areas.

A plate of drawings of a few characteristic fossils has been made for each age. The visitor is referred to the synoptic cases where are displayed the actual fossil specimens of these and other species, and also outcrop maps of the various formations and maps showing the configuration of North America at each stage.

Colored photographs of typical exposures of the rocks of the different formations add to the attractiveness and instructive value of this case. These photographs are colored in oil so that there is no danger of fading. The Museum draftsman, E. J. Stein, has made a specialty of this oil coloring.

Some restorations in plaster were used from the first in the Museum. More were introduced when we began to see how important they were in giving a better understanding of our fossils; and then came our wax restoration groups which have attracted such wide attention. With the exception of the Devonian Forest restoration, all the restorations and restoration groups were to a greater or less extent planned by Doctor Ruedemann and he supervised the work of the artist and sculptor, Henri Marchand. The plaster restorations include life-sized models of eurypterids (*Eusarcus, Stylonurus* and *Pterygotus*), life-sized models of *Crustaceans* (*Mesothyra, Lichas, Homalonotus* and *Dalmanites*), models of growth stages of four species of eurypterids (*Hughmilleria shawangunk* Clarke, *Eurypterus maria* Clarke, *Stylonurus myops* Clarke and *Pterygotus globiceps* C. & R.) modeled by Doctor Ruedemann himself, and models illustrating the internal structure of the shells of cephalopods—also made

by him. Doctor Ruedemann was not quite satisfied with the effect of the plaster models, and, to see if he could get them to look more lifelike, had one or two painted in natural colors by G. S. Barkentin, draftsman at the time, who was very clever at this kind of work. The results more than fulfilled expectations and all the models were treated in this way.

The Eusarcus Group was the first restoration group used in the Museum, and as this was at a time when we were still in the plaster stage, the two restorations of Eusarcus in this group are of plaster. The first restorations in wax made by Mr Marchand were the primitive fishes, *Bothriolepis* and *Cephalaspis,* that now form a small group in the Hall of Vertebrate Paleontology. These wax restorations were found so much more satisfactory than those in plaster that it was decided to continue to use them. A case showing the restoration of Portage life was the next to appear, then the restoration case showing Helderberg life, and finally the Upper Devonian Sponge case. It is planned to add to the restorations a Cambrian, Ordovician and Silurian case to complete our series of "period" cases. A crinoid case bringing together different types of Devonian crinoids, regardless of formation, just as was done in the case of the Upper Devonian sponges, to show the wealth of the New York Devonian rocks in these forms, was already discussed with the artist before the Devonian Forest group was started; and more of this type of case will be added as time and money and room permit.

In one of the graptolite cases fossils and restorations have been combined very effectively; and this idea could be well carried out with other groups. The slabs containing the graptolites are arranged at the bottom of the case, the floor of which is a very much flattened pyramid. Wax restorations of the most important generic groups shown on the slabs are suspended at various heights from the glass top of the case.

The latest, also the largest and most elaborate restoration undertaken by the Museum is the Upper Devonian (Gilboa) Forest group. This group has a width of about 36 feet, a depth from 16 to 18 feet, and a height around 25 to 30 feet. The restoration was executed by Henri Marchand and his two sons, Georges and Paul, under the supervision of Miss Goldring. In this group a new departure was made: in the foreground (idealized, of course) a reproduction of the actual conditions under which the fossil trees were found is shown; in the background a restoration of the forest as it might have appeared in the height of its glory. The two ideas have been successfully worked out and beautifully combined by

the artist. This group not only serves its purpose as a scientific reproduction but through the painting in the background, especially, deserves to be numbered among works of art.

Not all of the restoration cases were set up at once, as one continuous piece of work; but the groups were assembled piece by piece, as the Museum could afford it. Money was not always available, and the Museum owes much to the late Director, Dr John M. Clarke, for supporting these restorations and for his untiring efforts to obtain the money for them, if not from the State, then as gifts from private individuals. To carry out all our plans fully, we shall need the new State Museum which was the unfulfilled dream of our late Director.

Figure 10 First case illustrating "What is a Fossil?"

Figure 11 Second case illustrating "What is a Fossil?"

Figure 12 Rear and end view of case illustrating "What is a Geologic Formation?"

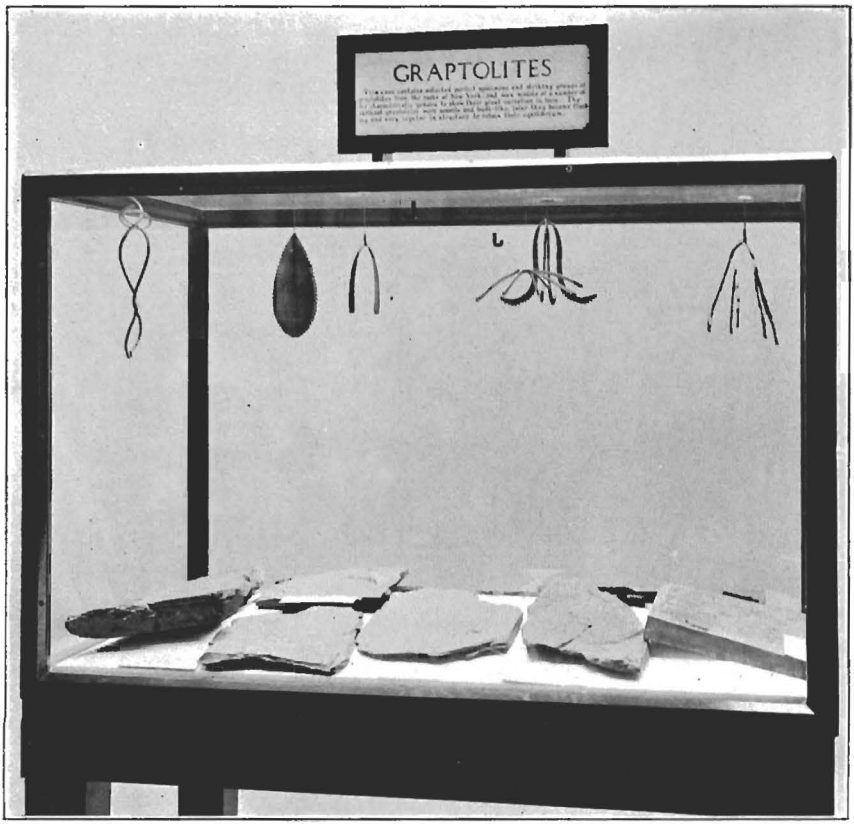

Figure 13 Case containing selected slabs with graptolites and restorations of graptolites in wax. When completed, it will show a phylogenetic series of the principal genera.

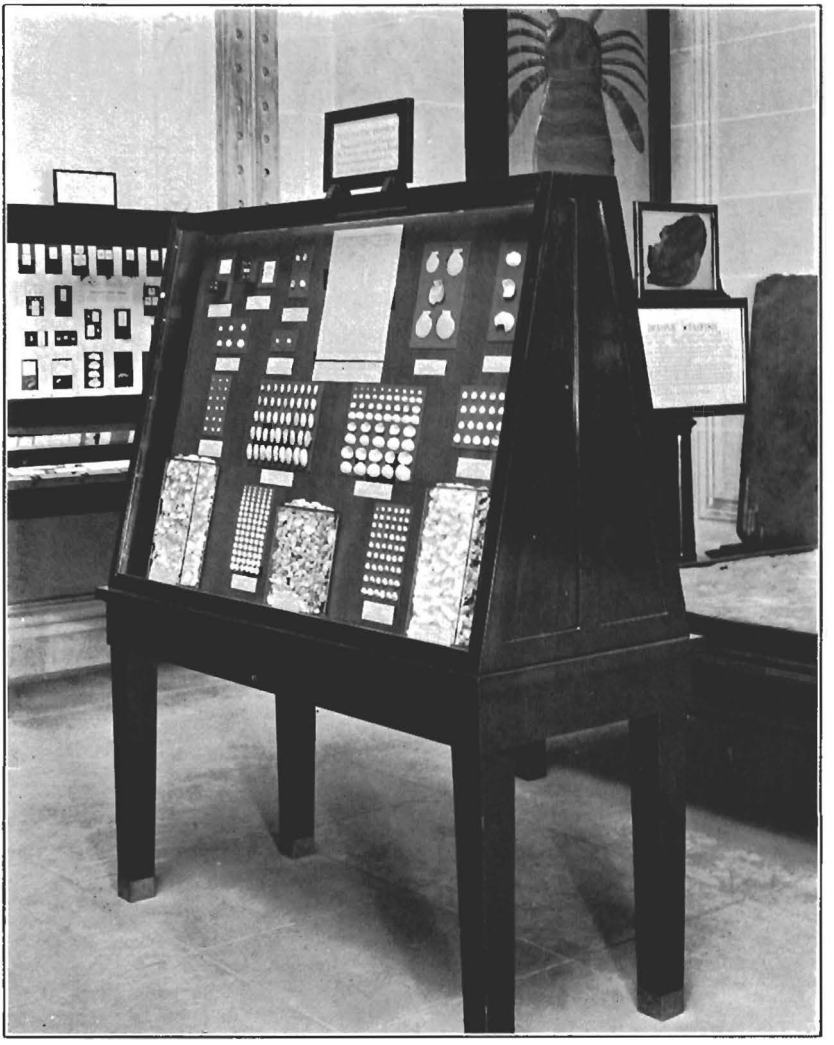

Figure 14 One side of a special exhibit case, illustrating the marine invasion of the post-glacial Champlain period in the Lake Champlain basin. Arranged by Miss Goldring.

Figure 15 The Gilboa Group, showing the rocks with the three horizons of fossil stumps in front, and the restoration of the forest