of fluid above. The same happens in regard to organic remains which are filled with water under great pressure as they sink, otherwise they would be immediately crushed to pieces and flattened. Nevertheless, if the materials of a stratum remain in a yielding state, and do not set or solidify, they will be gradually squeezed down by the weight of other materials successively heaped upon them, just as soft clay or loose sand on which a house is built may give way. By such downward pressure particles of clay, sand, and marl, may become packed into a smaller space, and be made to cohere together permanently.

Analogous effects of condensation may arise when the solid parts of the earth's crust are forced in various directions by those mechanical movements afterwards to be described, by which strata have been bent, broken, and raised above the level of the sea. Rocks of more yielding materials must often have been forced against others previously consolidated, and, thus compressed, may have acquired a new structure. A recent discovery may help us to comprehend how fine sediment derived from the detritus of rocks may be solidified by mere pressure. The graphite or "black lead" of commerce having become very scarce, Mr. Brockedon contrived a method by which the dust of the purer portions of the mineral found in Borrowdale might be recomposed into a mass as dense and compact as native graphite. The powder of graphite is first carefully prepared and freed from air, and placed under a powerful press on a strong steel die, with air-tight fittings. It is then struck several blows, each of a power of 1000 tons; after which operation the powder is so perfectly solidified that it can be cut for pencils, and exhibits when broken the same texture as native graphite.

But the action of heat at various depths in the earth is probably the most powerful of all causes in hardening sedimentary strata. To this subject I shall refer again when treating of the metamorphic rocks, and of the slaty and jointed structure.

Mineralization of organic remains.—The changes which fossil organic bodies have undergone since they were first imbedded in rocks, throw much light on the consolidation of strata. Fossil shells in some modern deposits have been scarcely altered in the course of centuries, having simply lost a part of their animal matter. But in other cases the shell has disappeared, and left an impression only of its exterior, or a cast of its interior form, or thirdly, a cast of the shell itself, the original matter of which has been removed. These different forms of fossilization may easily be understood if we examine the mud recently thrown out from a pond or canal in which there are shells. If the mud be argillaceous, it acquires consistency on drying, and on breaking open a portion of it we find that each shell has left impressions of its external form. If we then remove the shell itself, we find within a solid nucleus of clay, having the form of the interior of the shell. This form is often very different from that of the outer shell. Thus a cast such as *a*, fig. 58, commonly called a fossil screw, would never be suspected by an inexperienced conchologist to be the internal shape of the fossil univalve, *b*, fig. 58. Nor should