

alluded to has long been well known in the arts, being used in the form of powder for polishing stones and metals. It has been procured, among other places, from Bilin, in Bohemia, where a single stratum, extending over a wide area, is no less than 14 feet thick. This stone, when examined with a powerful microscope, is found to consist of the siliceous plates or frustules of the above-mentioned Diatomaceæ, united together

Fig. 16.

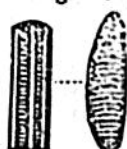
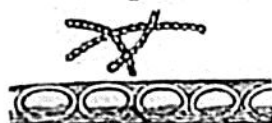
*Bacillaria vulgaris?*

Fig. 17.

*Gallonella distans.*

Fig. 18.

*Gallonella ferruginea.*

These figures are magnified nearly 300 times, except the lower figure of *G. ferruginea* (fig. 18 a), which is magnified 2000 times.

without any visible cement. It is difficult to convey an idea of their extreme minuteness; but Ehrenberg estimates that in the Bilin tripoli there are 41,000 millions of individuals of the *Gaillonella distans* (see fig. 17) in every cubic inch, which weighs about 220 grains, or about 187 millions in a single grain. At every stroke, therefore, that we make with this polishing powder, several millions, perhaps tens of millions, of perfect fossils are crushed to atoms.

The remains of these Diatomaceæ are of pure siliceous, and their forms are various, but very marked and constant in particular genera and species.

Fig. 20.

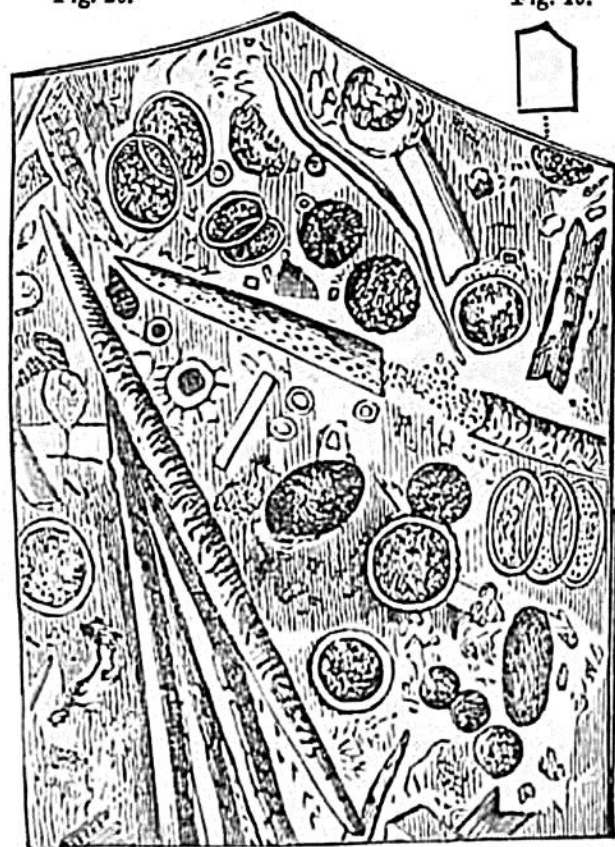


Fig. 19.



Fragment of semi-opal from the great bed of tripoli, Bilin.

Fig. 19. Natural size.

Fig. 20. The same magnified, showing circular articulations of a species of *Gaillonella*, and spicula of *Spongilla*.

Thus, in the family *Bacillaria* (see fig. 16), the fossils preserved in tripoli are seen to exhibit the same divisions and transverse lines which characterize the living species of kindred form. With these, also, the siliceous spiculae or internal supports of the freshwater sponge, or *Spongilla* of Lamarck, are sometimes intermingled (see the needle-shaped bodies in fig. 20). These flinty cases and spiculae, although hard, are very fragile, breaking like glass, and are therefore admirably adapted, when rubbed, for wearing down into a fine powder fit for polishing the surface of metals.

Besides the tripoli, formed exclusively of the fossils above described, there occurs in the