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has recently been arranged in Gallery X of the Geological Department (Centre-case M). Here numerous examples, chiefly impressions of seeds and fruits, show that tropical swamp-ferns, palms, gingers, cinnamons, and asclepiads grew in Oligocene times in the Isle of Wight, side by side with many warm-temperate plants of which the living allies are to be found in eastern Asia (Fig. 1). To these may be added a few examples from other Tertiary deposits. The well-known maidenhair tree (*Ginkgo*) (Fig. 2), which has had a long geological history, scarcely sur-

Fig. 3. A Nipa Swamp in the Malay Peninsula.

vives to-day in a wild state, and might have been extinct had it not been preserved in the temple-gardens of China. In Tertiary times it extended right across Europe and America, and fine specimens of the leaves have been found in the early Tertiary interbasaltic beds of Mull. *Ginkgo* survived in Europe up to the beginning of the Ice Age, and leaves from the Pliocene beds of Frankfort-on-Main are exhibited in the Fossil Plant Gallery. The tropical swamp-palm, *Nipa* (Fig. 3), is now confined to the coasts of eastern Asia and northern Australia, but its fruits have been found fossil in the United States, Europe, Africa, and Asia. They are abundant in the London Clay of Sheppey and the

Eocene sands of Bournemouth. The tulip tree (*Liriodendron*) is a Tertiary genus which has survived not only in China but in eastern North America. It has been found fossil in Holland as late as the Pliocene, and has been recorded from early Tertiary beds of southern England. Another example of a survival in eastern Asia and eastern America is the fern *Onoclea* from Mull, which is almost indistinguishable from the living *Onoclea sensibilis*.

Many other instances could be adduced, but enough has been said to show the intimate connexion between the present vegetation of eastern Asia and the past vegetation of our own country, at a time when the climate was almost tropical, and crocodiles and turtles basked in the mud of the Thames estuary.

A YOUNG SUMATRAN RHINOCEROS.

By J. G. Dollman, B.A., Assistant Keeper, Department of Zoology.

His Highness the Sultan of Perak has recently presented to the Trustees of the British Museum a young specimen of the Sumatran rhinoceros, *Rhinoceros* (*Dicerorhinus*) *sumatrensis*, which has been well mounted by the taxidermist of the Federated Malay States Museum. This young rhinoceros is of considerable interest, because it shows that the young of this species are quite as hairy as the adults.

The Sumatran rhinoceros is the only Asiatic species with two horns, both the Indian (*Rhinoceros unicornis*) and Javan (*Rhinoceros sondaicus*) rhinoceroses having only one horn. In this respect the Sumatran rhinoceros resembles the African species, but is distinguished from it by having teeth in the front of the jaw and by the presence of folds in the skin. These folds are, however, less pronounced than in the other two Asiatic species, the fold behind the shoulders being the only one to extend across the back. It is the smallest living rhinoceros, standing only 4 to 4½ ft. at the shoulder, and measuring about 8 ft. in length, excluding the tail. The females are considerably smaller than the males, the shoulder height being about 3 ft. 8 in.

In addition to being the smallest species it is also the most hairy, the body being rather sparsely clothed in brownish or black hair; in the present specimen the hair is black, but in an

YOUNG SUMATRAN RHINOCEROS.

adult example on exhibition in the Lower Mammal Gallery the hair is reddish-brown in colour. The skin is granular, but not marked with the mosaic-like pattern met with in the Javan rhinoceros. This latter species, which is now almost extinct, shows no trace of the hairy coat of the Sumatran beast, either in the young or the adult stage.

The horns, which are comparatively slender, are separated at their bases by an interval, and the front horn curves backward; they are frequently of considerable size, the record horn, one in the Museum, measuring 32½ in. in length and 17⅜ in. round its base. Another specimen in the Museum Collection measures 27⅛ in. in length and 17⅞ in. in circumference. Rhinoceros horns are not, of course, composed of horn, but are formed of a mass of agglutinated hairy fibres; they are not firmly attached to the skull, and it is necessary to bolt or screw the horns on before exhibiting a specimen.

The Sumatran rhinoceros is found in Sumatra, Borneo, the Malay Peninsula, and northwards through Burma to Assam; it has also been recorded from Siam. The Assam rhinoceros has been separated as a distinct race on account of its more hairy ears, and has received the name *Rhinoceros sumatrensis lasiotis*. The Malay and Tenasserim form, to which the present specimen belongs, has also been distinguished from the typical Sumatran race, and should be known by the name *Rhinoceros sumatrensis blythi*.

The Javan rhinoceros (*Rhinoceros sondaicus*) is easily distinguished from the Sumatran animal by the presence of only one horn, the absence of hair on the body, and the mosaic-like pattern of the skin. The folds in the skin are much more pronounced. The single horn, which is frequently, if not invariably, absent in the female, is considerably smaller, the record horn, a specimen presented to the British Museum a few years ago by Mr. Marius Maxwell, measuring only 10¾ in. in length. In bodily size this animal is considerably larger than the Sumatran species, standing as high as 5 ft. 10 in. at the shoulder. It was at one time widely distributed, but is now nearly exterminated; formerly it ranged over a great part of Eastern Bengal to Assam and thence through Burma to the Malay Peninsula and islands. No local races have been so far distinguished, but it is quite probable that, if a number of specimens from the various localities could be examined, racial distinctions would be discovered.

The only other Asiatic rhinoceros is the Indian rhinoceros, a still larger animal, standing in some cases as much as 6 ft. 4 in. at the shoulder. It possesses a single horn and the skin on the

sides of the body is thickly studded with rounded tubercles. The record horn, also in the Museum Collection, measures 24 in. in length; this specimen is, however, quite exceptional, since as a general rule the horn of the Indian rhinoceros does not exceed about a foot in length, although a few specimens of 16 to 19⅛ in. have been recorded. At one time this species was distributed over a great part of Northern India, but is now-a-days restricted to Assam, Nepal, and some of the adjacent territories.

LARGE SPECIMENS OF SPAR FROM THE SNAILBEACH MINE, SHROPSHIRE.

By L. J. Spencer, Sc.D., F.R.S., Keeper of Mineralogy.

The Mineral Collection has recently been enriched by a set of fine specimens remarkable for their large size. Although the whole globe is made up of minerals, there is, of course, a limit to the size of specimens that can be usefully displayed in museums. We cannot bring a mountain to the Museum. The size of those collected underground is further limited by the widths of the tunnels and shafts constructed in mining operations. The miner working ores for their metal value has no use for large specimens of barren spar, and if hauled to the surface they come up as broken pieces of waste rock. Many cavities completely lined with beautiful sparkling crystals have been ruthlessly destroyed by miners. Only on very rare occasions has a mine manager been sufficiently interested in minerals as specimens (and disinterested commercially) to bring exceptionally fine and large pieces to the surface. Smaller pieces, such as usually find their way into collections, have mostly been brought up surreptitiously in the miners' pockets.

The question may be asked: what is the point of exhibiting specially large mineral specimens? It must be admitted that, beyond affording a spectacular display, there is not much point. Opportunities for seeing such specimens, however, occur only rarely, and unless they are preserved in museums they are lost for ever. Fine crystal-lined cavities are exceptional and are met with in but few mines. When freshly opened they present a wonderful spectacle in the torchlight: but they are soon broken down and the crystals become shattered and covered with dust from the blasting charges during the work underground. When the gallery or mine is abandoned, the spot is no longer accessible, owing to flooding with water or to falling of the roof.

A small well-crystallized specimen examined under the microscope * is a very beautiful object and will often tell as much as, or perhaps even more than, a large specimen. A large specimen may, after all, show only a repetition of the same kind of crystals and grouping over a correspondingly larger area. This is the case with the slab of quartz crystals represented in Fig. 1, which might conceivably have extended even for miles. On the other hand, the specimen depicted in Fig. 2 shows very effectively the grouping of a smaller number of large crystals.

A collection to illustrate the size of crystals would have more meaning than one showing merely large specimens. Here we would be dealing with single individuals, which may vary very considerably in size. At the commencement of its growth a crystal is infinitely small, in fact of molecular dimensions; but, under favourable conditions, there would appear to be no limit to the size to which it may grow. There would, however, be many difficulties in the way to the formation of a collection of specially large crystals. The largest crystal of diamond yet found—the "Cullinan," which weighed 1⅓ lb.—had an enormous intrinsic value. The largest crystal of any on record is one of spodumene in the Black Hills of South Dakota: it measured 47 feet in length with a cross-section of 3 to 5 feet, and from it 90 tons of material was quarried for the manufacture of lithium salts. I have myself seen in a Canadian felspar quarry a crystal of felspar 20 feet in length, but unfortunately it was not possible to collect it. A mica crystal, 14 feet in length and 5 feet 4 inches in diameter, yielded 7 tons of fine mica selling at $5 per pound at the mine in Canada. On the Museum almanac for 1928 we read of the acquisition of "an extraordinarily large crystal of sperrylite." True, this is more than sixty thousand times as large as any sperrylite crystal previously in the collection or known to exist—but it measures barely an inch across. Sizes are merely relative.

The set of specimens from the Snailbeach mine was

* The late Mr. Clarence S. Bement, whose collection of large mineral specimens was purchased by Mr. J. Pierpont Morgan for presentation to the American Museum of Natural History in New York, afterwards devoted himself to forming a collection of microscopic mounts of minutely crystallized minerals: his reason for this, so he informed me, being that his flat in New York was much smaller than his mansion in Philadelphia, so small indeed that he even had to use condensed milk. Mr. Bement presented to the British Museum a specimen of bementite and a very fine group of rhodochrosite crystals from Colorado.