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ing with oxygen begine to burn, and consequently making the flame temperature necessary for the propagation of flame raised higher up to its own effective ignition temperature. When this temperature is reached, ethyl bromide behaves as a normal combustible in flame of ether and the hydrocarbon and consequently the straight line relation above mentioned or Le Chatelier's rule is closely followed by these mixtures richer in the bromide.

The lower limits of ethyl ether and the hydrocarbon are little influenced by the addition of ethyl bromide up to the content of about one per cent of the latter, beyond which, however, they lower more rapidly. These will be easily explained in the same manner as in the case of the upper limits. Addition of ethyl bromide more than about three per cent, again influences very slightly the lower limit of ether. From this it may be seen that the combustion of ethyl bromide becomes difficult when the amount of other combustibles burning with it decreases below a certain limit.

97. *Fossils of Rhinocerotidae found in Japan.*

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In the Journal of the Geological Society of Tokyo for 1889 and the Journal of the College of Science, Tokyo Imperial University, for 1902, I had occasion to report on the occurrence of Rhinocerotidae in the province of Mino. This was the first discovery of Rhinocerotid remains in Japan. The fossils were those of jaw bones belonging to three different species, and one of them, found in the village of Hiramaki, was an upper jaw provided with the second, third and fourth premolars, and the first, second and third molars. This last mentioned discovery was later discussed by Prof. H. Matsumoto under the name of *Teleoceras pugnator* nov. sp. in a description which appeared in the Science Reports of the Tohoku Imperial University for 1921. The two other fossils, unearthed at Kaminogo-mura and Togari in Akiyo-mura respectively, are now in the keeping of the Museum of the Geological Institute of the Tokyo Imperial University. These are both lower jaws, and in expectation of a possible discovery of other parts, I have been withholding the publication of the results of my study on these fossils.

While I was pursuing my study in the coal-field of Ube in the province of Nagato last year, I was fortunate enough to secure a specimen of a lower jaw of Rhinocerotidae in the strata belonging to the same geological age as that of the coal seam. Through the courtesy of my friends, Mr. O. Maki, manager of theHō zan colliery, Korea, and Mr. H. Kawasaki, director of the geological survey of Korea, I have come into possession of a lower jaw of Rhinocerotidae representing a different species from those above mentioned. It is noteworthy that the occurrence of Tertiary mammalian fossils has not been reported from any other district in Korea.

These five fossils, representing as many different species, are the specimens owned by museums in various parts of the country. It will be seen from the foregoing that the discovery of Rhinocerotid remains is very rare in Japan, and the discoveries thus far made are well worthy

of record. The stratum which contained *Teleoceras pugnator* (*Brachypotherium pugnator*, according to Zittel's Text-book of Palaeontology) from Hiramaki-mura in the province of Mino, belongs to the lower Miocene epoch according to Prof. H. Matsumoto. The left lower jaw provided with first, second and third molars, which I obtained at Kaminogō-mura, Mino province, was imbedded in a stratum belonging to the same geological age. The jaw was evidently that of a fairly large individual, as evidenced by the following measurements:—

	Length	Width at the base
First molar	53 mm	33 mm
Second molar	55 mm	33 mm
Third molar	63 mm	37 mm

The specimen from Togari in Akiyo-mura, Mino province, came from strata somewhat younger in age, presumably of the middle Miocene epoch. It represents a left lower jaw bone provided with the fourth premolar, and the first and second molars. The individual to which it belonged may be judged to have been of a fairly large size. The measurements are as follows:—

	Length	Width at the base
Fourth premolar	40 mm	26 mm
First molar	48 mm	28 mm
Second molar	54 mm	32 mm

The specimen from Ube, Nagato province, was discovered in the Tertiary strata 18 metres below the Itsudan coal seam, which is now being developed. Both rami of the mandible are provided with the third and fourth premolars and the first molar. The third premolar is partially broken and the first molar is not in a condition permitting mastication, its greater part being hidden in the alveolus. The geological age of this stratum is probably not older than the Miocene. The measurements of the teeth are as follows:—

	Length	Width at grinding surface
Third premolar	31 mm	13 mm
Fourth premolar	47 mm	18 mm
First molar	50 mm	

The specimen from the Hōzan mine in Kōkaido, Korea, is imbedded in a piece of coal. The mandible is provided with the second, third and fourth left premolars and the first left molar, also the second and third right molars, though both of the latter are broken. The geological age of

the strata in which the specimen occurred, is presumed to be Miocene, though a thorough investigation has not yet been made. In a stratum some six meters above this fossil zone, *Mya crassa* Grev. and other fossil shells, some of which are found in Miocene strata in various parts of Japan, have been unearthed. The measurements of the teeth are as follows:—

	Length	Width at the base
Second premolar	14 mm	12 mm
Third premolar	20 mm	14 mm
Fourth premolar	27 mm	17 mm
First molar	36 mm	20 mm

Of the above mentioned specimens from Kaminogō and Togari, that from Kaminogō belongs to a species presumably allied to *Teleoceras pugnator*. They are not identifiable with those found in North America and not at all allied to those from China, India, etc. The specimens from Ube and Korea do not coincide with the lower jaws of such Asiatic species as those of India, Persia, and the Hipparion fauna of China. However, the teeth of the lower jaw of Rhinocerotidae are little differentiated in various species, and possess no characteristics peculiar to the genera. These facts render the determination of the species difficult. As none of the forms of the four specimens exactly corresponds with any specimen illustrated in the literature on this subject, I may be justified in giving the animals the following new names provisionally, until more specimens make their appearance in the future:—

Teleoceras (?) *kaniensis* from Kaminogō, Kani-gun, Prov. Mino.
Teleoceras (?) *tokiensis* from Togari, Toki-gun, Prov. Mino.
Aceratherium (?) *watanabei* from Ube, Prov. Nagato.
Aceratherium (?) *makii* from Hōzan, Kokaido, Korea.