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NOTES ON CORAL SNAKES FROM MEXICO

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On the occasion of a visit of the junior author to Field Museum we had the opportunity to review together and to discuss the geographic relations of certain of the coral snakes of the genus *Micrurus*, which have long formed a special interest of the senior author. We find it desirable to extend the geographic partition of *Micrurus nigrocinctus*, a subspecies complex that enters Mexico only in Chiapas, and to describe two additional distinct forms from Guerrero, to one of which we attach the name of the veteran collector W. W. Brown, and to the other that of Edward H. Taylor. *Micrurus diastema diastema*, as defined in an earlier publication, is restricted to Colima and Jalisco, with the re-establishment of *Elaps michoacanensis* as a subspecies of *diastema*. *Micrurus nuchalis*, formerly the only coral snake with supra-anal tubercles known from Mexico, remains relatively distinct from *M. n. zunilensis*, *M. n. ovandoensis*, and *M. browni*. No specimens of *nuchalis* other than the six recorded by the senior author in 1933 have appeared. A single specimen of coral snake collected at Acapulco, Guerrero, by Dr. Edward H. Taylor, appears to be related to *nuchalis* rather than to any other of the species or races above mentioned. Except for the description of *Micrurus fitzingeri microgalbineus* by the junior author and Bryce C. Brown, these changes are the more significant alterations in the senior author's arrangement of the Mexican forms of the genus *Micrurus*. Numerous further records and modifications of geographic ranges will be found in the junior author's forthcoming check list of Mexican snakes.

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We are indebted to the United States National Museum, the Museum of Comparative Zoology, the Museum of Zoology of the University of Michigan, and Dr. Edward H. Taylor of the University of Kansas for the loan of Mexican coral snakes.

Micrurus nigrocinctus zunilensis Schmidt

Micrurus nigrocinctus zunilensis Schmidt, Proc. Calif. Acad. Sci., (4), 20, pp. 265-267, 1932—Finca El Ciprés, lower slopes of Volcán Zunil, Suchitepequez, Guatemala.

This distinct race is known from sixteen specimens: thirteen in the type series (topotypes); one reported by Schmidt (1936, p. 207) from Olas de Moca, Sololá, and another from El Porvenir, San Marcos, Guatemala; and a final specimen here recorded, Mus. Zool. Univ. Mich. No. 87705, from Mount Ovando, 6,000 feet, Chiapas. The latter specimen extends the range into Mexico. It is typical, with 224 ventrals (female, tail incomplete), black rings on body and tail 20 + 5, and the yellow rings very narrow, practically obsolete ventrally.

This race appears to be an upland form, occurring at altitudes from 2,000 to 6,000 feet, and to have much the same range as *latifasciatus*, which was described from the same type locality.

At lower elevations in Chiapas, from 400 to 1,200 feet, the junior author has taken two specimens that appear to be closely related to *n. zunilensis*, but are distinct in certain characters. No other race or close relative of *nigrocinctus* is known from low elevations on the Pacific slope north of Nicaragua, except *nuchalis*; the latter as well as all races of *nigrocinctus* except *zunilensis* have the dorsal scales on the red zones black-tipped, and in this respect differ from the two Chiapas specimens. Accordingly we conclude that the specimens in question represent a distinct race that probably extends at low elevations southward to Honduras and northward perhaps to the Isthmus of Tehuantepec. It is described below.

Micrurus nigrocinctus ovandoensis subsp. nov.

Type from Salto de Agua, Mount Ovando, about fifteen miles northeast of Escuintla, Chiapas. Altitude 1,200 feet. No. 111331 United States National Museum. Subadult male. Collected May 19, 1940, by Hobart M. Smith.

Diagnosis.—A coral snake with the general coloration and habitus of *Micrurus nigrocinctus*; males with supra-anal tubercles; black rings single, complete, covering three or four scale rows mid-dorsally,

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numbering twelve on body and three or four on tail, in the specimens known; red rings very broad, the dorsal scales within them not black-tipped; yellow rings complete, one and a half to two scale rows wide; prefrontals in contact with or narrowly separated from supralabials. Ventrals 204 (male), 211 (female).

Description of type.—Head scales normal; upper and lower labials 7-7; preoculars 1-1; postoculars 2-2; temporals 1-1-2; prefrontal narrowly in contact with second and third supralabials on one side (separating nasal and preocular), narrowly separated from them on the other; ventrals 204; anal divided; caudals 48, all divided; dorsal scale rows 15, smooth, not pitted; supra-anal tubercles present.

Snout black, the color reaching posterior margin of eye and posterior part of frontal; mental and three anterior lower labials on each side black; a broad, yellow parietal ring, involving all except the posterior tip of the frontal; dorsal and upper lateral surfaces of the head in the light areas stippled, remainder immaculate; nuchal black ring involving tips of parietals and six scale lengths on the body medially as the first of a series of twelve equidistant complete black rings; all rings except the first and last extending over three or four scale lengths on the mid-dorsal line, the last involving five; four black rings on tail, twice as wide as yellow interspaces; black rings on body bordered by complete yellow rings one and a half to two scale lengths wide; red spaces very broad, the dorsal scales within them not black-tipped.

Measurements.—Total length 629; tail 93.

Notes on paratype.—A single paratype, U.S.N.M. No. 111332, is from the vicinity of La Esperanza, 400 feet, ten miles northeast of Escuintla, Chiapas, collected May 25, 1940. It is a young female with 211 ventrals and 32 subcaudals, black rings on body and tail 12 + 3; the prefrontals touch the third labial on both sides; total length 207, tail 19. On one side the first and second supralabials are abnormally fused. Other characters are as in the type.

Comparisons.—From *n. zunilensis* the present race differs in having broad yellow rings, covering one and a half to two scale lengths and not tending to disappear ventrally (less than one scale row wide in *n. zunilensis*, and practically obsolete ventrally), fewer black rings on body (twelve as against fourteen to twenty), fewer tail rings (four in male, three in female as against five to seven in male and four to five in female *n. zunilensis*), and in having the prefrontals in contact with or narrowly separated from the labials. The prefrontals are broadly separated from the labials in most coral snakes and in

n. zunilensis. The subcaudals of the single female paratype are fewer by one than the lowest count known in this sex for *n. zunilensis*. The new form differs from *Micrurus nuchalis* in its larger number of black rings.

Remarks.—The type was found in a rather unusual habitat. It was seen at night, crawling rapidly in the limbs of bushes about ten feet above the ground in the bottom of a nearly dry wash that led into a larger running stream not far away. The snake was so active that it had to be shot to prevent its escape. Not impossibly it may have been searching for small, newly transformed frogs that were clinging in some numbers to the foliage, but nothing was found in the stomach.

Micrurus diastema diastema Duméril and Bibron

This subspecies is restricted to the states of Colima and Jalisco by the re-establishment of *michoacanensis* and the transfer of Guerrero specimens to the new species *browni*. The range of variation in ventrals thus becomes 191 to 210 in males, and 207 to 220 in females, with caudals respectively 45 to 57 and 34 to 45.

Micrurus diastema distans Kennicott

A specimen from Magdalena, Jalisco (U.S.N.M. No. 67374), with ventrals 237, agrees best in this character with *distans*. There is no trace of yellow rings in the somewhat faded specimen. It has a much higher number of black rings than has hitherto been known in this form.

Micrurus diastema michoacanensis Dugès

Elaps diastema var. *michoacanensis* Dugès, La Natureza, (2), 1, p. 402, pl. 27, 1891.

Elaps michoacanensis Dugès, Bull. Mus. Hist. Nat. Paris, 2, p. 60, 1896; Rev. Cien. Bibl. (Soc. Ant. Alzate), 1900–1901, p. 58 (1901).

The type of this form is no longer present in the Dugès Museum. In his revision of the original description, Dugès recorded a second specimen as from Tecpan de Galeana, Guerrero. This coastal locality may well represent an extension of the range of *michoacanensis*, and we are assured that the second specimen corresponds exactly to the type. This specimen, a female, may be described in some detail.

Description of Tecpan specimen.—Head somewhat flattened, body cylindrical. The scale characters are those of the species, ventrals 226, caudals 38, of which the third is undivided.

The specimen has faded so badly that it is impossible to distinguish between yellow and red, both colors faded to creamy white. Anterior part of head *dark brown* extending posteriorly to a point slightly beyond angle of frontal, the posterior edge of the dark area slightly concave; the edge of this dark snout marking passes through the postero-lateral part of the first temporal, the upper edge of the fifth supralabial, and then becomes irregular, passing through the middle of the lower part of the anterior labials; snout proper, including internasals, rostral and first supralabial, somewhat mottled.

Nuchal black ring covers seven scale rows dorsally, and on the ventral surface covers parts of three whole scutes, its anterior edge separated from last labial by one scale. Seven black rings on the body (including nuchal ring but not the band on head), and three on the tail (the last very small, visible only dorsally where it covers three dorsal scales and the terminal spine). Black rings four and one-half to six scale rows long on the back and covering from three and one-half to five ventrals. Caudal black rings much longer, the two complete rings separated from each other on the under side by six scales.

Measurements.—Length of head 16.5; total length 865; tail 88.

Two coral snakes from Apatzingan collected by F. A. Shannon on the fourth Hoogstraal Expedition to Mexico in 1941 and one collected near the same place by Hobart M. Smith in 1939 are in excellent agreement with Dugès' description and thus afford the reasonable assumption that the species is characteristic of the arid lower part of the basin of the Balsas River. The single female from Apatzingan agrees closely with the Tecpan specimen; it has 226 ventrals and 40 caudals, and the black rings are 8 + 2. The two male specimens have ventrals respectively 211 and 214, caudals 50 and 49, and black rings 7 + 3 and 6 + 3. All these specimens have an obscure mottling of brown on the dark tip of the snout and apparently lack the yellow rings entirely. The scales of the red zones are entirely without black spots.

Micrurus browni sp. nov.

Type from Chilpancingo, Guerrero. No. 38494 Field Museum of Natural History. Adult male. Collected by W. W. Brown.

Diagnosis.—A coral snake of the genus *Micrurus*, with the general coloration and habitus of *Micrurus nigrocinctus*, with black-spotted red scales, and with distinct supra-anal tubercles in adult males.

Ventrals 207–220 in males, 226–230 in females; black rings 11 + 4 to 24 + 7, usually more than 17 + 4. Differing from *Micrurus nigrocinctus ovandoensis* and from *M. nuchalis* in having more numerous black rings on body and tail, and a higher number of ventrals.

Description of type.—Body cylindrical, head somewhat flattened; head scales normal; labials 7–7 above and below; preoculars 1–1; postoculars 2–2; temporals 1–1 on each side; ventrals 220; anal divided; caudals 50; dorsal scales in 15 rows; supra-anal tubercles present.

Snout black, the black reaching the anterior ends of the parietal and involving all of the postoculars, the first four upper and the first three lower labials. Tip of frontal light; nuchal black ring on tips of parietals, extending five scale lengths on the nape, and covering the last upper labial, the two last lower labials, and the first five ventrals, with a pointed forward extension reaching the first chin-shields; black rings covering three or four ventrals, 19 + 7 on the body and tail; yellow rings distinct, about one and a half scale lengths wide, somewhat narrowed below; red rings shortened posteriorly; no black spotting on the scales or ventrals of the red rings; no red rings on tail.

Measurements.—Total length 689; tail 97.

Notes on paratypes.—Nine additional specimens from Chilpancingo and one from Omilteme are referred to *browni*; these are U.M.M.Z. Nos. 85681–85684; M.C.Z. Nos. 33666–33668; F.M.N.H. 38493, 38495; and B.M. 1895–2–20–9. Occasional specimens have temporals 1–2 and three specimens have one or two entire caudals. The range of ventrals in six males is 210–220, and 226–230 in five females; caudals in males 47–53, and 38–44 in females. The paratypes exhibit various degrees of black spotting of the scales of the red zones.

Remarks.—The complete absence of supra-anal tubercles in the specimen U.M.M.Z. 85681, which measures only 10 mm. less than the type, is explainable only as an individual anomaly; but this structure is known to fail to develop in occasional specimens of species in which it normally occurs, when sufficient series are examined. The present series of coral snakes is variable in another character that has elsewhere been used as a criterion of subspecific difference; namely, presence or absence of black spotting of the dorsal scales.

***Micrurus nuchalis taylori* subsp. nov.**

Type from Acapulco, Guerrero. No. 5085 Taylor-Smith Collection. Adult male. Collected July 29, 1936, by Edward H. Taylor.

Diagnosis.—A coral snake related in several respects to *Micrurus nuchalis*, but with a larger number of black rings and a larger number of ventrals. Black rings with very obscure yellow borders, narrowed on the sides; scales in the red zones black-spotted; snout not mottled with brown; supra-anal tubercles strongly developed.

Description of type.—An elongate coral snake with cylindrical body, long tail, and somewhat flattened head. Head scales normal; upper and lower labials 7-7; preoculars 1-1; postoculars 2-2; temporals 1-1 on each side; ventrals 218; anal divided; caudals 55; dorsal scale rows 15; supra-anal tubercles well developed.

Snout black, without brown mottling, the black reaching the anterior borders of the parietals, involving all of the upper postocular and the anterior border of the lower, cutting across the upper part of the fourth labial to the labial border; mental light (with brown marking), anterior half of first lower labial and all of second black. Tip of frontal light; nuchal black band cutting across tip of parietals, extreme rear of seventh upper labials, and all of seventh lower labials to second ventral, six scales long dorsally and covering four ventrals. Black rings covering two or two and a fraction ventrals, narrowed on the sides, two and a half scale rows long above; yellow rings barely indicated by somewhat lightened borders of the black rings; three black rings interrupted on the sides, i.e., divided into a dorsal and a ventral spot; tail with three black rings and a black tip, the rings about twice as long as the yellow interspaces; black rings (including nuchal) 11 + 4; each dorsal scale in the red zones with a small black spot at the tip; no black spotting on red ventrals.

Remarks.—This Guerreran coastal form may be regarded as related to *M. nuchalis nuchalis* of Oaxaca, from which it is distinguished by a higher number of ventrals and of black rings, and a shorter nuchal ring. It will require additional specimens to define the possible relations with *diastema michoacanensis* to the north and with *browni* in the highlands of Guerrero.

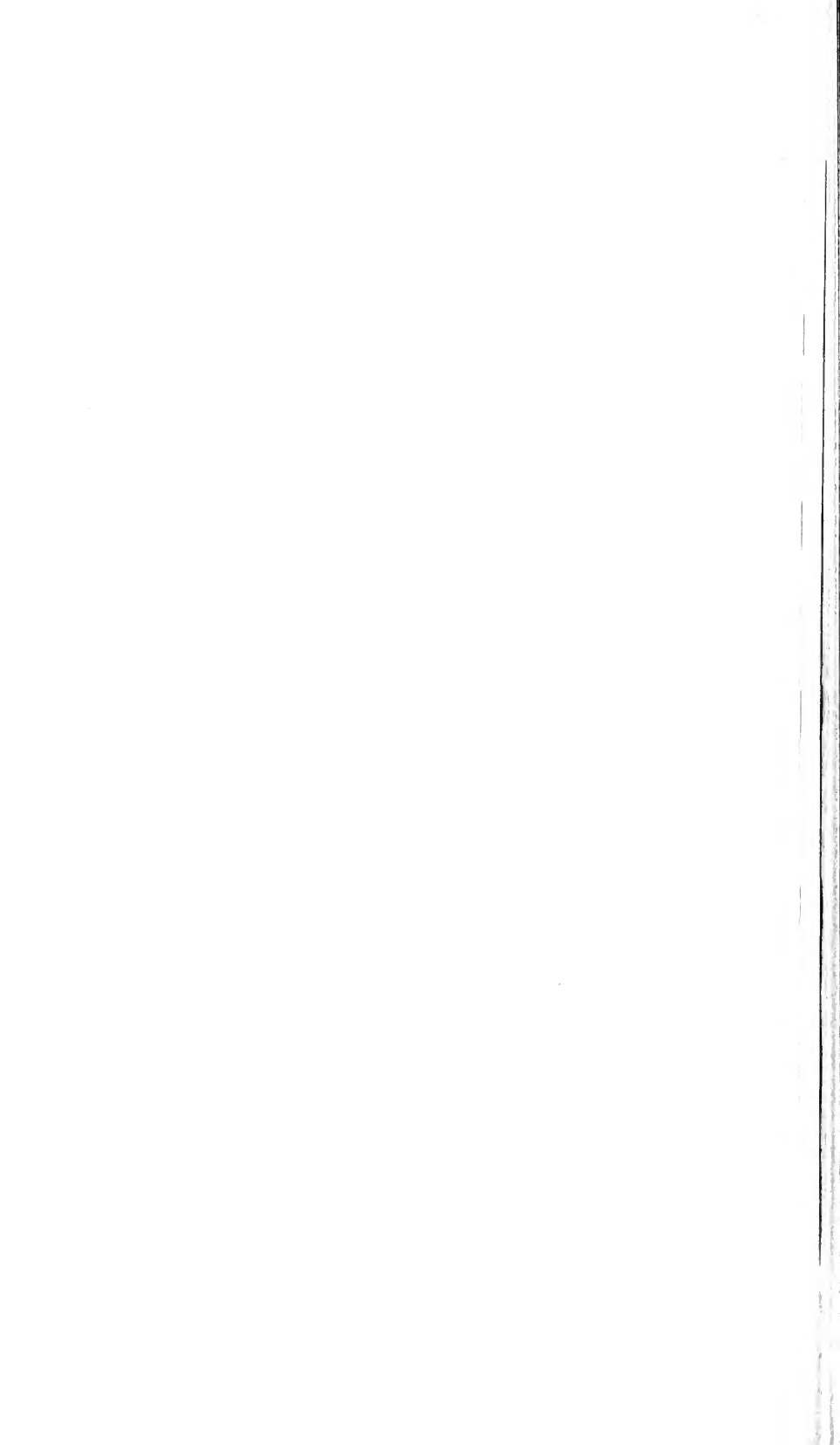
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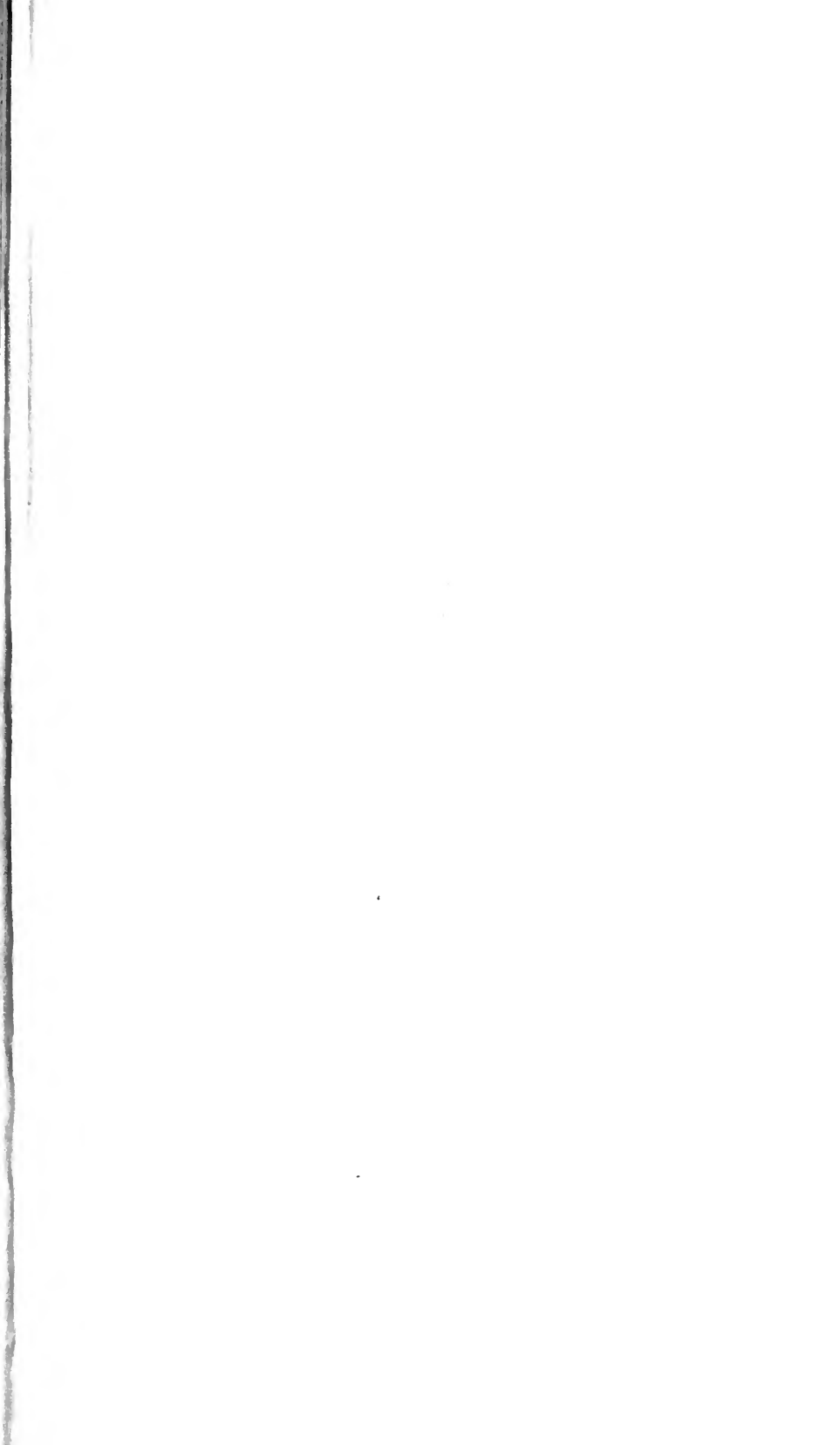
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