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Reptiles from the Mariana and Caroline Islands

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This paper records eleven previously described species of lizards and four previously described species of snakes collected by one of us (Dryden) from June, 1962 to May, 1964 in the Mariana and Caroline Islands. In addition, a presumed new species of typhlopid snake from Guam, Mariana Islands is described. The lizards include one rather rare gekkonid (*Peropus papuanus*) from Angaur, West Caroline Islands and Saipan, Mariana Islands as well as two unusual skinks (*Mabuya multicarinata* and *Eugongylus mentovarius*), both from Angaur, West Caroline Islands. Also included is a group of *Dasia smargdinum* of questionable subspecific designation from Ponape, East Caroline Islands. No amphibians were collected although the recently introduced toad, *Bufo marinus* was abundant on Guam, and to a lesser extent, on Saipan.

We thank Carl Dannis for capturing the *Dasia* on Ponape and Dr. K. R. Barbehenn for taking the new form of *Typhlops* on Guam. Henaro Sabino helped collect on Guam and Koror, Palau, as did Tasiano Marar on Angaur, Palau.

The numbers, referred to below, pertain to specimens now in the Edward H. Taylor-Hobart M. Smith (EHT-HMS) collection, Department of Zoology, University of Kansas.

Typhlops braminus (Daudin)

Eryx braminus Daudin, 1803, Histoire naturelle des reptiles, 7:279-280 (Based on Russell, 1796, Ind. Serp., 1:48, pl. 43; type-locality, Vizagapatam, India).

Two of our nine specimens were taken on a military area on northern Saipan, the others from the northern half of Guam. A partially digested specimen was recovered from the stomach of a *Varanus indicus indicus* taken in the latter area.

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The species has been collected on several other islands in the Marianas and we presume that they occur on all. They are, however, smaller in size than those of populations occurring in continental Asia and certain larger islands of the Indo-Australian Archipelago. The maximum and minimum lengths occurring in our series are 127 mm and 58 mm, respectively.

Typhlops pseudosaurus sp. nov.

Type: EHT-HMS No. 6717, collected at Harmon Village, Guam, Mariana Islands, March 30, 1963 by Dr. K. R. Barbehenn.

DIAGNOSIS: A diminutive species, the type specimen being 82 mm in length; rostral fails to reach eye level by a distance half the length of dorsal portion of rostral; nasal completely divided; eyes visible; prefrontal and frontal relatively large; 20 longitudinal scale rows at middle of body; 318 transverse scale rows following parietals, followed by terminal spine.

Description of the holotype. Rostral moderately narrow, failing to reach back to level of eyes by a distance equal to four fifths of length of prefrontal; nasals separated by prefrontal, which is a little wider than long; frontal minutely larger than prefrontal and following interparietal. Rostral dorsally slightly less than one-third of width of head. Supraoculars somewhat diagonally placed, the outer edge barely touching upper part of eye, which is covered by ocular; interparietal not larger than the two pairs of parietals, which touch it. Nasal completely divided, the suture arising from preocular; four supraoculars increasing in size from first to fourth; a single postocular between fourth labial and parietal; 20 longitudinal scale rows and 318 transverse rows following parietals. Vent bordered anteriorly by five semitransparent scales, the two outer twice the transverse width of the others; 12 longitudinal subcaudal rows+1 (spine).

Color: Light blue dorsally and ventrally in life. After fixation in formaldehyde and storage in ethanol, silvery gray above and vaguely lighter silver below. Lower jaw, chin, and upper labials cream. Tip of snout whitish, gradually becoming grayish above. Terminal spine creamy white.

Measurements in mm: Total length, 82; tail length, 2; width of head, 2.

Remarks: The specimen was obtained in an area where Typhlops braminus also occurs. There is an obvious difference in color, but in certain brown species of Typhlops, the specimens just before shedding are often grayish or silvery gray and we suspect that the silvery color of our specimen might be less pronounced after shedding.

The glandules below the head sutures always present in T. braminus are seemingly completely absent in the form here described. The presence of a shortened rostral easily separates it from T. braminus.

Enygrus carinatus (Schneider)

Boa carinatus Schneider, 1801, Historiae amphibiorum naturalis et literarie, Fasc. 2, p. 261-263 (type-locality unknown).

Enygrus carinatus, Duméril and Bibron, 1844, Erpétologie générale, 6:479-483.

Enygrus superciliosus Günther, 1863, Ann. Mag. Nat. Hist., ser. 3, 12:360-361, pl. 6, fig. D (type-locality "Pelew Islands").

Two specimens were taken in the Palau Islands group, one on Koror and one on Angaur. The specimen from Koror is adult. The scale formula is 31-34-23; there are 180 ventrals, 45 single subcaudals. The specimen is a female and contains three embryos. A fourth embryo seemingly had died and had been partly resorbed before capture of the specimen. The specimen taken on Angaur is a much younger one and very much lighter in color.

Günther, with two specimens from the Palau ("Pelew") Islands, described *Enygrus superciliosus*, which was later placed in the synonymy of *E. carinatus* by Günther and others.

Dendrelaphis lineolatus Hombron and Jacquinot

Dendrelaphis lineolatus Hombron and Jacquinot, 1842, Voyage au pôle sud et dans l'oceanie sur les corvettes l'Astrolabe et la Zélée. III. Reptiles, p. 20, pl. 2, fig. 1 (type-locality?); Duméril, Bibron, and Duméril, 1854, 7(1):200 deal with the species Dendrephis lineolata Nobis. "Cette espèce inédite, dont nous possédons plusieurs individus, proviennent, les uns de MM. Hombron et Jacquinot, et ils sont figurés dans le voyage de Dumont d'Urville en 1842, et décrits dans la relation de ce voyage par M. Guichenot. Les autres ont été recueillis probablement à la Nouvella Hollande par M. J. Verreaux, par M. Freycinet, et par MM. Quoy et Gaimard, en 1824, dans les îles Waigiow."

Three specimens were captured in the Palau Islands. Since these have been preserved in formalin the original color and markings are largely obliterated. The variation in squamation and measurements is shown in Table 1. The temporals are somewhat variable and the preocular reaches but only touches the frontal (on one side). The sixth labial has a posterior, elevated point suggesting that a postocular has been fused with it.

Table 1. Data on Dendrelaphis lineolatus.

Number	17	18	19		
Locality	Koror, Palau	Angaur, Palau	Angaur, Palau		
Body length	764	655	710		
Tail length	363	318	333		
Total length	1127	973	1043		
Ventrals	180	179	184		
Subcaudals	129+	138	132		
Scale formula	15,13,11	15,13,11	15,13,11		
Supralabials	9-9	9-9	9-9		
Supralabials in orbit	5,6	5,6	5,6		
Infralabials	10-10	9-10	10-10		
Infralabials touching chinshields	5-5	5-5	5-5		

Boiga irregularis Merrem

Coluber irregularis Merrem, 1802, in Bechstein, Uebers. Lacépède, 4:239, pl. 37, fig. 1 (type-locality?) [publication not seen].

Three specimens of this species taken in Guam are present in the collection. Two (Nos. 6720 and 6722) are complete; one (No. 6721) consists of a head and the anterior part of the body. See Table 2.

Number	6720	6722	
Body length	971	782	
Tail length	276	219	
Total length	1247	1002	
Supralabials	9-9	9-9	
Supralabials entering orbit	4,5,6	4,5,6	
Infralabials	13-14	13-14	
Scale formula	23,23,19	23,23,19	
Anal	1	1	
Ventrals	257	257	
Subcaudals	116+1	116+1	

TABLE 2. Data on Boiga irregularis.

Lepidodactylus lugubris (Duméril and Bibron)

Platydactylus lugubris Duméril and Bibron, 1836, Erpétologie générale, 3:304 (type-locality "cette petite espèces a été raportée de l'île d'Otaïte" [=Tahiti]).

Our specimens are from the following localities: Nos. 6755, 6758, Guam, May 10, 1963; 6759-6764, Saipan, Aug. 4 to Sept. 28, 1962; 6752-6758, Angaur, Palau, June, 1964. These show a minimum of variations except for four specimens, one from Guam (No. 6755) and three from Saipan (Nos. 6759-6761). These have retained the transverse bands on the body and tail and much pigmentation on the head, including a scattering of pigment on the chin. These markings are strongly reminiscent of the pattern of *Lepidodactylus woodfordi* Boulenger (Boulenger, 1887). None of the specimens mentioned above has preanal or femoral pores and it is presumed that all are females. The males, of which only a few have ever been seen or taken, are said to have a long series of about 25 femoral pores, which are angular in the middle. The "pore scales" of our females number only 7 to 9.

Hemidactylus frenatus Schlegel in Duméril and Bibron

Hemidactylus frenatus Schlegel, 1836, in Duméril and Bibron, Erpétologie générale, 3:366-368 (type-locality, Java).

Concerning the type, Duméril and Bibron state: "Le nom de Frenatus, qui nous a servi pour désigner cette espèce, est celui sous lequel elle nous a été envoyée d'Musée de Leyde." However, numerous other specimens were

available to these authors. They mention specimens from Madagascar, Ceylon, Amboina, Java, Timor, Bengal, and "Nous en avons plusieurs échantillons recueillis aux îles Mariannes par M. Gaudichaud." Schlegel's specimen came from Java.

A large series of about 150 specimens of this species from Guam were preserved. They were very common. Specimens also were obtained on Saipan in the Marianas and on Angaur in the Palau Islands.

Cagle (1946) reported a gekkonid lizard as being used in Tinian for field studies, together with geckos belonging to two other genera. He states that "Hemidactylus, the most abundant form, was studied by marking." The species was reported as H. garnotii.

We feel almost certain that the material so used was *Hemidactylus* frenatus that had been incorrectly identified for Dr. Cagle. It has not been possible to verify this opinion as his specimens seemingly were lost in the mails.

Apparently no other collector has found *H. garnotii* in the Marianas. It would not be surprising that it did occur but not to the exclusion of the much more common *H. frenatus*.

Gehyra oceanica (Lesson)

Gekko oceanicus Lesson, 1830, Voyage autour du monde éxécute par ordre du Roi sur la corvette de sa Majesté La Coquille, pendant les années 1822-25, Zoologie. Lesson and Garnot, 2(1):42, pl. 2, fig. 3 (type-locality "Des îles d'O-Tahiti et de Borabora"); Brongersma, 1934, Zool. Meded., 17:174.

This species is represented by one adult specimen and a juvenile from Saipan, Mariana Islands.

The lamellae under the digits are transverse, and completely undivided. The species has been reported previously from the Marianas. It is widespread in New Guinea and the numerous Island groups to the west, northeast, and southeast, but does not extend to the east as far as the Marquesas Islands.

Peropus mutilatus Wiegmann

Hemidactylus (Peropus) mutilatus Wiegmann, 1835, Nova Acta Acad. Caes. Leopoldino-Carolinae Nat. Cur., 17(1):238 (type-locality "cette espèce a été trouvée à Manille).

Two specimens (Nos. 6705 and 6706) of this wide-ranging species were taken on Angaur in June, 1963. The count of femoral pores is 16-15 and 18-16, respectively.

Peropus papuanus A. B. Meyer

Gehyra papuana Meyer, 1874, Monatsb. Kgl. Akad. Wiss. Berlin, p. 129 (type-locality New Guinea); Sauvage, 1878, Bull. Soc. Philom. Paris, ser. 7, 2:31; Brongersma, 1934, Zool. Meded., 17:174-175.

Gehyra oceanica (part.), Peters and Doria, 1878, Ann. Mus. Civ. Genova, 13:369; Boulenger, 1885, Catalogue of the lizards in the British Museum, 2nd ed., 1:152-153.

The type-description of this form follows: "Steht *G. australis* Gray nahe. Über den Ohren und hinter den Augen eine dreieckige, nach oben spitze Hautfalte. Purpur-grau. Unterseite kaum heller gefärbt. Kinnschilder 3.3. Femoralporen vereinigen sich bogenförmig in einem mit den Spitze nach vorn gerichten v mit den Präanalporen."

This brief description caused certain subsequent authors to place *papuanus* in the synonymy of *Gehyra oceanica*. Brongersma (*loc. cit.*) who has studied the type, has shown that it is indeed a species distinct from *oceanica*. He

presents a satisfactory redescription of the type.

A specimen (No. 6699) taken in Angaur, one of the southern islands of the Palau group, which lies almost directly north of the western end of

New Guinea, has been referred to Peropus papuanus Meyer.

The head is slightly shorter proportionally and there are fewer labials than in the type. The character of the digital lamellae, the squamation, skin folds on the side of the body and head, etc. are much the same as reported by Brongersma for the type. Our specimen has lost its tail.

Two other specimens were obtained in Saipan, Mariana Islands (Nos. 6697 and 6698). In these the heads are proportionally longer. The preanal pores or pore scales (they scarcely reach the femoral region) are 8-11, 9-8, a much smaller number than is reported for the type of *papuana*.

Whether there are other significant differences that might warrant subspecific designations for these island forms can only be determined by their direct comparison with the type of *Gehyra papuana* Meyer, with the type of *Peropus lampei* Anderson from Bogadjim, New Guinea, and with the type of *Peripia papuensis* Macleay from Katow, New Guinea.

Gekko vittatus bivittatus (Duméril and Bibron)

Platydactylus bivittatus Duméril and Bibron, 1836, Erpétologie générale, 3:334 (type-locality "l'un de la nouvelle-guinee, l'autre de l'île Waigiou").

Gecko vittatus bivittatus Boulenger, 1885, Catalogue of the lizards in the British Museum, 1:186-187.

Three specimens (Nos. 6702-6704) are from Angaur, Palau Islands, in the West Caroline Islands. The specimens are typical as regards most characters. The two males have a count of 23-23 and 15-17 femoral pores. Boulenger has previously reported the species from the "Pelew Islands." It is distributed rather widely in the western Pacific Islands.

Mabuya multicarinata (Gray)

Tiliqua multicarinata Gray, 1845, Catalogue of the specimens of lizards in the collection of the British Museum, p. 109 (type-locality, Philippines).

Mabuia multicarinata, Boulenger, 1887, Catalogue of the lizards in the British Museum, 2nd ed.,

3:185, pl. XI, fig. 2; De Rooij, 1915, Reptiles of the Indo-Australian Archipelago, 1:161; Taylor, 1922, The lizards of the Philippine Islands, Manila, pp. 156-158, text fig. 13, pl. 12, fig. 2.

The distribution of this species in the Indo-Australian Archipelago, Philippines, and the Islands of the western Pacific is rather spotty. De Rooij mentions specimens only from Kina Balu (Mt.) Borneo and Karakelang Islands. One of us (Taylor) has reported it throughout the Philippines.

The series at hand is from the Palau island of Angaur. The series differs from many Philippine specimens in having the parietals separated by the interparietal. Table 3 presents much of the variation in this species.

The females show a stronger dark lateral stripe than the males, and most of them have several narrow, dark, more or less distinct longitudinal lines on the dorsum. In all, the soles of the feet are creamy white while the underside of the digits is blackish. In all, the rostral touches the frontonasal, which in turn is in contact with the frontal. There are six or seven keels on most dorsal scales. Beginning at the 20th subcaudal the scales are strongly widened. There are about seven preanal scales, the two median a little the larger and all light cream or yellowish in color.

The upper palpebral scales are distinctly larger than the lower palpebrals.

Number	6775	6777	6778	6779	6782	6784	6785	6786	6789	6788	6790
Sex	m	f	f	m	m	m	m	m	m	m	m
Body length	64	64	67	70	64	79	66	65	68	77	77
Tail length	107	126	inc	91+	123	123	111+	- inc	inc	128	inc
Scale rows at middle	30	30	30	30	30	30	30	30	30	30	30
Scales (parietals											
to above vent)	45	43	43	43	43	43	42	43	43	43	44
Subcaudals	91+	- 99	?	66+	- 91				inc	82+	- inc
4th finger lamellae	17	16	17	16	17	17	17	17	17	16	17
4th toe lamellae	25	24	25	24	24	23	25	25	25	25	25
Supraciliaries	5	5	5	5	5	5	5	5	5	5	5

Table 3. Data on Mabuya multicarinata.

Carlia fuscum (Duméril and Bibron)

Heteropus fuscus Duméril and Bibron, 1839, Erpétologie générale, 5:759-760 (type-locality, "Cette espèce a été trouvée dans les îles de Waigiou et de Rawack par MM. Quoy et Gaimard") (here restricted to Waigiou [Waigeu]).

Three specimens of *Carlia fuscum* were taken, presumably a species that has not been reported in the Marianas previously. One of the specimens (No. 6728) was caught in a mousetrap at night at the Kobler Air Field in south Saipan, the other two (Nos. 6726 and 6727) were found in a meadow south of the village of San Roque, Saipan.

The species was relatively common; several other specimens were seen running on grass or other vegetation above the ground.

Counts of the scale rows about the bodies are 32, 32, 34; the counts of the

lamellae under the fourth toe are 33, 31, 26, respectively.

We have utilized Gray's genus *Carlia* for this species, characterized by an undivided frontoparietal, a very small interparietal, and the digital formula 4-5.

Eugongylus mentovarius (Boettger)

Lygosoma (Riopa) mentovarium Boettger, 1895, Zool. Anz., no. 471-472:4-6 (type-locality, Halmahera Island).

A large specimen (No. 6729) of this skink, taken on Angaur, Palau, West Caroline Islands, has the following characteristics:

Diagnosis: Frontoparietals paired and supranasals present; limbs well

developed, overlapping when adpressed; lower eyelid scaled.

DESCRIPTION: The snout short and blunt; rostral moderately large, well visible from above, making a narrow contact with frontonasal; frontal narrower than frontonasal but considerably longer, forming a suture with it; prefrontals small, widely separated. Four large supraoculars, the area occupied by them a little narrower than the frontal. Frontoparietals paired, interparietal equally as large or larger than frontoparietal. Parietals large, enclosing interparietal; one pair of enlarged nuchals. Nasal small, partly or entirely divided, about size of supranasal; nostril surrounded by 3 scales; 2 frenals, the anterior the higher, bordering prefrontal; in superimposed pair of preoculars directly below first supraciliary, which is largest of a series of 8. A row of 7 pre- and postsuboculars separates the eye from the labials. Two small superimposed primary temporals followed by 3 secondary temporals, the upper much the larger. Five supralabials precede the somewhat enlarged subocular and 2 follow it, while on lower jaw, there are 6 infralabials. Mental narrow and considerably wider than rostral, followed by a much larger undivided postmental; a pair of chinshields touching labials. Subsequent chinshields separated from labials. Ear moderately large with 3 or 4 small, projecting lobules.

Body moderately slender, limbs robust. When adpressed, fourth toe reaches fingers of adpressed arm. Distance from tip of snout to insertion of arm is contained in axilla to groin distance about 1.4 times. Fifteen lamellae present under both third and fourth fingers, and 25 under fourth toe. There are 12 preanal scales, the 2 median, somewhat enlarged. Scale rows around neck, about 38; around middle of body, 32; anterior dorsal scales largest; 75 scales in a row from parietal to above vent; 143 subcaudal scales from vent to tip of tail.

General color brownish olive on dorsum and sides of body and tail; top of head uniform brown. Underside of head, body, limbs, and tail ivory yellow; undersurface of hand and foot blackish except first finger and toe which is yellowish. Brown marks cross labials and mouth angles and bend back on chin and throat for some distance. Median dark line behind occiput for about 1 inch, while crossing neck and body are about 15 series of irregular black dots and scattered lighter olive spots indicative of transverse bands. A few can be discerned on basal half of tail. A few vague darker marks apparent on side of neck.

Measurements in mm: Snout to vent, 127; tail, 208; total length, 330; width of head (greatest), 18; tip of snout to ear-level, 22.5; snout tip to arm insertion, 46; axilla to groin, 65; arm, 32; leg, 46.

Remarks: We have associated this species with the genus Eugongylus Fitzinger. Smith (1937) considered it as a sub-genus under Riopa, Mittle man (1952), a separate genus.

Cryptoblepharus poecilopleurus (Wiegmann)

Ablepharus poecilopleurus Wiegmann, 1835, Nova Acta Acad. Caes. Leopold-Carol., 17(I):202, pl. 8, fig. 1 (type-locality?).

Our specimen (No. 6742) was captured on Saipan on Sept. 28, 1963. Six others (Nos. 6743-6748) are presumably also from Saipan. The data accompanying them were lost in shipment.

Specimen No. 6742 has the following characters: rostral in contact with large frontonasal; supranasals lacking, prefrontals large, forming a median suture; frontal narrower than suprocular area, its length about half length of single frontoparietal, which is enclosed by parietals. One pair of large nuchals and a pair of large temporals border posterior edges of parietals. Four supralabials precede the subocular, fourth very small; mental has a larger labial border than rostral; postmental and 3 large pairs of chinshields border infralabials, of which there are 6.

There are 24 scales about middle of body and 21 lamellae under fourth toe. Eye circular, without lids, incompletely surrounded by several circular rows of minute scales. Three small scales between eye and supraciliary scales; 2 median dorsal scale rows are largest at first, almost as wide as the nuchal, then gradually diminishing in width posteriorly; preanal scales distinctly enlarged and subcaudal series wider than adjoining rows. The series has a size range from 26 mm to 37 mm in body length. When limbs are adpressed, fourth toe reaches a little beyond elbow.

We believe that this species has heretofore not been reported from the Marianas.

Dasia smaragdina viridipunctum (Lesson)

Scincus viridipunctum Lesson, 1830, Voyage autour du monde exécuté par ordre du Roi sur la corvette de sa Majesté, La Coquille, pendent les années 1822-1825, Zoologie, 2(1):44, pl. 4, fig. 1 (type-locality Oualan [=Kusaie], Eastern Caroline Islands); Barbour, 1912, Mem. Mus. Comp. Zool. Harvard College, 44(1):91-92, pl. 1, figs. 1 and 2; pl. 2, fig. 4.

A series of specimens (Nos. 6792-6811) is from Ponape, Eastern Caroline Islands. They agree with one of the forms described from "Oualan" by Lesson under the above name. Another species called *smaragdina* was described in the same publication from the same locality but subsequent collecting in the Carolines has failed to rediscover this form that is often very numerous in other localities. Barbour suggests that the type of *D. smaragdina* is not from the Carolines, but due to an error in labelling, was so reported. Lesson also reported this form in the Palau (Pelew) Islands. A second series (Nos. 6812-6826) from Angaur, Palau, Western Carolines, differs somewhat in coloration from the Ponape series. In the second series, almost all the scales on the dorsum have darker areas or darker borders which form an indefinite series of five or more dim longitudinal lines from head to the base of the tail, the lines often connected with each other with narrow black, very irregularly placed, dashlike marks.

Emoia werneri Vogt

Emoia cyanurum var. werneri Vogt, 1912, no. 1, Sitzungsb. Gesel. natur. Freunde Berlin, p. 5 (type-locality "Marianen").

Six adult specimens and four young (three from eggs) were collected on Guam. The young show the three light lines quite clearly. In adults these lines fade and are absent or difficult to see, especially in male specimens. The lamellae under the fourth fingers vary from 24 to 28; under the fourth toes from about 39 to 41.

A series of five specimens was taken on Angaur in the Palau Islands. In these specimens the stripes were distinct anteriorly in the adults. The lamellae under the fourth finger varied from 25 to 28; under the fourth toe from 40 to 44.

In the Guam specimens the postaxiliary scales were typical of scales elsewhere on the body but in the Angaur specimens they were modified to form chigger-mite refuges. In these, the scales were juxtaposed or barely overlapping, thus allowing space for the mites to attach to the flesh between scales. Numerous parasites were present on each side of each specimen. In two specimens a pair of symmetrical "postparietal" scales separated the parietals, and in a third specimen a suture partially severed the posterior part of one of the parietals. The other two specimens had typical parietal scales forming a suture.

Varanus indicus indicus (Daudin)

Tupinambis indicus Daudin, 1802, Histoire naturelle, générale et particulière des reptiles, 3:46-47, pl. 30 (type-locality "découvert dans l'île d'Amboine, par Riche").

Varanus (Varanus) indicus indicus, Mertens, 1942, Abh. Senckenb. naturf. Gesell., Abh.

466:263-270 (see pl. 6 in Mertens, 1942, ibid. Abh. 462:1, for variation in markings).

This species was relatively abundant on Guam, especially in the northern half of the island, and is found on various other islands in Micronesia (Dryden, 1965). One hundred specimens (54 male, 42 female, and 4 of undetermined sex) were caught or shot on the northern half of Guam. Total length and tail length ranges in mm are 305-1330 and 183-749, respectively.

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