" and to ascertain, for instance, how the nominative and " subjunctive words in a sentence are placed with respect " to the verb ; how the adjective with regard to the sub- " stantive; how plurals and degrees of comparison are " formed ; whether there is any kind of inflexion or varia- " tion of syllables of the same word according to its posi- " tion in the sentence and connection with other words ; " whether the pronouns personal vary according to the " rank or sex of the person addressing or person addressed ; " and whether they are incorporated with the verb ; and to " observe any other peculiarities of idiom, that the lan- " guage may present ; noting the degree of softness, harsh- " ness, indistinctness, intonation, guttural sounds, and the " prevalence or deficiency of any particular letters of the " alphabet, as we should term them, such as R and F. " The extent of country, over which a language is under- " stood to prevail, should also be a subject of investigation ; " and, by what others it is bounded at every side. Also, " whether there may not be a correct language of com- " munication between nations, whose proper languages are " distinct.

" I observe that the name of *Congo* belongs to the coun- " try on the southern side of the Zaire; and that Loango, " Kokongo, N'Goio, Tomba, and N'Teka, are the names " of kingdoms or districts on the northern side. The spe- " cimens I have of the language of Loango (apparently the " most considerable of these) shews it to be radically the " same with that of Congo, although, as dialects, they vary " a great deal. It will probably be found, that this is the

" case with regard to the others also; and I am the more " inclined to believe the language very general in that " part of Africa from the following circumstance: I had " formerly a negro servant from Mosambique, who came " by the way of Bombay to Bencoolen, and having taken " down from his mouth the words of his native tongue, I " was afterwards much surprized to find them correspond, " in many instances, not only with the language of the " Caffers, as given by Sparrman, but more especially with " that of Congo, as will be seen on comparing a few of the " words of the latter, as given by Benjamin (the Congo " black) with those taken from my servant.

English.	*Congo.*	*Mosambique.*	*Kaffer.*
Three.	Tatoo.	Atatoo.	
Ten.	Coomy.	Kumir.	
Four.	Me-sana.		Sanu.
Man.	Momtoo.	Muntu.	
Woman.	Makaintu.	Muke.	
Foot.	Cooloo.	Mo-guru.	
Day.	Booboo.	Riubu.	
Dead	Cufoy.	Kufoa.	
Water.	Maza.	Madje.	Maazi.

" But it was not my intention to have gone into this de- " tail; the fact, however, is very curious, the distance being " so considerable."

It is sufficiently remarkable, however, that while this agreement is found between the languages of tribes so very distant from each other, so great a difference should prevail in different parts of the same district, and at so short a distance, as

appears by the Vocabulary (Appendix, No. I.) collected and filled up by Captain Tuckey; the first column of which are the words of the Malemba language, on the coast and near the mouth of the river, the second those of Embomma; and it is stated that the language beyond Inga differed very considerably from that of Embomma.

Mr. Marsden, who obligingly furnished the list of English words in a printed form, and whose extensive knowledge of languages, stamps a value on any opinion he may give on that subject, has communicated the following observations on Captain Tuckey's vocabulary.

"The very copious and apparently accurate vocabulary "of the *Congo* language, collected by Captain Tuckey, "has furnished the means of comparison with the other "languages and dialects prevailing in the southern por- "tion of Africa, and has thereby served to establish the "fact of an intimate connexion between the races of peo- "ple inhabiting the western and the eastern coasts of the "peninsula; although in that parallel, its breadth is little "less than thirty degrees of longitude.

"Upon selecting some of the most familiar terms, and "comparing them with the specimens we possess, it will "be seen, in the first place, that the words as written down "by Captain Tuckey, from the mouths of the natives "of *Congo*, agree generally with those given by Brusciotto, "Oldendorp, and Hervas; allowance being made for the "differences of European orthography. They also cor- "respond with those of the neighbouring countries of "*Loango* and *Angola*, with some variety of labial pro-

" nunciation ; and less perfectly with the languages of the " *Mandongo* (not to be confounded with the *Mandinga* of " Northern Africa) and the *Camba* people; both of the " same western coast. It is highly probable, that all " these mutually understand each other in conversation. " Between the Congo language and that of the tribes on " the eastern side, the affinity, although radical is much " less striking, and the people themselves must consider " them as quite distinct ; but the following instances of " resemblance, in words expressing the simplest ideas, " may be thought sufficient to warrant the belief, that the " nations by whom they are employed, must, at a remote " period, have been more intimately connected."

	Congo. Tuckey.	Congo. Brusciotto.	Congo. Oldendorp.	Mosambique. Native.	De Lagoa. White.	Kaffer. Sparrman.
Three	Tatoo	Tattu	Si-tattu	Ba-tatu	—	A-tatu
Four	M'na	Ya	Sija	Me-sana	Moonaw	Sanu
Five	Tañoo	Tanu	Sit-tan	—	Thanou	—
Ten	Coomy	Icumi	Si-kumi	Kumi	Koumaw	Sumi
Eye	Mieso	—	—	Meso	Teesho	—
Tooth	Meno	—	—	Meno	Menho	—
Dead	Foi	—	Affua	Ku-foa	—	Ufile
Water	Maza	Mase	Masa	Madji	Matee	Maesi
Hog	Gorolooboo	—	Engulo	Guruay	Gulloway	—
Sun	Tangua	N'Tazi	Tangu	—	—	Langga
Moon	Mooezy	—	—	Moysé	Moomo	—
Salt	Moon-qua	—	—	—	Mun-you	—

There does not seem to be the least truth in the complicated mechanism of the Congo language, which some fanciful author thought he had discovered, and which has been repeated by succeeding writers; none of " those idioms

of which the syntax and grammatical forms, ingeniously combined with art, indicate, in the opinion of Malte-Brun, " a meditative genius, foreign to the habitual condition of these people."

These few observations contain a summary of the knowledge of the moral circumstances and condition of the people, and their means of subistence, as obtained by the expedition to the point of the river where its researches terminated. The physical information acquired is, on account of its scientific form, kept separate, and follows in the Appendix

APPENDIX, No. I.

A Vocabulary of the MALEMBA *and* EMBOMMA *Languages.*

English.	Malemba.	Embomma.
Above,	Tanda	Teleema,
Absent,	Ieli	Ieli-koulka
Accuse,	N'Doke	
Admire,	Equaila	
Advice,	Wenapee	
Adultery,	Wavuca, Ng-Cazganie	Sougam casan-gana
Afraid,	Wonga	Boema
Afront, *v.*	N'Sone	nganzey
After,	Quonema	
Afternoon,	Masseca	maseaka
Again,	Quandee	
Agree,	Ioca Chivueede	
Air,	E'Zoola	zeelo
Alike,	Deddy Deddy	
Alive,	N'Chema	monio
All,	ionsou. M'Venu-ionsou, I give all	Yo
Alone,	Caca; Meno caca, I am alone	
Always,	Loumbau E'on-sou, all times	Tangibana
Amuse,	Queembela	
Anchor,	Boam-poutou	boam-poutou
And,	Isha	
Angry	N'Zalla, Lengula, sulky	
Another	Lequa, Lequa chanca, ano-ther thing.	
Answer, *v.*	Tamboudede	boulem-beembo
Any,	lequa, chouso-le-qua, any thing	
Approach, *v.*	Queamena or Wesadea	Isa
Arm,	Coco	
Army,		Cacomunta
Arrive,	N'Chemosouca	
Ashamed,	N'Sone	sony-zakaleka
Ashore,	Vanase, vanasse	vananze
Ask,	Couvaula	uvroola
Asleep,	Leca	lélé
Assist,	Cousadesa	
At	M'pou	

English.	Malemba.	Embomma.
Aunt,	Cacandee	Menkaze
Avoid,	Souama	
Awake,	Catoumauca	cotouka
Axe,	M'Peebe	tawly
Back,	Nema	booza
Back again,	Vantauca	
Bad,	Mabee, Moontoa N'zambico, bad man	mambee
Bag,	Ecouba	Koube
Bake,	Zampaimbe, Bolo Zampaimbe, bake bread	
Bald,	Vandou	vandou
Bargain,	Saomba	soomba
Bark (rind)	Taunda	babosy
Barren	Seeta	
Barter, *v.*	Taubeengana-quetau	Vinja
Basket,	M'Bangou	
Bathe,	N'Younga	Sookoola
Battle,	Nouana	N'ousna
Bawl, *v.*	Beconoa	
Bay,	Londo	N'zeela
Beads,	M'Sanga, or Sanga	p'sanga
Beard,	N'Deva	Devoe
Beat, *v.*	Yaita, beco-yaita, don't strike	Bolo
Bed,	M'Foulou	Cheea
Before,	Ovetide quande	
Beg,	M'panou	M'cootoo
Begin,	Davove	Tona
Behind,	Oquinema	quanima
Believe,	Eande	
Belly,	Voumou	Voomoo
Below,	Quonsee	quoonsee
Bend,	Voumbama	beenza
Betray,	Moueve	
Between,	Fouloumose	
Beyond,	Valla	
Big,	Ounene	tolo
Bind,	Cangama	
Bird,	Noone	Noonee

English.	Malemba.	Embomma.
Bite, *v.*	Lavata	tibila
Bitter,	Cazan	nooly
Black,	M'fiote	M'fiot
Blind,	Mesoumafoa	mafoi
Blood,	Menga	Menga
Blue,	Chandombe	Chinom ba
Boat	N'Zaza	N'zaza
Body,	Solango	Avia
Boil, *v.*	Lamba (meno lamba, I boil)	laamb
Bold,	Oumolo, or quangolo	
Bone,	Vissee, or Vese	vezze
Bottom,	Coonansee	Coonansee
Box, *n.*	Lookata	
Boy,	N'Taoude	leeze, toadi
Brave,	Quangolo or Oumolo	pandé
Bread,	Bolo	Bolo
Break, *v.*	Baudede	bourica
Breasts,	N'Toulou	Maemi maboi
Bridge,	Saaoka	Subooka
Bring,	Twala	
Broad,	Tamamase	
Brother,	Pangame	
Build,	Taunganza	
Burn, *v.*	E. Veede	Monovia
Busy,	Salansalanga	
Buy,	Soumbaquacou	Soomba
Cable,	Seenga	Seenga
Call, *v.*	Bokela	Lundoo
Calm,	Bacanam-pembaquano, no wind	bauano pemo
Careful,	Kbea	bongo leeko
Carry,	Nata	Nata
Cat,	Boude	boodé
Catch, *v.*	Bacca	Seemba
Change,	Veenga. veenqua lequa (change something)	aviengeza
Cheeks,	Matamma	Matamma
Chew,	Dade	Casu
Chief, *n. s.*	Menta	
Child,	Mauana	moana
Chin,	Bevau	bevo
Choose,	Zona	
Circle,	Zounga(Zoonga)	zegoomaneena
City,	Banza	M'banza
Clean,	Soucoula, (means also wash)	Neaveze
Cloth,	chindele	blele
Cloud,	E'Sanche	tooty
Coarse,	Catyauwataco	voonga

English.	Malemba.	Embomm
Cold,	Chazee	cheosey
Comb, *v.*	Sanoo	Sanoo
Come,	Weesa	ouise
Conquer,	cheena waate	boogazy
Çook, *v.*	Lambe	lamba
Copper,	Sango	Songo
Corner,	Fouma	
Country,	Seame	N'zee
Cow,	Gombe	pacheza
Cry, *v.*	Dela	leela
Cure, *v.*	Sambouca	belola
Curse, *v.*	Lakelaca	lokala
Cut,	Veengoana	Yango
Dance, *v.*	Keena	keena
Dark,	Tombe ; Night time	M'boi
Daughtèr,	Chincoomba	Coomba
Day,	Laumbau	Moinee
Dead,	Fauede	foi
Deaf,	Matoo, Mafou (ear blind)	(the same)
Deceive,	Maueve	M'poonizea
Deep,	M'peenda	Vinda
Depart,	Wenda quakoo	Yenda
Devil,	Cadde M'Pemba	Coolam
Dew,	Desa or Deza	Lizee
Die, *v.*	M'foa	foca foi
Dig,	Sema. Sema auloo, dig grave	sicum
Diligent,	kebba-bene	
Discourse,	yako. Palaver	zoco
Dispute,	N'ganzy	ganzy
Divide,	chakeky	chakeky
Dog,	M'Boa	M'boi
Door,	Kaveloo, door-place, E'Vitoo.	Vitoo
Down, *ad.*	Coonasse. Wenda conasse,go down	
Dream, *v.*	N'dazee,dosentou	lota
Drink, *v.*	Noa	noi
Drop, *v.*	Bauede	soonoquezv
Drown,	Seendede	fomo
Drunk,	Calelau, or Coloa Malavou, drunk from wine	Coloi
Ear,	Cooto-Matoo	Matoo
Earth (soil)	N'tato	toto
Earth (globe)	sionso	sionso
East,		akoo
Eat,	Dea	lia
Edge,	Maino	tova
Egg,	Makee	makee

English.	Malemba.	Embomma.
ght,	E'Nana	N'ana
ghty,	Nana longcamma	lonvois
apty,	champabala	bacana leevco
d, *n.*	Seena	Seena
emy,		Giahelady
ough,	Fouaing	Foiny
ter,		Cota
eape, *v.*	cheena	teena
cuse, *n.*	cabely	liezo
e,	Mosau	
ebrow,	N'daou	davu
ee,	loosi	loozie
l, *v.*	Bouede	booide
se,	Voona or Ovoo-nene	boisey
nily,		cunda
r,	N'Seke	tanzy
t, *v.*	cadedeco, stomach empty	
	Tola	tolezy
her,	tata	taata
ar, *v.*	Wonga (cheenico do not run away.)	cheonico
ast,	dela quoomosee	mocu beeza
ather,	N'Salla	caia muza
el, *v.*	Seembede	seembelé
male,	Kentoo	chemta
ch, *v.*	Twala	voola
ver,	Yaila, sick	
ween,	Ecaume tanoo	macooma tanoo
ty,	Macaumatanoo	Sambanoo
ght, *v.*	Nooana	noona
	Zonga. Zonga Maza, fill water	Ouazia
d,	Tomba	tomba
nger,	M. blembo	loozala
e,	Bazao	bazoo
h,	Bishe or Bizhy	M'foo
e,	Tanoo	toanoo
t,	Vavawoote	bassa
sh,	Gombai	M'psoonia
at, *v.*	E'folo. E'folo de Maza, float on the water	
od,	Mazely. Maza mazely, water flood.	
wer,	Foundee	foondia
, *v.*	Lavooka	catooka
low,	Seeda-quonema, follow you.	londa

English.	Malemba.	Embomma.
Fond,	N'Zona. N'Zona Kentou, fond of woman	n'zoolozy
Food,		belia
Fool,	Laoo	booba
Foot,	Tambee	tambee
Forbid,	Zoueneco	seembeedi
Forget,	Zeembakeene	zimbancoonie
Forgive,	Mangene	vanica
Fork,	Soma	soma
Forty,	Macoomaya	macoomana
Four,	Yaca Quca or kea	m'na
Fourteen,	Ecoameaeya	coom ni na
Fowl,	Soosoo	soo soo
Free,	Foomoo, free man	foomongana
Fresh,	Enasoodeca (no stink)	
Friend,	Dequame	Coondiamy
Fruit,		Cooia
Full,	Ezaily (Glossa Ezaily Maza, glass full of water)	zala
Fur,	Meca	mecka
Girl,		caintoo
Give,	vana	vana
Glad,	Tondele	tondiza
Go, *v.*	Wenda	ouenda
Goat,		combo
God,	Zambe M' Poungoo	yambee
Gold,	Ola	voola
Good,	Maboote	fibooty mavoot
Great,	Foonioo-a-Moote	keenani
Green,	Chambeo	kankoososo
Grow,	E'Menene	coola
Guard, *v.*		lunglula
Hair,	N'Sooke	M'sootchy
Half,	Cachanseca	teeny
Hand,	Candase	coco
Handsome,	Mamoote	quenevezey
Hang,	Keteca,	zungalaquoi
Happy,		ooboocli
Hard,	Golozeenge	bala
Head,	N'Too	M'too
Hear,	Weloo(Owcloowe do you hear that)	oneloo
Heart,	N'Cheema	monio
Heaven,	Ezooloo	coozolo
Heavy,	Zeeta	zeeta
Hen,	Soosoo N'kentoo woman fowl	

English.	Malemba.	Embomma.
Herb,	Foundee	teel,
Here,	Wesa-ba (come here)	
Hide, *v.*	Soo-aimy	souka
High,	M'Saiky	nankoo
Hill,	M'Zanza	vemongo
Hire, *v.*	Salla Ecofeeta, work and I'll pay you, Ooeza poota, come and I'll pay you	
Hit, *v.*	Oungetele	
Hog,	N'Gooloo	gooloobo
Hold, *v.*	Seemba	seemba
Hole,	Nooa	cooloo
Hollow, *n. a.*	Lequa champa-bala, empty	voovooloo
Home,	Coompootoo	
Honest,	Moontoo N'Zam-be	moonta
Horn,	M'Poca and M'Poonge	m'poka
Horse,	Cavalo	cavallo (Portug.)
Hot,	Mooene	bazoo
House,	M'Zo	m'zo
Hundred,	changcamma	m'cama
Hungry,	N'Zalla	zala
Hurt, *v.*	N'Gansey	coontanty
Husband,	Etoco	nooniani
I,	Meno	meenoo
Idle,	Casasalaco	
Jealous,	Fontavouke cas-same	chimpala
If,	Onso-Onso Zo-nene, if you like	vo
Industrious,	Salla woete	
Innocent,		mandico
Interpret	N'Camba	sencamba
Join,	Ecca or Yeca	
Journey,	Diata	tanzey
Iron,	Loocaneba	saangua
Island,	Zoonga	zoonga
Jump, *v.*	Zotooka	
Justice,		coticounda
Keep,	Loonda	saonou
Kick, *v.*	Waita	tockensy
Kill,	M'foa, or M'foua	bonda
King,	Nemboma or fooma, cheeno	m'cheeno
Knife,	M'Baily	belée
Knot,	Acolo or E'colo	colo
Know,	Ounzoi	N'zabizy

English.	Malemba	Embomm
Lake,	Eanga	Cooly
Lame,	Tolooca	toloca
Land,	Zela	n'se
Last,	Quenema	lequampe do
Laugh, *v.*	Saiba	seva
Law,	Yoco, and Palaver	m'cusa
Lead, *n.*	choomboo	choomboo
Learn, *v.*	Longua or Cou-camba	longua
Leg,	Veende,	maloo
Lie (down) *v.*	Daile,	bleka
Lie (falsity)	Vouna	m'voonoo
Lift,	Nata	naogoova
Light (not heavy)	Bacana Zitaco	zelaco
Light (not dark)	Mouene	mooini
Lightning,	N'Zaza	lusiemo
Lips,	Bevau	bleelee
Little,	Chakai	chepehow
Live, *v.*	Ena-Wa-wantee, I live	
Long,	Chella	chicolezy
Look, *v.*	Talla	
Love, *v.*	Laou	zolozy
Low,	Vousee	toola
Mad,	E'Laou or Ai-leooa	laooka
Make, *v.*	Saneca	vanga
Male,	Moontou,	
Man (homo)	Moontau	boocala
Many,	Enjecaca	benga
Market,	E'Zandou,	zando
Mat,	Teba	teva
Meet, *v.*	Baulasenna	boolanjana
Melt, *v.*	Manze	quabooka
Mend,	Londa	londo
Middle,	Counzee	cawty
Milk,	Chimvooma	chialy
Mine, *pr.*	Wamee or E'Chame	chamy
Money,	Bango	bongo
Month,	N'Gondai	gondé
Moon,	N'Gondai	gondé
More,	Lequa	boola
Morning,	Kensouca	menamena
Mother,	Mamma	mama
Mountain,	M'Zanza	m'zanza
Mouth,	Noua	m'no i
Much,	Panega	yenzy
Mud,	Folo	m'teachy
Musick,	Sambe	yeoola
Nails, (ongles)	Sonso	n'yula
Name,	Zena	zena

APPENDIX, No. I.

English.	Malemba.	Embomma.
Narrow,	Voucoufe	cheechow
Near, nigh,	Calavou	chevolagaya
Neck,	E'Laca	m'singoo
Neighbour,	Voumosetweena	boleamba
Nest,	Mounguanza	jula
Net,	N'Zalo	condy
Never,	Bacana Vanaco	ooenoquako
New,	Chacheva	chamona
Night,	Masseca	fookoo
Nine,	E'Vaua	nana
Ninety,	Louvoua Long-camma	lunana
No,	Nana	bucanaco
Noise,	Bouba	yoko-beke yoko, don't make noise
None,	Gonguame	chunuvalaututo
North,		velo
Nose,	Mazaumau	yoono
Now,	Waau	booboo
Oil,	Manze	mazey
Old,		seemba
One,	Basé	mosey
Only,	(Lequa chemasi, no more than one)	
Open, *v.*	Zibaula	zaboquely
Out,	Lava	bussykissey
Owe, *v.*		boncooa
Pain,	Malau tanta	yela
Paint, *v.*	Cousandeemba	vela
Paper,	Papalla	papela (Port.)
Pay, *v.*	Feta	fitezy
Peace,	Ele-Nauana	noinidecau
People,	Peendouame	bantoo
Pierce,	(Zeka Aulou make Hole)	
Pinch,	Acoutanta	jougana
Plain, *n. s.*	Voulelamene or Vouyanzala	
Play, *v.*	Chobcubo	sacoona
Pleasure,	Tondela	tooendacoit
Plenty,	Ingee	yengabeeni
Poison,	Daukee	goolioongo
Poor,	Machanzambe	beezycunda
Possess,	Doundedeca	
Pot,	Sea	cheenzo
Pregnant,	Acuemeta	mavoomocavo
Present, (gift)	Ta	vana
Pretend,	N'Sallaco	
Prevent,	Ounseembede	

English.	Malemba.	Embomma.
Price,	E'faunda	bongoqua
Priest,	Wecheche	gonga
Private,	Sauama	
Profit,	Keta	
Promise,	Sompeea	getu coovan
Proud,	Venda wawoote	
Pull,	(anoar) Vouela. voula bene, pull well voulla Foumose, pull together	
Quarrel,	N'Dokee	zouza
Quarter part,	N'Dambouka	
Queen,	Camma-Foumou	foo moonchal
Question,	Balounge dede	
Quick,	Sampouea	yong'nana
Quiet,	Molo Molo	
Rain,	Voula	vola
Rat,	N'Coumbe	pooloo
Raw,	Yangtounzau	yancoonzo
Read,	Soneca	chimboiky
Ready,	Panga	
Rebel, *n.*	N'Couta	
Receive,	Tamboude	
Red,	Yampaimbe	
Rejoice,	Veca Monacoo	
Return, *v. n.*	Avotoquede	voo taloo
Reward, *n.*	Ounzetou	
Rich,	Sena	vovama
Ride,	Sambela	cundama
Ring, *n.*	Loangana	longa
Ripe,		sŏowondoo
Rise, *v.*	Katomaca	talama
River,	Moela	moela
Road,	Mozeila	enzala
Roast,	Coka or Coca	roka
Rob,	Mowee	lovenda yeba
Rope,	Seenga	singa
Rotten,	Chawola	kabowle
Rough,	Meca	
Round,	Chenzaongolo	soolama
Row, *v.*	Zongoloca	vooila
Run,	Zoucooloca	zuola
Safe	Chinavona	
Sail, *n.*	Voola	voola
Salt,	Mongua	moongua
Sand,	Yengasee	neengy
Savage	Ganze	
Say,	Vova	
Sea,	Embou or M'Bou	boo
Seat,	Voanda	chansoo
Secure,	Yeco-baca	

English.	Malemba.	Embomma.
See,	Tala	mona
Seek,	Tomba	tomba
Sell,	Zeca	loombeeca
Send,	Toma	tooma
Servant,	Toudeamme	moonaleze
Seven,	Sambouady	Sambody
Seventy,	Lousambouady	loosambody
Shade,	Pozee	
Shake,	Necona	nicocka
Shame,	Somee	sonee
Share, *n.*	Auncoeya	cayana
Sharp,	Looca	etooide
Shell,	Chimpenga	encaissoi
Short,	Cofec	cooffey
Shut,	Zeca	zeca
Sick,	Yela; yela yela, very sick	
Side,	Louvate	mona
Silent,	Beca yoca, be silent	canganikoota
Silver,	Plata	parata (Port.)
Sing,	Wimbela	quimbela
Sink,	Chesceendede	seendissa
Sister,	Panga M'Kentau	pangankainto
Sit,	Voenda	ovanda
Six,	Sambanou	sambanoo
Sixty,	Macouma Sambanou	
Sky,	E'Zooloo	zooloo
Sleep, *v.*	Laika or Laica	lecka
Slow,	Conka	neké
Smell, *n.*	Noucouna	soody
Smoke,	Moiscee	moisy
Smooth,	Lelamma	vendoomona
Soft,	Labella	bootaboota
Son,	Moene	moonayakala
Soon,	Kainga	oo
Sore,	Tanta	bezy
Sorry,	Cardee	keady
Sour,	Gangomona	gongoomona
Sow, (grain)	Coona	zeka moongé
Speak,	Ovova (short)	vova
Spit, *v. n.*	Chaca	taoulamete
Split,	Tongona	babo
Square,	Shanana	conzoia
Stab,	Chonda	coonzoka
Stand, *v.*	Talama	telema
Star,	Beta	botelé
Steal,	Queya	moocey
Stink, *v. n.*	Soode	soody
Stone,	Tadee	etudy
Storm,	Voolazambe	teemboi
Stranger,	Zenzee	zainza
Strike,	Boola	yundi weeta

English.	Malemba.	Embomm
Strong,	Golo	golo
Sun,	Mouene	tangua
Swear,	Gozee	deily
Sweet,	Chinzsilla	
Swim,	Yonga	coivela
Sword,	Tanzee	soma
Tail,	M'Kela	keela
Take.	Bonga	
Tear, *v.*	Masanga	baka
Tell,	Camba	
Ten,	Ecau-me	coomy
There,	Chinna	ouvana
They,	Ana	doo
Thief,	Moevee	moivy
Thigh,	Ebooboo	boodou d'a
Thin,	Enka	lovilo
Thirsty,	Pouilla	pooina
Thirteen,	Coomee é tatou	macoomata
Thirty,	Macoumn a tatou	macoomasa noo
This,		eki
Throat,	Gongolo	elaka
Throw,	Looza	lasa
Thunder,	Mandazee	moindozy
Three,	Tatau	tatoo
Tie,	Kanga	cavaga
To	Oula	
To-morrow,	Baze mene	Bazimeney
Tongue,	Loodeemee	loodimee
Tooth,	Manoo	menoo
Touch, *v.*	Vepatacanna	touta
Town,	Banza	Banza
Tree,	N'Chee	chee
True,	Chillica	kelica
Turn,	Votola	viloka
Twelve,	Ecoume Eole	coomy emi
Twenty,	Macoumolee	macoomoly
Two,	Cole	meoly
Village,	Deemba	voota
Virgin,	Toubola	
Under,	Cama	cooianda
Understand,	Ocuvanga	outooway
Unhappy,	Eango	Mimamby edico
Unjust,	Zemba Canee	
Voice,	Deenga	
Up,	Twoinda	
Upon,	Tandoo	

English.	Malemba.	Embomma.	English.	Malemba.	Embomma.
ke, *v.*	Catomoko	Catoomoka	Wind, *n.*	M'Paibe or M'Paima	pemo
lk,	Diata	deuta			
r,	Veta	zingoo	Wing,	Evee	evevê
rm,	Quamona	cafoota	Wise,	Lookee	quandooka
sh, *v.*	Soucoula	Yonga	Woman,	Kentou	quinto
tch, *v.*	Wingala	lanjedilla	Wood, (lignum)	Bala	coony
ter,	Maza	maza	Wood, (sylva)	Lebala	chencootoo
ak,	Goloco		Wool,	Meza	maka
ary,	Deembalou	nectoo coongely	Word,	Dinga	diambo
ep,	Yenza	beela	Work, *v.*	Salla	salo
ll, *n. a.*	Sambocadee	quamy	Wrong,	Zimbacainna	diambo deady
ien,	Chaloumbo	oongatoo	Year,		m'oo
ite,	Pamba	pembei	Yes,	Enga	eenga
no,	Nanèe	ounanie	Yesterday,	E. Zono	zono biokelly
cked,	Mabe (bad)	untoonga	You,	Gaia (plural, Yeno)	gaiyay
fe,	Cazammee	casamy			
ld,	Sittau	booloo			

"This Vocabulary I do not consider to be free from mistakes, which I cannot now find time to discover; all the objects of the senses are, however, correct.—J. TUCKEY."

APPENDIX, No. II.

Observations on the Genus Ocythoë *of Rafinesque, with a Description of a new Species. By* William Elford Leach, M. D. F. R. S.

From the Philosophical Transactions.

Pliny, Aldrovandus, Lister, Rumphius, d'Argenville, Bruguiere, Bosc, Cuvier, and Shaw, have described a species of this genus, that is often found in the *Argonauta argo* (common paper-nautilus), and which they have regarded as its animal, since no other inhabitant has been observed in it.

Sir Joseph Banks, and some other naturalists, have always entertained a contrary opinion, believing it to be no more than a parasitical inhabitant of the argonaut's shell, and Rafinesque, (whose situation on the shores of the Mediterranean, has afforded him ample opportunities of studying this animal, and of observing its habits) has regarded it as a peculiar genus, allied to the *Polypus** of Aristotle, residing parasitically in the above mentioned shell.

Dr. Blainville, ten months since, when speaking of the *Argonauta*, said, " animal unknown," and he has lately informed me, that he has written a long dissertation to prove, that the *Ocythoë* of Rafinesque, does not belong to the shell in which it is found.

The observations made by the late Mr. John Cranch, zoologist to the unfortunate Congo expedition, have cleared from my mind any doubts on the subject. In the gulf of Guinea,

* Sepia octopodia Linne'.

and afterwards on the voyage, he took by means of a small net, (which was always suspended over the side of the vessel) several specimens of a new species of *Ocythoë*, which were swimming in a small *argonauta*, on the surface of the sea.

On the 13th of June he placed two living specimens in a vessel of sea water; the animals very soon protruded their arms and swam on and below the surface, having all the actions of the common *polypus* of our seas; by means of their suckers, they adhered firmly to any substance with which they came in contact, and when sticking to the sides of the basin, the shell might easily be withdrawn from the animals. They had the power of completely withdrawing within the shell, and of leaving it entirely. One individual quitted its shell, and lived several hours, swimming about, and showing no inclination to return into it; and others left the shells, as he was taking them up in the net. They changed colour, like other animals of the class cephalopoda: when at rest the colour was pale flesh-couloured, more or less speckled with purplish; the under parts of the arms were bluish grey; the suckers whitish.

The *Ocythoë* differs generically from the *polypus*, in having shorter arms, with pedunculated instead of simple suckers; the superior arms too are dilated into, or furnished with, a wing-like process on their interior extremities.

All the internal organs are essentially the same as in the *polypus*, although they are somewhat modified in their proportion; but as these differences may be the result of the contraction caused by the spirits, in which they are preserved, it may be more prudent not to dwell on them. Two characters, however, which I could not discover in the *polypus*, may be mentioned, namely, four oblong spots on the inside of the tube, resembling surfaces for the secretion of mucus; two inferior and lateral, and two superior, larger, and meeting anteriorly. On the rim

of the sac, immediately above the branchiæ, on each side, is a small, short, fleshy tubercle, which fits into an excavation on the opposite side of the sac. This character, which, with slight modifications, is common to this genus, to *loligo* and *sepia*, does not exist in the *polypus*.*

Although the superior arms are stated to perform such different functions from those of the *polypus*, yet they are supplied in the same manner, and from the same source with nerves. The muscles of these parts were in too contracted a state, to enable me to ascertain if they were in any degree different from those in the same parts of its kindred genus.

The general form of the body of this species of *ocythoë* is the same as that of the common *polypus*, and it is covered by the same integuments, without any surface adapted either to adhere to, or to secrete, the shell in which it is found. The sexes differ as in the *polypus*.

OCYTHOË CRANCHII.

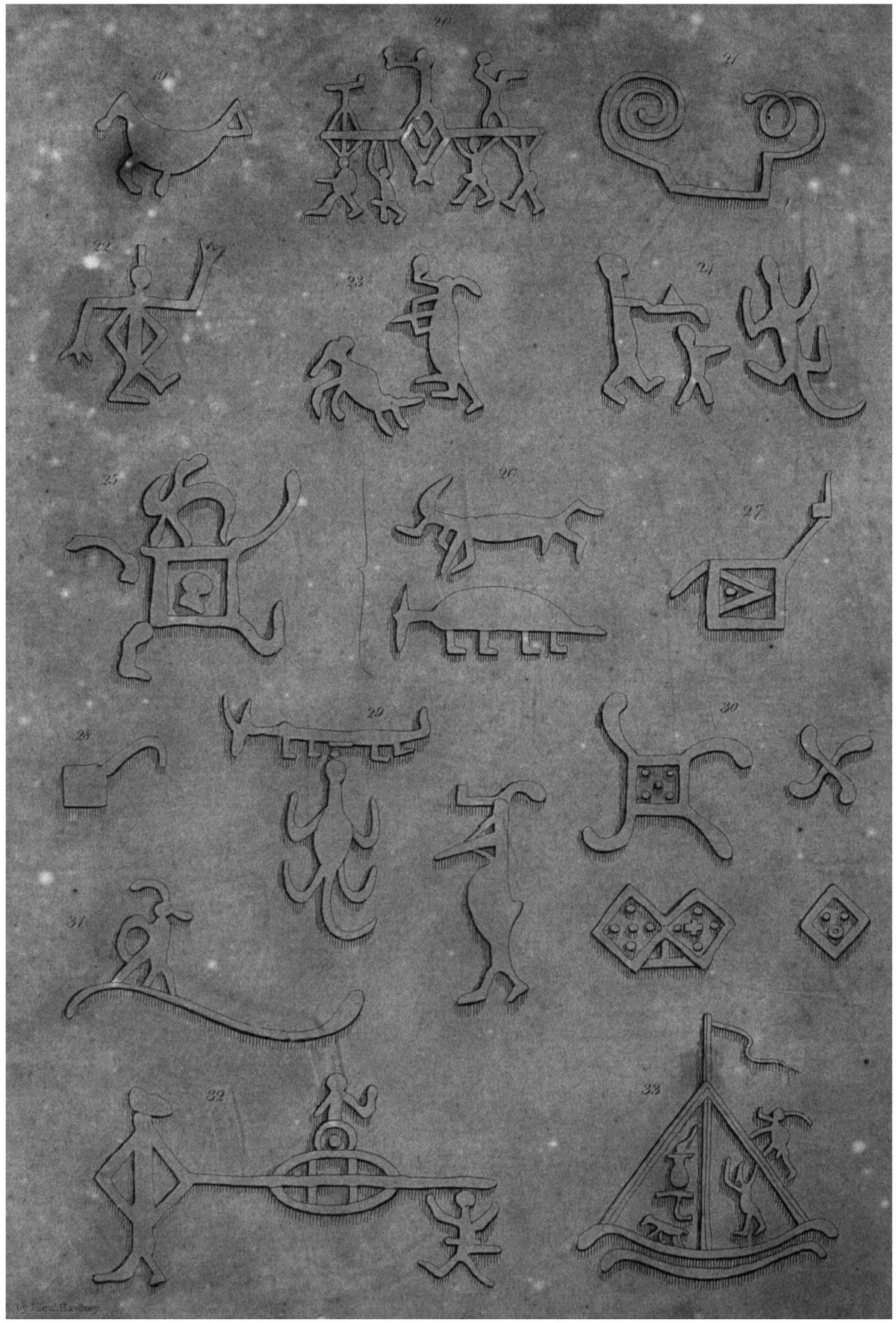
O. corpore purpureo-punctato, brachiis subtus cerulescente-griseis; superioribus membranâ spongeosâ pallidâ maculatâ.

The superior arms are generally attached to the side of the membranes (fig. 5. Pl. XII.); but in one specimen the membranes adhere only by their base, below the apex of the arm, fig. 6. The membrane is subject to great variation in size and form, and is often different on the arms of the same individual.

One male only was sent home, all the others were females, which had placed their eggs in the spiral part of the shell.

One female, that had deposited all her eggs, withdrew completely within the shell, as in fig. 3; her body on one side had

* The rudiment of the bone, which occurs in the *polypus*, (as has been observed by CUVIER) is not to be found in the *Ocythoë*.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all the impressions of the shell, and the suckers on all the arms were diminished in size, as if from pressure.

Explanation of Plate XII.

Fig. 1. Ocythoë Cranchii sitting within the shell.

Fig. 2. The animal without the shell.

Fig. 3. One completely retracted within the shell.

Fig. 4. Ditto taken out of the shell showing the impressions of the shell on the body.

Fig. 5. Left superior arm (common appearance) magnified.

Fig. 6. Right superior arm (variety) magnified.

APPENDIX. No. III.

The distinguishing characters between the OVA *of the* SEPIA, *and those of the* VERMES TESTACEA, *that live in water explained. By Sir* EVERARD HOME, *Bart. V. P. R. S.*

[*From the Philosophical Transactions.*]

LINNÆUS was led into an error respecting the animal that forms the shell argonauta, by the circumstance of a species of sepia having been often found in this shell. This erroneous opinion has been adopted by many naturalists upon the Continent, even those conversant in comparative anatomy.

Whether the argonauta is really an internal shell, which I have asserted it to be, may possibly never be determined by direct proofs, as the animal belonging to it has not been met with. The present observations are confined to the question of the probability of its being formed by the species of sepia frequently found in it; and the materials of the present Paper, which are furnished from the specimens of natural history collected in the late expedition to the Congo, enable me to prove, in contradiction to such an opinion, that the ova of this particular species of sepia are not those of an animal of the order vermes testacea, that live in water.

The young of all oviparous animals, while contained in the ovum, must have their blood aerated through its coats, but in the vermes testacea, if the shell were formed in the ovum, the process of aerating the blood must be very materially interfered with; for this reason, the covering or shell of the egg first drops off, and the young is hatched before the shell of the animal is formed; this I have seen taken place in the eggs of the

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

garden snail, but in the testacea that live in water, the young requires some defence in the period, between the egg being hatched, and the young acquiring its shell, which is not necessary in those that live on land; for this purpose, the ova are enclosed in chambers of a particular kind.

This camerated nidus in the larger animals of this tribe, must be familiar to all naturalists, since specimens in a dried state, containing the young shells completely formed, are to be met with in collections of natural history; but I am not aware that all the purposes for which such a nidus is supplied by nature, have ever been explained.

I have been informed by a friend, who while in the East Indies saw the chank (a shell belonging to the same genus with the *voluta pyrum* of Linnæus,) shed its eggs, that the animal discharged a mass of mucus, adapted to the form of the lip of the shell, and several inches in length; this rope of eggs, enclosed in mucus, at the end which is last disengaged, was of so adhesive a nature, that it became attached to the rock, or stone on which the animal deposited it. As soon as the mucus came in contact with the salt water, it coagulated into a firm membranous structure, so that the eggs became enclosed in membranous chambers, and the nidus having one end fixed and the the other loose, was moved by the waves, and the young in the eggs, had their blood aerated; when the young were hatched, they remained defended from the violence of the waves, till their shells had acquired strength.

What passes under the sea, few naturalists can be so fortunate as to have an opportunity of observing, and although what I have stated was communicated to me by an eye witness, it required confirmation, as well as an opportunity of examining the nidus, before I could give it my assent. Since that time, I

have procured from my friend Mr. Lee, the Botanist, of Hammersmith, a portion of a camerated nidus brought from South Carolina, containing shells of an univalve not very different from the chanks of the East Indies. This nidus is represented in the annexed drawing. (Plate XIII. fig. 7.)

I have also, which is still more satisfactory, seen the camerated nidus of the helix janthina. This animal not living at the bottom of the sea, like the vermes testacea in general, deposits its ova upon its own shell, if nothing else comes in its way; one of the specimens of the shell of the janthina caught in the voyage to the Congo, fortunately has the ova so deposited, as will be seen in the annexed drawings, made by Mr. Bauer, who was so pleased with the appearance the parts put on in the field of the microscope, that he was desirous of making a representation of them. (Pl. XIII. fig. 1, 2, 3, 4, 5, 6.)

In this instance, the ova are single, but in other tribes, several ova are contained in one chamber. In the land snail, the eggs have no such nidus. The following observations respecting them were made in the year 1773, the first year that I was initiated in comparative anatomy, under Mr. Hunter. He kept snails to ascertain their mode of breeding, and the notes that were made at the time in my own hand writing, I now copy.

August 5, 1773. A snail laid its eggs, and covered them over with earth; Mr. Hunter took one out and examined it; the egg was round, its covering strong, and of a white colour, with a degree of transparency; it had no yelk; a small speck was observable with a magnifying glass in the transparent contents.

On the 9th no apparent change had taken place. On the 11th the speck had enlarged, but was too transparent to admit

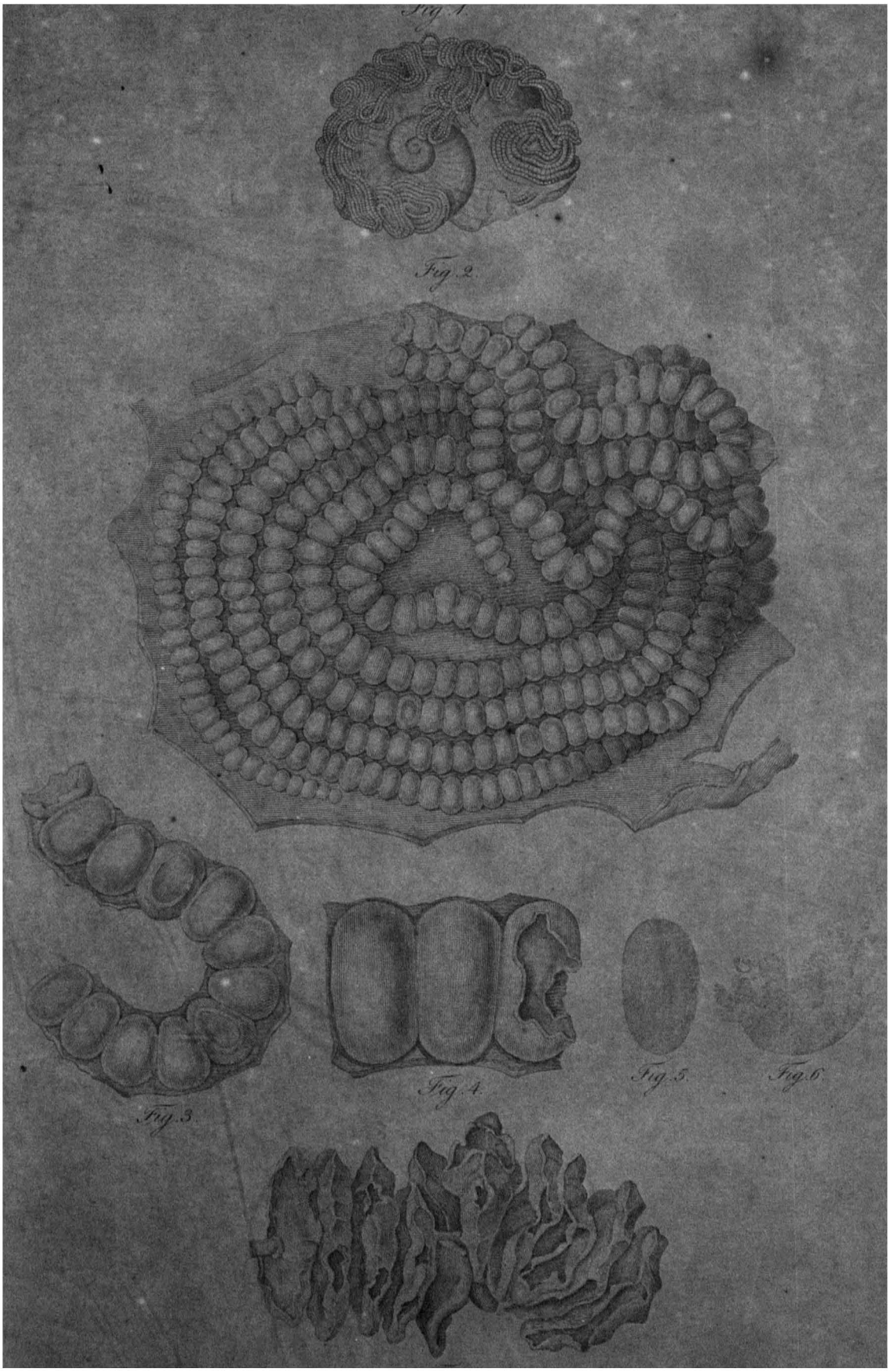
Fig. 1
Fig. 2
Fig. 3
Fig. 4
Fig. 5
Fig. 6

of its form being distinguished; upon moving the speck it fell out of its place.

On the 12th the embryo was indistinctly seen.

On the 15th the embryo filled $\frac{1}{4}$ part of the egg, but the different parts were still indistinct.

On the 18th the body of the embryo had become larger, and the covering thicker.

On the 19th, the coverings or shells of all the eggs were more or less dissolved, so much so that Mr. HUNTER thought all the eggs were rotting, and the whole brood of young would be lost.

On the 20th, the young were hatched, and the shells completely formed.

On the 23d, when the young snails were put in water, their bodies came out of the shell as in full grown snails.

On the 24th, they all deserted their nests.

The specimens of the sepia found in the argonaut shell, which, was caught by Mr. CRANCH, in this expedition to the Congo, had deposited some of its eggs in the involuted part of the shell, and the animal being fortunately caught in the shell identified the eggs to belong to it; (Pl. XIV.) they are united together by pedicles, like the eggs of the sepia octopus, and in all other respects resemble them; they differ from those of the helix janthina and the other vermes testacea, that live in water, in having no camerated nidus, and in having a very large yelk to supply the young with nourishment, after they are hatched.

Upon these grounds, this animal must be resolved into a species of sepia, an animal which has no external shell, and only uses the shell of the argonaut, when it occasionally gets possession of one.

Some naturalists, unacquainted with comparative anatomy, have asserted that in these eggs they saw the argonaut shell

partly formed; they must have mistaken the yelk, which will be seen in the drawing to be unusually large, for the new shell.

Explanation of the Plates.

PLATE XIII.

Fig. 1. The shell of the helix janthina, with the ova in its camerated nidus, attached to it; magnified twice in diameter.

Fig. 2. A portion of the nidus magnified 12 times in diameter.

Fig. A string of the same nidus magnified 25 times in diameter.

Fig. 4. Two of the same ova and one empty chamber, magnified 50 times in diameter.

Fig. 5. One of the same ova, and

Fig. 6. The same slightly bruised, both magnified 50 times in diameter.

Fig. 7. A portion of the camerated nidus, in a dried state, belonging to the ova of a univalve from south Carolina, of the natural size.

Plate XIV.

Fig. 1. The shell of the argonauta, with the ova of the octopus deposited in it, magnified twice in diameter.

Fig. 2. A cluster of the same ova, as they are seen when immersed in water, magnified 12 times in diameter.

Fig. 3. One of the same ova with its pellicle, magnified 25 times in diameter.

Fig. 4. The yelk of the egg.

Fig. 5. A transversal section of the same.

Fig. 6. A longitudinal section of the same. The three preceding figures are magnified 50 times in diameter.

Fig. 7. A collapsed egg, as seen when taken out of the water, magnified 25 times in diameter.


Fig. 1.
Fig. 2.
Fig. 3
Fig. 5.
Fig. 7.

APPENDIX. No. IV.

A general Notice of the Animals taken by Mr. JOHN CRANCH, *during the Expedition to explore the Source of the River Zaire.*

MAMMALIA.

Calitrix sabæa (*Audebert, iv. ii. f.* 4.) one of the various species of *monkies* that are generally denominated *green*, was found in great plenty at Tall Trees.

Three very young *lions* (probably of the Senegal sort) were brought to Mr. Cranch by the natives, who called them *boulaces*. They were kept alive three days and fed on soaked bread, which doubtless caused their death.

BIRDS.

Aquila melanætos,* (*Savignys Oiseaux d'Egypt. pl. ii. f.* 2.)
Ierax musicus, Singing hawk, (*Le Vail. Ois. d'Afr. i. pl.* 27.)
Circus ——, (L'Acoli, *Le Vail.*)
Elanus melanopterus, (*Sav. Ois. d'Eg. pl. ii. f.* 2.) In great plenty.
Milvus ætotius, (*Sav. Ois. d'Eg. pl. iv. f.* 1.)
Polophilus ——, (*Sav. Ois. d'Eg. pl. iv. f.* 1.)
Corvus scapularis, (*Le Vail. Ois. d'Af. ii. pl.* 53.)
Coracias afra, African roller.
Passer, (*Savig. Ois. d'Eg. pl. v. f.* 7.)
Hirundo Savignii, (*Sav. Ois. d'Eg. pl. iv. f.* 4.)
Hirundo Smithii. (New species.) Black colour glossed with steel-blue, whitish beneath the tail, and wing-quills black; the former with a white band, the upper part of the head chestnut, the outermost tail feathers very long. A single specimen was killed off Chisalla island.
Alauda, (*Le Vail. Ois. d'Afr. pl.* 196.)
Sylvia, (*Savig. Ois. d'Eg. pl. v. f.* 3.)
Sylvia, (*Le Vail. Ois. d'Afr.* 121.)
Certhia cincta, (*Ois. Dor. ii. pl.* 10.)

* *Plin. lib. x. cap.* 3. *sec.* 3. *et seq.*

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Sylvia, (*Le Vail. Ois. d'Afr.* 121.)

Certhia cincta, (*Ois. Dor. ii. pl.* 10.)

* *Plin. lib. x. cap. 3. sec. 3. et seq.*

Certhia chalybea, (*Ois. Dor. Ni. pl.* 13 *et* 14.)

Merops erythropterus, (*Pl. énl.* 318.)

Upupa Epops, Common Hoopoe, not varying in the slightest degree from that of Europe.

Alcedo maxima var.? With the breast ferruginous, the belly varied with black and white, the throat white. In other respects it agrees exactly with the common varieties from Senegal.

Alcedo Senegalensis, (*Pl. énl.* 594.)

Alcedo ——, (*Pl. énl.* 556) probably a variety of *Senegalensis*, or the other sex.

Alcedo rudis, (*Pl. énl.* 62.)

Buceros ——, (*Le Vail. Ois. d'Afr. pl.* 233.)

Perdix Cranchii, (new species.) Cinereous-brown beneath, whitish, freckled with dark-brown; the spots on the belly elongate and inclining to ferruginous; throat naked.

Columba ——, (*Savig. Ois. d'Eg. pl.* 5. *f.* 9) common.

Vanellus ——, (*Savig. Ois d'Eg. pl.* 6. *f.* 3.)

Scopus umbretta, Tufted Umber; not uncommon.

Ardea ——, (*Savig. Ois. d'Eg. pl.* 8, *f.* 1.)

Ardea Senegalensis, (*Pl. énl.* 315.)

Parra Africana, (*Lath. Syn. tab.* 87.)

Recurvirostra ——— Very much destroyed, but from the parts remaining, not to be distinguished from our European species, *R. Avosetta*, the common Avoset.

Phalacrocorax ——, (*Savig. Ois. d'Eg. pl.* 8. *f.* 2.)

Plotus Congensis, (new species.) Black; head and neck brownish chestnut; back and wing coverts streaked with white. One only was killed.

Anas ——, (*Savig. Ois. d'Eg. pl.* 10. *f.* 1.)

Sterna senex, (new species.) Cinereous-black, top of the head gray, belly with a very faint and obsolete teint of chestnut.

Rhynchops niger, (*Pl. énl.* 357.)

Reptiles.

Trionyx Egyptiacus, (*Geoff. St. Hill. Rept. d'Eg. pl.* 1.) The head only of this extraordinary animal was sent home, in spirits.

Coluber Palmarum, (new species.) Reddish; beneath whitish, the scales of the

sides and back very long-ovate and carinated. Found in palm trees at Embomma.

Coluber Smythii, (new species.) Brown-gray beneath whitish, the sides, especially anteriorly, with triangular whitish spots, bordered with sooty-black; the scales of the sides and back hexagonal, rather narrower at their extremities. This species was found in great plenty near Embomma on the ground. The back is very faintly marked with some transverse narrow whitish bands, spotted with black.

Fishes.

About eighty species of this class were taken during the voyage; but as I have not yet studied the marine fishes, I can say but little about them. Two species of a genus (which appears to be new) allied to *Leptocephalus* were taken off the African coast. Their head is smaller and more pointed than that of *Leptocephalus*; their bodies are even more compressed, but are marked in the same manner by transverse zigzag lines, and their teeth are similar. Rudiments only of the dorsal and anal fins exist towards the extremity of their bodies, and no pectoral fins can be discovered.

In the river itself three new species were discovered, namely:

Sp. 1. *Silurus Congensis*. With the upper nostrils the angles of the mouth and each side of the chin furnished with a filament, the first ray of the dorsal and pectoral fins serrated towards the point, which is unconnected with the second ray; the second ray very much elongated and attenuated, the laciniæ of the tale acute.

Obs. The first ray of the dorsal fin is only serrated towards its point, the unconnected apex itself being destitute of teeth. The first ray of the pectoral fins, is serrated above the unattached part, and the teeth are continued downwards to near its middle. It is akin to *Silurus mystus* (*Geoff. Poiss. de Nile.*) but may very easily be distinguished from it by the characters of the pectoral fins, and by the presence of the filaments on the chin The filaments of the chin and nostrils are nearly of equal length; those of the angles of the mouth are very long.

Sp. 2. *Pimelodus Cranchii*. Chin on each side nostrils and angles of the mouth furnished with a filament, pectoral fins with the first ray shorter than the second, very strong and sulcated; behind very strongly serrated, anterior

dorsal fin, with the first ray thick striated without teeth, caudal fin with lanceolate laciniæ.

Obs. The front of the head is obtuse and rounded; the upper part is irregularly sulcated, and the vertex is striated: the striæ being disposed in rays; the mouth is large; the filaments of the nostrils are very short, and those of the angles of the mouth are a third longer than those of the chin. The hinder dorsal fin is short and not very fleshy.

Sp. 3. *Oxyrhynchus deliciosus.* The scales concentrically sculptured, the dorsal ones rounded; those of the sides and belly very broad, the teeth linear acuminated behind and before.

Obs. This animal is doubtless referable to the genus *Oxyrhynchus* of Athenæus.* It differs from its congener *Momyrus anguilloides* (*Geoff. Poiss. de Nil.* pl. VII.) in the form of its scales, (which in that species are of the same size and form on all parts of the body) and in the shape of the dorsal fin, which in *O. deliciosus* is more acute in its hinder upper edge. This fish is very common in the river, and its flesh is of a most exquisite flavour.

Cephalopoda.†

Of this class one new genus, and six new species were discovered; four of which are figured in the annexed plate.

Genus I. Ocythoë. *Sp.* 1. *Ocythoë Cranchii*, of which a description is given in Appendix, No. III.

Genus II. Cranchia.‡ Body oval, sack-shaped: fins approximating, their extremities free: neck with a frenum behind, connecting it with the sack, and with two other frena connecting it with the sack before.

Sp. 1. *Cranchia scabra.* Sack rough, with hard rough tubercles.

Sp. 2. *Cranchia maculata.* Sack smooth, beautifully mottled with distant ovate spots.

* *Deipnos*, lib. iii. 116; viii. 356; vii. 312.

† For a synopsis of the genera of this class see Zoological Miscellany, vol. iii.

‡ The localities of the two species sent home were unfortunately lost.

Genus III. Loligo. The characters presented by three new species, are very different from those observed in the *Loligines* of the European seas. The distal suckers of the larger or supplementary arms, are produced into hooked processes, and in two of them all the suckers of the shorter arms are formed in the same manner.

Sp. 1. *Loligo Banksii.* Shorter arms with globose simple suckers, the fins forming, by their union, a rhomboidal figure.

Obs. The colour of this, when alive, is pale flesh. The body is yellowish behind, sprinkled irregularly with blackish spots teinted with purple. The external aspect of the arms is freckled with purplish. The under parts of the fins without spots. One specimen was taken in the Gulph of Guinea.

Sp. 2. *Loligo lcptura.* Shorter arms with hooks on their suckers, longer arms with free hooks on the distal suckers, tail abrupt and slender.

Obs. The body and external aspects of the arms are smooth, with a few tubercles arranged into longitudinal lines. Two were taken in 1, 8, 0 N. lat. 7, 26, 30 E. long.

Sp. 3. *Loligo Smithii.* Shorter arms with hooks on their suckers, larger arms with the hooks of the distal suckers furnished anteriorly with a membrane, tail gradually attenuated.

Obs. Body and arms externally tuberculated; the tubercles purple with white lips, and arranged into longitudinal lines.

Pteropoda.†

Of this division of the molluscous tribe of animals, two species of Peron's genus *Clcodora* were taken in south lat. 2, 14, 0 E. long. 9, 55, 15, and S.

* In the museum of the College of Surgeons is preserved part of the arm of a large and unknown animal of this class, in which the suckers are all furnished with distinct strong and free hooks.

† Of the genus Firola (whose situation has not yet been satisfactorily ascertained, but which, with Cuvier, I am disposed to consider as more nearly allied to the Gasteropoda, than to any other class) a new species was found in S. lat. 3, 15, 0, E. long. 9, 38, 0, viz. *Firola arcuata.* Dorsal fin simple, vermiform appendage none, tail arched above, without any vermiform appendage. Two other species were sketched by Lieut. Hawkey, but were not received.

lat. 2, 41, 0, E. long. 9, 16, 0, both having a spinous process on each side of their shell, near its opening. One species is beautifully sulcated transversely, and the other but slightly so.

Hyalæa tridentata (vulgarly called the chariot Anomia) was also taken in abundance in the Gulph of Guinea.

Gasteropoda.

Janthina fragilis was the only species of this class that was brought home; all the rest, as well as the collection of the species of the following class,

Acephala,

were lost.

Cirripedes.

Nine new species of *Barnacles* were discovered, all of which are very interesting; since they augment especially the genus *Cineras*, of which but two species only were known, and also two divisions of Hill's genus *Pentalasmis*, of which likewise very few have been described.

Sp. 1. *Cineras Chelonophilus.* Body lanceolate, peduncle abrupt, upper scales small and acuminated behind, the hinder scale straight and linear.

Obs. The purplish stripes of this species are very faint, and the scales beneath the legs are covered by a thin membrane, which renders them very opaque. The space between the superior and posterior scales is very great. A large quantity occurred adhering to the legs, neck, and shell of some turtles that were taken in 36, 15, 0 N. lat. 16, 32,0 W. long. See page 9.

Sp. 2. *Cineras Cranchii.* Body obliquely truncated above; the peduncle rather abrupt, upper scales linear with obtuse extremities, hinder scale with a subgibbose apex.

Obs. The vittæ are three on each side, very strong; the two anterior ones are often interrupted.

Sp. 3. *Cineras Olfersii.* Body above acuminated, upper scales with both extremities (especially the hinder one) acuminated, hinder scale at its middle subgeniculated. Found on Fucus natans (*Linn.*)

PENTALASMIS.

Divisions of the genus.

* *Hinder scale simply arcuated. Lateral scales smooth.*

** *Hinder scale simply arcuated. Lateral scales costated.*

*** *Hinder scale abruptly bent below the middle.*

Sp. 1. *Pentalasmis* (*) *Cheloniæ*. Superior scales broad, rounded at their points, hinder scale convex. Found on turtles in N. lat. 36, 15, 0 W. long. 16, 32, 0. Page 9.

Sp. 2. *Pentalasmis* (*) *Hillii*. Superior scales narrow, anteriorly obliquely-truncated; (hence as if produced behind), hinder scale carinated below.

Sp. 3. *Pentalasmis* (**) *Spirulæ*. Rather convex, upper scales with their points anteriorly produced.

β With the ribs spined. Found in great abundance adhering to the floating shells of SPIRULÆ. (to which in several specimens part of the animal still adhered) 22, 0, 0 N. lat. 19, 17, 0 W. long.

Sp. 4. *Pentalasmis* (**) *dilatata*. Larger scales anteriorly dilated, hinder scale with granulated striæ (often behind with two or four teeth.) 0, 14, 0, N. lat. 6, 18, 52, E. long. adhering to *Janthina fragilis*.

Sp. 5. *Pentalasmis* (***) *Donovani*. Hinder scale, with a longitudinal elevated little line; angle rectangular; bend obtuse with a transverse elevated little line. Taken in 0, 38, 0 S. lat. 7, 50, 0 E. long.

Sp. 6. *Pentalasmis* (***) *Spirulicola*. Hinder scale narrow carinated from the apex to the angle; angle rectangular, geniculated, prominent. Found on shells of Spirula, 22, 0, 0 N. lat. 19, 17, 0 W. long.

CRUSTACEA.

Portunus, (a new species,) without spines on the front aspect of its arms, was taken in the Gulph of Guinea.

Lupa; of this genus three new species were discovered, all of which belong to that section in which the hinder lateral spine of the shell is very much elongated.

Machærus; a new genus allied to *Gonoplax*, but differing in having short

The peduncle of those of the first division is very long, or moderately so; of the two other divisions extremely short.

peduncles to its eyes, which are inserted into the same part of the shell as in that genus.

Pilumnus, (a new species.) Gulph of Guinea.

Grapsus minutus, and a new species. Gulph of Guinea.

Dorippe. Species not determined.

Sp. 1. *Megalopa* Cranchii* (new species) with a broad, entire, porrected rostrum, having its point terminating in one spine, and each side armed with a tooth, hinder coxæ armed with a straight spine. Gulph of Guinea. This species belongs to the same division of the genus with those of our seas.

Sp. 2. *Megalopa maculata*. (new species) Shell smooth, and spotted with black, rostrum narrow and abrubtly deflexed.

Sp. 3. *Megalopa sculpta*. (new species) Shell sculptured (like that of *Cancer floridus Herbst*) and very hairy, rostrum narrow and abruptly deflexed.

Obs. These two species were likewise taken in the Gulph of Guinea; they form a new division of the genus characterised by the deflexed rostra.

Scyllarus. Of this genus, a common species was taken during the voyage, and having been preserved in spirits, allowed me to ascertain by dissection, that its nervous system is in all respects similar to that of the other macrourous crustacea. Its lamelliform broad antennæ send their nerves to the same ganglion. The optic nerves are more curved in their course.

Of the large group of macrura comprehending the shrimps and prawns there are eleven new species, and seven new genera.

A new genus allied to *Nebalia*.

Zoëa. The type of this genus was discovered in the Atlantic by Bosc, who believed it to hold an intermediate situation between the crustacea with pedunculated, and those with sessile eyes. By Latreille it was referred to the *Entomastraca*. In N. lat. 1, 36, 0 E. long. 8, 46, 37, Mr. Cranch took a new species of this interesting genus, by which I have been enabled to verify the opinion published in the Supplement to the Encyclopædia Britannica, (vol. i. p. 423) where I have referred it to the crustacea with pedunculated eyes.

The last segment of the abdomen on each side is furnished with two moveable plates, which I formerly overlooked.

Zoëa clavata. The eyes of this species, like that of its congener, are large, with very short peduncles. The shell is somewhat triangular; the front being terminated by a long spiniform rostrum.* The middle of the back and the sides are armed with a long clavate spine.

Obs. It differs from Bosc's *Zoëa pelagica* in having clubbed instead of acute spines. Its situation is certainly in the same group with *Nebalia.*

Two new genera of the same natural family with *Squilla*, have established the situation of that genus. They have in common with it sixteen locomotive legs: the anterior pair is elongate and slender; the second pair much elongated and raptorious; the three following pairs are short, with their last joint compressed, and terminated by a moveable claw; the three hinder pairs are short, and remote from the rest, the last joint but one being furnished with a moveable appendice at its base.† Mouth with two mandibles and four maxillæ. Upper antennæ with three articulated setæ. Under antennæ with an elongate lamella at their base. Abdomen with two moveable foliaceous appendages arising from a common peduncle, attached to each side of the belly: the peduncle of those of the last joint is produced into a spine; the exterior lamella composed of two joints. The second pair of legs of the following new genera, *Smerdis* and *Alima*, have none of those denticulations which afford so striking a character in those of *Squilla.*

Gen. I. Smerdis. Sides of the shell approximate beneath. Mouth anterior.

Sp. 1. *Smerdis vulgaris.* Shell with a very short spine on the hinder part of its back.

This animal was found in great plenty every day from the latter end of April to the beginning of June.

Sp. 2. *Smerdis armata.* Shell with a very long spine on the hinder part of its back. A few specimens of this species were taken between the latter end of

* Which is broken in the only tolerable specimen that was sent home.

† All the legs of these genera, as well as of *Squilla*, have each a foliaceous appendage at their base, which are certainly the organs of respiration. In Squilla, the outer foliaceous appendages beneath the abdomen, have filamentous processes, which the French naturalists have considered to be the respiratory organs. The two new genera want these filaments, but have those appendages (common to all the malacostraca with pedunculated eyes) at the bases of their legs.

April and twentieth of May, and were not seen afterwards, although the preceeding sort were still abundant.

Gen. II. ALIMA. Thorax elongate with the sides not approximating. Mouth placed towards the hinder part of the thorax.

Sp. 1. *Alima hyalina.* Occurred abundantly at Porto Praya, and in 7, 37, 0 N. lat. 17, 34, 15 W. long.

PHYLLOSOMA,* the most curious genus of crustacea that has yet been discovered, and of which there are at least four very distinct species, occurred in the greatest profusion from the 10th April to the 30th May. The shell of this genus is membranaceous and as thin as a leaf; the part containing the mouth, and from whence the legs arise, is drawn backwards and projects beyond the hinder part of the shell. The front of the shell bears the eyes and antennæ: the eyes have the first joint of their peduncles very much elongated; the second joint is short, and the eyes themselves are abruptly larger than their peduncles. The superior antennæ are (as in all the other malacostraca with pedunculated eyes) bifid. The inferior antennæ are variable in their projection, and form, affording characters which, for the present, I shall only venture to use for the purpose of specific distinctions The abdomen has the usual appendages beneath, and those of the last joint are converted into swimming or rather steering lamellæ. The mouth, when first viewed, appears to be trilobate; this arises from a clypeus similar to that covering the mouth of *Squilla*, and the prominence of the exterior sides of the mandibles, which are much curved and dilated towards their middle; their points are bifid, and one lacinia is unidentate within. Two pairs of maxillæ are very distinctly to be seen; the outer ones are terminated by three spines. I have not had time to ascertain the modification of the interior ones, nor to ascertain the existence and insertion of the palpi. The front pair of legs is extremely short and dilated at its base, with all the joints (the first excepted?) confluent. The second pair is short; the third joint at its base has a flagrum which is articulated towards its point; the last joint is terminated by long spines and a claw with unequal spines. The five following pairs of legs are very long, and the hinder ones gradually

The third, fourth, fifth, sixth, and seventh pairs of legs, in the numerous specimens sent home, were for the most part broken off at their third joint, the flagrum only remaining. See the plate.

encrease in length: at the base of the second joint, each is furnished with bipartite flagrum, the second division of which is articulated and ciliated: the third pair is terminated by a simple ciliated joint; the three next pair by claws, which in some of the species are ciliated with spines, and meet little spines on the interior side of the apex of the joints to which they are attached: the last pair is abruptly shorter than the preceding legs, and varies in the number of its joints, from two to five. The organs, termed ears by the French naturalists, are very large and prominent. I have not examined the nervous system.

1. *Phyllosoma brevicorne.* Inferior antennæ shorter than the superior ones, with the second division slightly dilated externally; the two last divisions setaceous; hinder pair of legs two-jointed; the second joint simple.
2. *Phyllosoma laticorne.* Inferior antennæ a little longer than the superior ones, the second joint very much dilated externally, and produced at its external apex, the last division lanceolate, hinder pair of legs five-jointed, the last joint with a simple slightly curved claw.

   Two specimens only were taken, and their locality was not set down.
3. *Phyllosoma commune.* Inferior antennæ filiform rather more than twice the length of the superior ones, hinder pair of legs four-jointed; the last joint terminated by a straight simple claw.

   Taken at Porto Praya and during the voyage until 2, 58, 0 S. lat. 9, 21, 22 E. long. in the greatest profusion.
4. *Phyllosoma clavicorne.* Inferior antennæ filiform, half as long again as the thorax, with the extremity of the last division clavate, hinder pair of legs four-jointed; the last joint terminated by a simple and very slightly curved claw. Occasionally taken with the preceding species.

From the above very general observations, it will be very evident to entomologists, that *Phyllosoma* constitutes a family of crustacea-macroura, to which no other discovered genus can be referred.

Amongst the sessile-eyed crustacea, with compressed bodies, there are four new species which constitute the types of as many genera, and of those with depressed bodies, there are; of

SPHÆROMA, a new species.

CYMOTHOA, a new species.

And a new species of an unnamed genus, intermediate betwixt the genera *Ægа* and *Eurydice.*

Entomostraca.

Two new species of the genus *Caligus* of Müller were found on fishes.

Myriapoda.

Iulus, two species, one of which is new.
Scolopendra, one nondescript species.

Insecta.

Thirty-six species only reached England in a tolerable state, the rest were entirely destroyed by insects and damp. Amongst them is a new genus of the family *Scarabæidea*, and probably there are five or six new species, which I have not yet found time to examine.

Anneleides.

A new species of *Nereis* was taken in a bit of floating wood 0, 21, 0 N. lat. 5, 49, 37 E. long. together with a genus not known to me.

Entozoa.

One species of this parasitical class, was taken out of the intestinal canal of an albicore.

Acalephiæ.

Porpita. Disc cartilaginous, round, composed of rays. Stomach central and round. Mouth slightly prominent and capable of very great distention. Whole underside covered by tentacula, those of the middle terminated by suckers, those next the margin larger (and simple or at least terminated by indistinct suckers.*)

Of this genus, to which the above characters are now given, a new species, was found in 8, 12, 0 N. lat. 18, 13, 7 W. long. viz,

Porpita granulata. The rays of the upper part of the disc granulated by pairs. The stomach of one specimen was filled with the debris of a fish.

* In specimens of very soft animals preserved in spirits of wine, where the organs are much contracted, it is generally impossible to ascertain all the characters of each part. Naturalists should therefore take every opportunity to describe them whilst alive, since all are not gifted with the extraordinary powers of M. Savigny.

VELELLA. To this genus likewise some additional characters may be added. The disc is oval and cartilaginous, having an oblique crest on its upper side. The disc itself is composed of two thin oval plates joined together by several concentric septa. The whole of the cartilaginous part is covered by a dense membrane, and its inferior surface is covered by tentacula, which surround its stomach; those towards the centre are terminated by suckers, those towards the margin are longest, and appear to be simple. The stomach is oblong, and the mouth very prominent. The membrane in passing from the upper part of the disc, to the lower, is produced beyond its margin, and the produced part is consequently composed of two membranes, which are united towards the margin of the disc.

1. *Velella scaphidea.* Crest set on the disc from left to right; its apex abruptly produced.

Velella scaphidea. *Peron et Le Seuer. Atlas, pl. xxx.*

2. *Velella pyramidalis.* Crest set on the disc from right to left; its apex gradually produced, pyramidal.

Taken in plenty in 26, 34, 0 N. lat. 18, 28, 0 W. long.

From the MS. observations made by Mr. Cranch, it is evident that a box containing specimens of marine animals, preserved in spirits, and a very large portion of the birds, have been lost. I have before remarked, that of the birds received, those enumerated, were the only specimens in a state fit for examination; the greater part being totally destroyed by insects.

This produced membrane is to be observed in all the species, and therefore cannot be taken as a specific character, as has been done by Lamarck, for our European species.

APPENDIX. No. V

Observations, Systematical and Geographical, on Professor CHRISTIAN SMITH'S *Collection of Plants from the Vicinity of the River Congo, by* ROBERT BROWN, *F. R. S.*

THE Herbarium formed by the late Professor Smith and his assistant Mr. David Lockhart, on the banks of the Congo, was, on its arrival in England, placed at the disposal of Sir Joseph Banks; under whose inspection it has been arranged; the more remarkable species have been determined; and the whole collection has been so far examined as the very limited time which could be devoted to this object allowed.

In the following pages will be found the more general results only of this examination; descriptions of the new genera and species being reserved for a future publication.

In communicating these results I shall follow nearly the same plan as that adopted in the Botanical Appendix to Captain Flinders's Voyage to Terra Australis:

1st. Stating what relates to the three Primary Divisions of Plants.

2dly. Proceeding to notice whatever appears most remarkable in the several Natural Orders of which the collection consists; and,

3dly. Concluding with a general comparison of the vegetation on the line of the river Congo, with that of other equinoctial countries.

I. The number of species in the herbarium somewhat exceeds 600; the specimens of several of which are, indeed, imperfect; but they are all referable with certainty to the primary divisions, and, with very few exceptions, to the natural orders to which they belong.

Of the Primary Divisions, the Dicotyledonous plants amount to 460
The Monocotyledonous to - - - - - 113
And of the Acotyledonous, in which Ferns are included, there are only - - - - 33 species.

It is a necessary preliminary, with reference especially to the first part of my subject, to determine whether this herbarium, which was collected in a period not exceeding two months, and in a season somewhat unfavourable, can warrant

any conclusions concerning the proportional numbers of the three primary divisions, or of the principal natural orders in the country in which it was formed.

Its value in this respect must depend on the relation it may be supposed to have to the whole vegetation of the tract examined, and on the probability of the circumstances under which it was formed, not materially affecting the proportions in question.

Its probable relation to the complete Flora of the country examined, can at present be judged of only by comparing it with collections from different parts of the same coast of equinoctial Africa.

The first considerable herbarium from this coast, of which we have any account, is that formed by Adanson, on the banks of the Senegal, during a residence of nearly four years. Adanson himself has not given the extent of his collection, but as he has stated the new species contained in it to be 300,* it may I think, be inferred, that altogether it did not exceed 600, which is hardly equal to that from Congo. Limited as this supposed extent of Adanson's herbarium may appear, it is estimated on the most moderate calculation of the proportion that new species were likely to bear to the whole vegetation of that part of equinoctial Africa, which he was the first botanist to examine; allowance being at the same time made for the disposition, manifested in the account of his travels, to reduce the plants which he observed to the nearly related species of other countries.

From the herbarium, and manuscripts in the library of Sir Joseph Banks, it appears, that the species of plants collected by Mr. Smeathman at Sierra Leone, during a residence of more than two years, amounted to 450.

On the same authority I find that the herbarium formed in the neighbourhood of Cape Coast by Mr. William Brass, an intelligent collector, consisted of only 250 species.

And I have some reason to believe, that the most extensive and valuable collection ever brought from the west coast of equinoctial Africa, namely, that formed by Professor Afzelius, during his residence of several years at Sierra Leone, does not exceed 1200 species: although that eminent naturalist, in the course of his researches, must have examined a much greater extent of country than was seen in the expedition to Congo.

From these, which are the only facts I have been able to meet with respecting

* *Fam. des Plant.* 1. *p. cxvi.*

the number of species collected on different parts of this line of coast, I am inclined to regard the herbarium from Congo as containing so considerable a part of the whole vegetation, that it may be employed, though certainly not with complete confidence, in determining the proportional numbers both of the primary divisions and principal natural orders of the tract examined; especially as I find a remarkable coincidence between these proportions in this herbarium and in that of Smeathman from Sierra Leone.

I may remark here, that from the very limited extent of the collections of plants above enumerated, as well as from what we know of the north coast of New Holland, and I believe I may add of the Flora of India, it would seem that the comparative number of species in equal areas within the tropics and in the lower latitudes beyond them, has not been correctly estimated: and that the great superiority of the intratropical ratio given by Baron Humboldt, deduced probably from his own observations in America, can hardly be extended to other equinoctial countries. In Africa and New Holland, at least, the greatest number of species in a given extent of surface does not appear to exist within the tropics, but nearly in the parallel of the Cape of Good Hope.

In the sketch which I have given of the botany of New Holland, I first suggested the enquiry respecting the proportions of the primary divisions of plants, as connected with climate; and I then ventured to state that "from the equator to 30° lat. in the northern hemisphere at least, the species of Dicotyledonous plants are to the Monocotyledonous as about 5 to 1, in some cases considerably exceeding and in a very few, falling somewhat short of this proportion, and that in the higher latitudes a gradual diminution of dicotyledones takes place until in about 60° N., and 55° S. lat. they scarcely equal half their intratropical proportion." *

Since the publication of the Essay from which this quotation is taken, the illustrious traveller Baron Humboldt, to whom every part of botany, and especially botanical geography, is so greatly indebted, has prosecuted this subject further, by extending the enquiry to the natural orders of plants: and in the valuable dissertation prefixed to his great botanical work,† has adopted the same equinoctial proportion of Monocotyledones to Dicotyledones as that given

* *Flinders' Voyage to Terra Australis*, 2. *p.* 538.

† Nova Genera et Species Plantarum, quas in perigrinatione orbis novi collegerunt, &c. *Amat. Bonpland* et *Alex. de Humboldt.* ex sched. autogr. in ord. dig. *C. S. Kunth.* 1815, *Parisiis.*

in the Paper above quoted; a ratio which seems to be confirmed by his own extensive herbarium.

I had remarked, however, in the Essay referred to, that the relative numbers of these two primary divisions in the equinoctial parts of New Holland appeared to differ considerably from those which I had regarded as general within the tropics; dicotyledones being to monocotyledones only as 4 to 1. But this proportion of New Holland very nearly agrees with that of the Congo and Sierra Leone collections. And from an examination of the materials composing Dr. Roxburgh's unpublished Flora Indica, which I had formerly judged of merely by the index of genera and species, I am inclined to think that nearly the same proportion exists on the shores of India.

Though this may be the general proportion of the coasts, and in tracts of but little varied surface within the tropics, it seems at the same time probable from Baron Humboldt's extensive collections, and from what we know of the vegetation of the West India islands, that in equinoctial America, in tracts including a considerable portion of high land, the ratio of dicotyledones to monocotyledones is at least that of 11 to 2, or perhaps nearly 6 to 1. Whether this or a somewhat diminished proportion of dicotyledones exists also in similar regions of other equinoctial countries, we have not yet sufficient materials for determining.

Upon the whole, however, it would seem from the facts of which we are already in possession, that the proportions of the two primary divisions of phænogamous plants, vary considerably even within the tropics, from circumstances connected certainly in some degree with temperature. But there are facts also which render it probable, that these proportions are not solely dependent on climate. Thus the proportion of the Congo collection, which is also that of the equinoctial part of New Holland, is found to exist both in North and South Africa, as well as in Van Diemen's Island, and in the south of Europe.

It is true indeed that from about 45° as far as to 60°, or perhaps even to 65° N. lat. there appears to be a gradual diminution in the relative number of dicotyledones; but it by no means follows, that in still higher latitudes a further reduction of this primary division takes place. On the contrary, it seems probable from Chevalier Giesecke's list of the plants of the west coast of Greenland,* on different parts of which, from lat. 60° to 72°, he resided several

* Article Greenland, in Brewster's Edinburgh Encyclopædia.

years, that the relative numbers of the two primary divisions of phænogamous plants are inverted on the more northern parts of that coast;* dicotyledones being to monocotyledones, in the list referred to, as about 4 to 1, or nearly as on the shores of equinoctial countries. And analogous to this inversion it appears, that at corresponding Alpine heights, both in the temperate and frigid zones, the proportion of dicotyledones is still further increased.

The ACOTYLEDONOUS or cryptogamous plants of the herbarium from Congo, are to the phænogamous as about 1 to 18. Some allowance is here to be made for the season, peculiarly unfavourable, no doubt, for the investigation of this class of plants. But it is not likely that Professor Smith, who had particularly studied most of the cryptogamous tribes, should have neglected them in this expedition; and the circumstance of the very few imperfect specimens of Mosses in the collection being carefully preserved and separately enveloped in paper, seems to prove the attention paid to, and consequently the great rarity of, this order at least; which, however, is not more striking than what I have formerly noticed with respect to some parts of the north coast of New Holland.†

I have in the same place considered the Acotyledones of equinoctial New Holland, as probably forming but one-thirteenth of the whole number of plants, while the general equinoctial proportion was conjectured to be one-sixth. This general ratio, however, is certainly over-rated, though it is probably an approximation to that of countries containing a considerable portion of high land. Within the tropics therefore, it would seem that the ratio of acotyledonous to phænogamous plants, varies from that of 1:15 to 1:5; the former being considered as an approximation to the proportion of the shores, the latter to that of mountainous countries.

* That some change of this kind takes place on that coast might perhaps have been conjectured from a passage in Hans Egede's Description of Greenland, where it is stated, that although from lat. 60° to 65° there is a considerable proportion of good meadow land, yet in the more northern parts, "the inhabitants cannot gather grass "enough to put in their shoes, to keep their feet warm, but are obliged to buy it from "the southern parts." (English Translation, p. 44, and 47.)

† *Flinders' Voyage*, 2. *p.* 539.

II. The NATURAL ORDERS of which the herbarium from Congo consists, are 87 in number; besides a very few genera not referable to any families yet established. More than half the species, however, belong to nine orders, namely, to *Filices*, *Gramineæ*, *Cyperaceæ*, *Convolvulaceæ*, *Rubiaceæ*, *Compositæ*, *Malvaceæ*, *Leguminosæ*, and *Euphorbiaceæ*; all of which have their greatest number of species in the lower latitudes, and several within the tropics.

I now proceed to make some observations on the orders above enumerated, and on such of the other families, included in the collection, as present any thing remarkable, either in their geographical distribution, or in their structure; more especially where the latter establishes or suggests new affinities; and I shall take them nearly in the same order, as that followed in the botanical appendix to Captain Flinders's Voyage.

ANONACEÆ. Only three species of this family are contained in the collection. One of these is *Anona senegalensis*, of which the genus has been considered doubtful even by M. Dunal in his late valuable Monograph of the order.* That it really belongs to Anona, however, appears from the specimen with ripe fruit preserved in the collection. It is remarkable therefore as the only species of this genus yet known which is not a native of equinoctial America. for Anona asiatica, of which Linnæus had no specimen in his herbarium, when he first proposed it under this name, according to the original synonyms, is nothing more than Anona muricata: and A. obtusiflora, supposed by M. Tussac† to have been introduced into the American Islands from Asia, does not appear to differ from A. mucosa of Jacquin, which is known to be a native of Martinica.

The second plant of this order in the collection is very nearly related to *Piper Æthiopicum* of the shops, the Unona æthiopica, and perhaps also Unona aromatica of Dunal:‡ these with several other plants already published, form a genus, which, like Anona, is common to America and Africa, but of which no species has yet been observed in Asia.

Of MALPIGHIACEÆ, an order chiefly belonging to equinoctial America, there are also three species from Congo.

* *Monogr. de la famille des Anonacées, p.* 76.

† *Flore des Antilles*, 1. *p.* 193. ‡ *Anonac. p.* 113 *et* 112.

One of these is *Banisteria Leona*, first described, from Smeathman's specimens, by Cavanilles,* who has added the fruit of a very different plant to his figure, and quotes the herbarium of M. de Jussieu as authority for this species being likewise a native of America, which is, I believe, equally a mistake.

The two remaining plants of Malpighiaceæ, in the collection, with some additional species from different parts of the coast, form a new genus, having the fruit of Banisteria, but with sufficient distinguishing characters in the parts of the flower, and remarkable in having alternate leaves. From this disposition of leaves, in which the genus here noticed differs from all others decidedly belonging to the order, an additional argument is afforded, for referring *Vitmannia* to Malpighiaceæ, as proposed by M. du Petit Thouars :† and the approximation, though perhaps not the absolute union of Erythroxylon to the same family is confirmed.

It may not be improper here to notice a very remarkable deviation from the usual structure of leaves in Malpighiaceæ, which is supposed to occur in a plant of equinoctial Africa, namely *Flabellaria pinnata* of Cavanilles (the *Hiræa pinnata* of Willdenow.) It is certain, however, that the figure given by Cavanilles of this species is made up from two very different genera; the pinnated leaf belonging to an unpublished *Pterocarpus*; the fructification to a species of *Hiræa*, having simple opposite leaves. The evidence respecting this blunder, which was detected by Mr. Dryander, is to be found in the herbarium of Sir Joseph Banks.

In Malpighiaceæ the insertion of the ovulum is towards its apex, or considerably above its middle; and the radicle of the embryo is uniformly superior. In these points Banisteria presents no exception to the general structure, though Gærtner has described its radicle as inferior, and M. de Jussieu does not appear to have satisfied himself respecting the fact.‡ It appears, however, that M. Richard is aware of the constancy in the direction of the embryo in this order.§

HIPPOCRATICEÆ. M. de Jussieu has lately proposed this as a distinct family,‖ of which there are two plants in the collection. The first is a species of Hippocratea; the second is referable to Salacia.

* *Dissert.* 424, *t.* 247.

† *In Nov. gen. Madagasc.* n. 46, (Biporeia.)

‡ *Annal. du Mus. d'Hist. Nat.* 18, *p.* 480.

§ *Mem. du Mus. d'Hist. Nat.* 2, *p.* 400.

‖ *Annal. du Mus. d'Hist. Nat* 18, *p.* 183.

In Hippocraticeæ, the insertion of the ovula is either towards the base, or is central; the direction of the radicle is always inferior. In these points of structure, which are left undetermined by M. de Jussieu, they differ from Malpighiaceæ, but agree with Celastrinæ, to which, notwithstanding the difference in insertion and number of stamina, and in the want of albumen, they appear to me to have a considerable degree of affinity; especially to Elæodendrum, where the albumen is hardly visible, and to Ptelidium, as suggested by M. du Petit Thouars, in which it is reduced to a thin membrane.

SAPINDACEÆ. Only four plants of this natural family, which is almost entirely equinoctial, occur in the herbarium. Two of these are new species of Sapindus. The third is probably not specifically different from *Cardiospermum grandiflorum* of the West India Islands. And the fourth is so nearly related to *Paullinia pinnata*, of the opposite coast of America, as to be with difficulty distinguished from it. M. de Jussieu,† who probably intends the same plant, when he states P. pinnata to be a native of equinoctial Africa, has also described a second species from Senegal.‡ No other species of this genus has hitherto been found, except in equinoctial America; for Paullinia japonica of Thunberg, probably belongs even to a different natural order. The species from Congo, however, seems to be a very general plant on this line of coast; having been found by Brass near Cape Coast, and by Park on the banks of the Gambia.

In Sapindaceæ there is not the same constancy in the insertion of the ovulum and consequent direction of embryo, as in the two preceding orders. For although, in the far greater part of this family, the ovulum is erect and the radicle of the embryo inferior, yet it includes more than one genus in which both the seeds and the embryo are inverted. With this fact it would seem M. de Jussieu is unacquainted; § and he is surely not aware that in his late Memoir on *Melicocca** he has referred plants to that genus differing from each other in this important point of structure.

TILIACEÆ. It is remarkable that of only nine species belonging to this

* *Hist. des Veget. des Isles de l'Afrique*, p. 34.

† *In Annal. du Mus. d'Hist Nat.* 4, p. 347. ‡ *loc. cit.* p. 348.

§ *Annal. du Mus. d'Hist. Nat.* 18, p. 476. ‖ *Mém. du Mus. d'Hist. Nat.* 3, p. 179.

family in Professor Smith's herbarium, three should form genera hitherto unnoticed.

The *first* of these new genera is a shrub, in several of its characters related to Sparmannia, like which, it has the greater part of its outer stamina destitute of antheræ: in the structure of its fruit, however, it approaches more nearly to Corchorus.

The *second* genus also agrees with Corchorus in its fruit; but differs from it sufficiently in the form and dehiscence of the antheræ; as well as in the short pedicellus, like that of Grewia, elevating its stamina and pistillum.

The *third*, of which the specimens are in fruit only, fortunately, however, accompanied by the persistent flower, is remarkable in having a calyx of three lobes, while its corolla consists of five petals; the stamina are in indefinite number; and the fruit is composed of five single-seeded capsules, connected only at the base. In the want of symmetry or proportion between the divisions of its calyx and corolla, it resembles the *Chlenaceæ* of M. du Petit Thouars,* as well as *Oncoba* of Forskael and *Ventenatia* of M. de Beauvois.† The existence of this new genus decidedly belonging to Tiliaceæ, and having a considerable resemblance to Ventenatia, whose place in the system is, indeed, not yet determined, but of which the habit is nearly that of Rhodolæna, seems in some degree to confirm M. du Petit Thouars's opinion of the near relation of Chlenaceæ to Tiliaceæ; though M. de Jussieu, in placing it between Ebenaceæ and Rhodoraceæ,‡ appears to take a very different view of its affinities.

MALVACEÆ. Of this family 18 species were observed on the banks of the Congo. It forms, therefore, about one thirty-fourth part of the Phænogamous plants of the collection; which is somewhat greater than the equinoctial proportion of the order, as stated in Baron Humboldt's dissertation,§ but nearly agrees with that of India, according to Dr. Roxburgh's unpublished Flora Indica.

The greater part of the Malvaceæ of the collection, belong to *Sida* and *Hibiscus*; and certain species of both these genera are common to India and America. *Urena americana* and *Malachra radiata*, hitherto supposed to be

* *Hist des Végét. des Isles de l'Afrique*, p. 46. † *Flore d'Oware*, 1, p. 29, t. 17.

‡ *Mirbel Elem. de Physiol. Veg. et de Bot.* 2, p. 855.

§ *Prolegomena*, p. xviii. *De Distrib. Geogr. Plant.* p. 43.

natives of America only, are also contained in the collection; and the loftiest tree seen on the banks of the Congo, is a species of *Bombax*, which, as far as can be determined from the very imperfect specimens preserved in the herbarium, does not differ from *Bombax pentandrum* of America and India. I have formerly remarked* that Malvaceæ, Tiliaceæ, Hermanniaceæ, Butneriaceæ, and Sterculiaceæ, constitute one natural class; of which the orders appear to me as nearly related as the different sections of Rosaceæ are to each other. In both these, as well as in several other cases that might be mentioned, there seems to be a necessity for the establishment of natural classes, to which proper names, derived from the orders best known, and differing perhaps in termination, might be given.

It is remarkable that the most general character connecting the different orders of the class now proposed, and which may be named from its principal order Malvaceæ, should be that of the valvular æstivation of the Calyx: for several, at least, of the genera at present referred to Tiliaceæ, in which this character is not found, ought probably, for other reasons likewise, to be excluded from that order: and hence perhaps also the Chlenaceæ, though nearly related, are not strictly referable to the class Malvaceæ, from all of whose orders, it must be admitted, they differ considerably in habit.

LEGUMINOSÆ. According to Baron Humbolt,† this family, or class, as I am rather disposed to consider it, constitutes one-twelfth of the Phænogamous plants within the tropics. Its proportion, however, is much greater in Professor Smith's herbarium, in which there are 96 species belonging to it, or nearly one-sixth of the whole collection. And, ample allowance being made for the lateness of the season when the collection was formed, which might be supposed to reduce the number of this family less than many of the others, Leguminosæ may be stated as forming one-eighth of the Phænogamous plants on the banks of the Congo. In India, it probably forms about one-ninth, which is also nearly the proportion it bears to Phænogamous plants in the equinoctial part of New Holland.

I have formerly proposed to subdivide Leguminosæ into three orders.‡

Of the first of these orders, MIMOSEÆ, there are only eight species from

Flinders's Voy. 2, *p.* 540. † *op. citat.* ‡ *Flinders's Voy.* 2, *p.* 551.

Congo, seven of which belong to Acacia, as it is at present constituted: the eighth is a sensitive aculeated *Mimosa* very nearly allied to M. aspera of the West Indies, as well as to M. canescens of Willdenow, found by Isert in Guinea; and perhaps is not different from the species mentioned by Adanson as being common on the banks of the Senegal.

Of the second order, CÆSALPINEÆ, the collection contains 19 species, among which there are four unpublished genera. One of these is *Erythrophleum* of Afzelius, the Red Water Tree of Sierra Leone; another species of which genus is the ordeal plant, or *Cassa* of the natives of Congo. *Guilandina Bonduc* and *Cassia occidentalis*, are also in the herbarium; the former, I believe, is unquestionably common to India and America; whether Cassia occidentalis be really a native of India and equinoctial Africa, in both of which it is now at least naturalized, is perhaps doubtful.

Among PAPILIONACEÆ, which constitute the principal part of Leguminosæ in the collection, there is only one plant with stamina entirely distinct. This decandrous plant forms a genus very different from any yet established, but to which *Podalyria bracteata* of Roxburgh * belongs.

The genera composing Papilionaceæ on the banks of the Congo have, upon the whole, a much nearer relation to those of India than of equinoctial America. To this, however, there is one remarkable exception. For of the only two species of *Pterocarpus* in the collection, one is hardly to be distinguished from *P. Ecastophyllum*, unless by the want of the short acumen existing in the plant of Jamaica. The second agrees entirely with Linneus's original specimen of *P. lunatus* from Surinam, and seems to be not uncommon on the west coast of equinoctial Africa; having been observed by Professor Afzelius at Sierra Leone, and probably by Isert in Guinea :† while no species of Pterocarpus related to either of these has hitherto been observed in India. On the other hand *Abrus precatorius* and *Hedysarum triflorum*, both of which occur in the collection, are common to equinoctial Asia and America.

TEREBINTACEÆ, as given by M. de Jussieu, appears to be made up of several orders nearly related to each other, and of certain genera having but little affinity to any of them. Of this, indeed, the illustrious author of the

* *Coromand. Plants*, 3 *tab.* † *Reise nach Guinea*, *p.* 116.

Genera plantarum seems to have been aware. He probably, however, had not the means of ascertaining all their distinguishing characters, and therefore preferred leaving the order nearly as it was originally proposed by Bernard de Jussieu in 1759.

One of the orders included in Terebintaceæ, and which is proposed by M. de Jussieu himself, under the name of CASSUVIÆ, consists of Anacardium, Semecarpus, Mangifera, Rhus and Buchanania, with some other unpublished genera.

The perigynous insertion of stamina in *Cassuviæ* (or *Anacardeæ*) may be admitted in doubtful cases from analogy, there being an unpublished genus belonging to it even with ovarium inferum. And the ovarium, though in all cases of one cell, with a single ovulum, may, at least in those genera in which the style is divided, be supposed to unite in its substance the imperfect ovaria indicated by the branches of the style, and which in Buchanania are actually distinct from the complete organ. The only plant belonging to this order in the herbarium, is a species of *Rhus*, with simple verticillate leaves, and very nearly approaching in habit to two unpublished species of the genus from the Cape of Good Hope.

AMYRIDEÆ, another family included in Terebintaceæ, and to which the greater part of Jussieu's second section belongs, may, like the former order, be considered as having in all cases perigynous insertion of stamina; this structure being manifest in some of its genera. Of Amyrideæ, there are two plants in the collection. The first of these is a male plant, probably of a species of Sorindeia:* the second, which is the *Safu* of the natives, by whom it is cultivated on account of its fruit, cannot be determined from the imperfect state of the specimens; it is, however, probably related to Roupartia or Bursera.

CONNARACEÆ, is a third family which I propose to separate from Terebintaceæ: it consists of Connarus *Linn.* Cnestis *Juss.* and Rourea of Aublet or Robergia of Schreber. The insertion of stamina, in this family, is ambiguous; but as in a species of Cnestis from Congo, they originate from, or at least firmly cohere with, the pedicellus of the ovaria; they may be con-

* *Aubert du Petit Thouars nov. gen. madagas. n.* 80.

sidered perhaps in all the genera rather as hypogynous than perigynous. The most important distinguishing characters of Connaraceæ, consist in the insertion of the two collateral ovula of each of its pistilla being near the base; while the radicle of the embryo is situated at the upper or opposite extremity of the seed, which is always solitary. In *Connarus* there is but one ovarium, and the seed (figured by Gærtner under the name of Omphalobium,) is destitute of albumen. *Rourea* or Robergia, has always five ovaria, though in general one only comes to maturity. Its seed, like that of Connarus, is without albumen, and the æstivation of the calyx is imbricate.

Of *Cnestis*, there are several new species in Professor Smith's herbarium. This genus has also five ovaria, all of which frequently ripen; the albumen forms a considerable part of the mass of the seed; and the æstivation of the calyx is valvular. The genera of this group therefore differ from each other, in having one or more ovaria, in the existence or absence of albumen; and in the imbricate or valvular æstivation of calyx. Any one of these characters singly, is frequently of more than generic importance, though here even when all are taken together, they appear insufficient to separate Cnestis from Connarus.

In considering the place of the Connaraceæ in the system, they appear evidently connected on the one hand with Leguminosæ, from which Connarus can only be distinguished by the relation the parts of its embryo have to the umbilicus of the seed On the other hand, *Cnestis* seems to me to approach to *Averrhoa*, which agrees with it in habit, and in many respects in the structure of its flower and seed; differing from it, however, in its five ovaria being united, in the greater number of ovula in each cell, in the very different texture of its fruit, and in some degree in the situation of the umbilicus of the seed.

But *Averrhoa* agrees with *Oxalis* in every important point of structure of its flower, and in most respects in that of its seed.

Oxalis indeed differs from Averrhoa in the texture of its fruits, in some respects in the structure of its seed; and very widely in habit, in the greater part of its species. The difference in habit, however, is not so great in some species of Oxalis; as for example, in those with pinnated and even ternate leaves from equinoctial America; and in that natural division of the genus including *O. sensitiva*, of which there are two species in the Congo herbarium.

This latter section of Oxalis* agrees also with *Averrhoa Carambola*† in the foliola when irritated, being reflected or dependent, which is likewise their position in the state of collapsion or sleep, in all the species of both genera.

To the natural order formed by Oxalis and Averrhoa, the name of OXALIDEÆ may be given, in preference to that of *Sensitivæ*, under which, however, Batsch‡ was the first to propose the association of these two genera, and to point out their agreement in sensible qualities and irritability of leaves.

M. de Jussieu, in a memoir recently published,§ has proposed to remove Oxalis from Geraniaceæ, to which he had formerly annexed it, and to unite it with Diosmeæ.

It appears to me to have a much nearer affinity to *Zygophylleæ*,‖ though it is surely less intimately connected with that order than with Averrhoa.

I am aware that M. Correa de Serra, one of the most profound and philosophical botanists of the present age, has considered Averrhoa as nearly related to Rhamneæ¶ or rather to Celastrinæ; from which, however, it differs in the number and insertion of stamina and especially in the direction of the embryo, with respect to the pericarpium.

In all these characters Averrhoa agrees with Oxalis; its relation to which is further confirmed on considering the appendage of the seed or arillus, whose modifications in these two genera seem to correspond with those of their pericarpia.

CHRYSOBALANEÆ. The genera forming this order are Chrysobalanus, Moquilea, Grangeria, Coupea, Acioa, Licania, Hirtella, Thelira, and Parinarium, all of which are at present referred by M. de Jussieu to Rosaceæ, and the greater part to his seventh section of that family, namely, Amygdaleæ. If Rosaceæ be considered as an order merely, these genera will form a separate section, connecting it with Leguminosæ. But if, as I have formerly proposed, both these extensive families are to be regarded as natural classes, then they will form an order sufficiently distinct from Amygdaleæ, both in fructification and habit, as well as in geographical distribution.

The principal distinguishing characters in the fructification of *Chrysobalancæ*, are the style proceeding from the base of the ovarium; and the ovula (which,

* Herba sentiens, *Rumph. Amboin.* 5, *p.* 301.
‡ *Tab. affin. p.* 23.
‖ *Flinders's Voy.* 2, *p.* 545.
† *Bruce in Philos. Transact.* 75, *p.* 356.
§ *Mém. du Mus. d'Hist. Nat.* 3, *p.* 448.
¶ *Annal. du Mus. d'Hist. Nat.* 8, *p.* 72.

as in Amygdaleæ, are two in number,) as well as the embryo being erect. The greater part of Chrysobalaneæ have their flowers more or less irregular; the irregularity consisting in the cohesion of the foot-stalk of the ovarium with one side of the tube of the calyx, and a greater number, or greater perfection of stamina on the same side of the flower.

Professor Smith's herbarium contains only two genera of this order, namely, *Chrysobalanus* and *Parinarium*.* One species of the former is hardly distinguishable from *Chrysobalanus Icaco* of America, and is probably a very common plant on the west coast of Africa: *Icaco* being mentioned by Isert † as a native of Guinea, and by Adanson‡ in his account of Senegal.

Of *Parinarium*, there is only one species from Congo, which agrees, in the number and disposition of stamina, with the character given of the genus. In these respects M. de Jussieu § has observed a difference in the two species found by Adanson at Senegal, and has moreover remarked that their ovarium coheres with the tube of the calyx. In that species most common at Sierra Leone, and which is probably one of those examined by M. de Jussieu, the ovarium itself is certainly free, its pedicellus, however, as in the greater part of the genera of this order and several of Cæsalpineæ, firmly cohering with the calyx, may account for the statement referred to. I am not, indeed, acquainted with any instance among Dicotyledonous plants of cohesion between a simple ovarium, which I consider that of Chrysobalaneæ to be, and the tube of the calyx.

The complete septum between the two ovula of Parinarium, existing before fecundation, is a peculiar structure in a simple ovarium; though in some degree analogous to the moveable dessepiment of Banksia and Dryandra, and to the complete, but less regular, division of the cavity that takes place after fecundation in some species of Persoonia.‖

MELASTOMACEÆ. Four plants only of this order occur in the collection.

The first is a species of *Tristemma*, very nearly related to *T. hirtum* of M. de Beauvois.¶

* *Juss. Gen.* 342. Parinari, *Aublet Guian.* 514. Petrocarya, *Schreb. Gen.* 629.

† *Reise nach Guinea, p.* 54. ‡ *Voyage au Senegal,* 175. § *Gen. Plant.* 342.

‖ *Linn. Soc. Transact.* 10, *p.* 35. ¶ *Flore d'Oware,* 1, *p.* 94, *t.* 57.

The second is perhaps not distinct from *Melastoma decumbens*, of the same author.*

The third and fourth are new species referable to *Rhexia*, as characterised by Ventenat,† though not to that genus as established by Linnæus; and in some respects differing from the species that have been since added to it, all of which are natives of America.

In the original species of *Tristemma*‡ there are, in the upper part of the tube of the calyx, two circular ciliated membranous processes, from which the name of the genus is derived; the limb of the calyx itself being considered as constituting the third circle. The two circular membranes are also represented as complete in T. hirtum.

But in the species from Congo, which may be named *T. incompletum*, only one circular membrane exists, with the unilateral rudiment of the second.

The rudiment of the inferior membrane in this species, points out the relation between the apparently anomalous appendage of the calyx in Tristemma, and the ciliated scales irregularly scattered over its whole surface in Osbeckia; the analogy being established by the intermediate structure of an unpublished plant of this order from Sierra Leone, in Sir Joseph Banks's herbarium, in which the nearly similar squamæ, though distinct, are disposed in a single complete circle; and by *Melastoma octandra* of Linnæus, in which they are only four in number, and alternate with the proper divisions of the calyx.

The two species here referred, though improperly, to Rhexia, agree with a considerable part of the species published in the monograph of that genus by M. Bonpland, and with some other genera of the order, in the peculiar manner in which the ovarium is connected with the tube of the calyx. This cohesion, instead of extending uniformly over the whole surface, is limited to ten longitudinal equidistant lines or membranous processes, apparently originating from the surface of the ovarium; the interstices, which are tubular, and gradually narrowing towards the base, being entirely free.

The function of these tubular interstices is as remarkable as their existence.

In Melastomaceæ, before the expansion of the corolla, the tops of the filaments are inflected, and the antheræ are pendulous and parallel to the lower or erect portion of the filament; their tips reaching, either to the line of complete cohesion between the calyx and ovarium, where that exists; or, where

* *Op. citat.* 1, p. 69, *t.* 49. † *Mém. de l'Institut. sc. phys.* 1807, *prem. semest. p.* 11.

‡ Tristemma virusana, *Vent. Choix de Plantes* 35.

this cohesion is partial, and such as I have now described, being lodged in the tubular interstices; their points extending to the base of the ovarium. From these sheaths, to which they are exactly adapted, the antheræ seem to be disengaged in consequence of the unequal growth of the different parts of the filament; the inflected portion ceasing to increase in length at an early period, while that below the curvature continues to elongate considerably until the extrication is complete, when expansion takes place.

It is singular that this mode of cohesion between the ovarium and calyx in certain genera of Melastomaceæ, and the equally remarkable æstivation of antheræ accompanying it, should have been universally overlooked, especially in the late monograph of M. Bonpland; as both the structure and economy certainly exist in some, and probably in the greater part, of the plants which that author has figured and described as belonging to Rhexia.

On the limits, structure, and generic division of Melastomaceæ, I may remark,

1st. That *Memecylon*, as M. du Petit Thouars has already suggested,* and *Petaloma* of Swartz† both belong to this order, and connect it with *Myrtaceæ*, from which they are to be distinguished only by the absence of the pellucid glands of the leaves and of other parts, existing in all the genera really belonging to that extensive family.

2dly. There are very few Melastomaceæ in which the ovarium does not in some degree cohere with the tube of the calyx; *Meriana*, properly so called, being, perhaps, the only exception.

And in the greater number of instances where, though the ovarium is coherent, the fruit is distinct, it becomes so from the laceration of the connecting processes already described.

3dly. That the generic divisions of the whole order remain to be established. On examination, I believe, it will be found that the original species of the Linnean genera, *Melastoma* and *Rhexia*, possess generic characters sufficiently distinguishing them from the greater part of the plants that have been since added to them by various authors. In consequence of these additions, however, their botanical history has been so far neglected, that probably no genuine species of Melastoma, and certainly none of Rhexia, has yet been published in M. Bonpland's splendid and valuable monographs of these two genera.

* *Mélanges de Botanique; Observ. address. à M. Lamarck, p. 57.*

† *Flor. Ind. Occid. 2, p. 831, tab. 14.*

Of RHIZOPHOREÆ,* as I have formerly proposed to limit it, namely, to Rhizophora, Bruguiera, and Carallia, the collection contains only one plant, which is a species of Rhizophora, the Mangrove of the lower part of the river, and probably of the whole line of coast, but very different both from that of America, and from those either of India or of other equinoctical countries that have been described. There is, however, a plant in the collection which, though not strictly belonging to this order, suggests a few remarks on its affinities.

I referred *Carallia*† to Rhizophoreæ, from its agreement with them in habit, and in the structure of its flower. It is still uncertain whether its reniform seed is destitute of albumen; the absence of which, however, does not seem necessary to establish its affinity with the other genera of this order: for plants having the same remarkable economy in the germination of the embryo as that of Rhizophora, may belong to families which either have or are destitute of albumen.

The plant referred to from Congo, may be considered as a new species of *Legnotis*, having its petals less divided than those of the original species of that genus, and each cell of its ovarium containing only two pendulous ovula. The genus *Legnotis* agrees with Carallia in habit, especially in having opposite leaves with intermediate stipules; in the valvular æstivation of its calyx, and in several other points of structure of its flower. It differs in its divided petals; in its greater number of stamina, disposed, however, in a simple series; and in its ovarium not cohering with the calyx. It is therefore still more nearly related to *Richæia* of M. du Petit Thouars,‡ from which perhaps it may not be generically distinct. The propriety of associating Carallia§ with Rhizophoreæ is not perhaps likely to be disputed; and its affinity to Legnotis, especially to the species from Congo, appears very probable. It would seem therefore that we have already a series of structures connecting Rhizophora on the one hand with certain genera of *Salicariæ*, particularly with *Antherylium*, though that genus wants the intermediate stipules; and on the other with *Cunoniaceæ*,‖ especially with the simple leaved species of *Cerato-*

* *Flinders's Voy.* 2, *p.* 549. † *Roxburgh. Coromand.* 3, *p.* 8, *t.* 211.

‡ *Nov. Gen. Madagasc. n.* 84.

§ Or Barraldæia, *Du Petit Thouars, Nov. Gen. Madagasc. n.* 82.

‖ *Flinders's Voy.* 2, *p.* 548.

petalum. While Loranthus and Viscum associated with Rhizophora, by M. de Jussieu, appear to form a very distinct family, and which, as it seems to me, should even occupy a distant place in the system.

HOMALINÆ. In the collection from Congo a plant occurs evidently allied, and perhaps referable, to *Homalium*, from which it differs only in the greater number of glands alternating with the stamina, whose fasciculi are in consequence decomposed; the inner stamen of each fasciculus being separated from the two outer by one of the additional glands. This plant was first found on the banks of the Gambia, by Mr. Park, from whose specimens I have ascertained that the embryo is inclosed in a fleshy albumen.

The same structure of seed may be supposed, from very obvious affinity, to exist in *Astranthus* of Loureiro, to which *Blackwellia* of Commerson ought perhaps to be referred; in *Napimoga* of Aublet, probably not different from Homalium; and in *Nisa*,* a genus admitting of subdivision, and which M. du Petit Thouars has referred to Rhamneæ. All these genera appear to me sufficiently different from Rosaceæ, where M. de Jussieu has placed them, and from every other family of plants at present established.

Their distinguishing characters as a separate order, are, the segments of the perianthium disposed in a double series, or an equal number of segments nearly in the same series; the want of petals; the stamina being definite and opposite to the inner series of the perianthium, or to the alternate segments where they are disposed apparently in a simple series; the unilocular ovarium (generally in some degree coherent with the calyx) having three parietal placentæ, with one, two, or even an indefinite number of ovula; and the seeds having albumen, as inferred from its existence in the genus from Congo. The cohesion of the ovarium with the tube of the perianthium, though existing in various degrees in all the genera above enumerated, is probably a character of only secondary importance in Homalinæ. For an unpublished genus found by Commerson in Madagascar, which in every other respect agrees with this family, has ovarium superum. This genus at the same time seems to establish a considerably affinity between Homalinæ and certain genera, either absolutely belonging to *Passifloreæ*, especially *Paropsia* of M. du Petit Thouars,† or

* *Nov. Gen. Madagasc. n.* 81.

† *Hist. des Véget. des Isles de l'Afrique*, 59.

nearly related to them as *Erythrospermum*, well described and figured by the same excellent botanist.*

The increased number of stamina in Homalium, and particularly in the genus from Congo, instead of presenting an objection to this affinity, appears to me to confirm it. It may be observed also that there are two genera referable to Passifloreæ, though they will form a separate section of the order, which have a much greater, and even an indefinite, number of perfect stamina, namely, *Smeathmania*, an unpublished genus of equinoctial Africa, agreeing in habit, in perianthium, and in fruit, with Paropsia; and *Ryania* of Vahl,† which appears to me to belong to the same family.

In Passifloreæ the stamina, when their number is definite, which is the case in all the genera hitherto considered as belonging to them, are opposite to the outer series of the perianthium; a character, which, though of general importance, and here of practical utility in distinguishing them from Homalinæ, is not expressed in any of the numerous figures or descriptions that have been published of the plants of this order.

Passifloreæ and Cucurbitaceæ, though now admitted as distinct families, are still placed together by M. de Jussieu; and he considers the floral envelope in both orders as a perianthium or calyx, whose segments are disposed in a double series.‡

These views of affinity and structure are in some degree confirmed by Homalinæ, in which both ovarium inferum and superum occur; and in one genus of which, namely, *Blackwellia*, the segments of the perianthium, though the complete number, in relation to the other genera of the order, be present, are all of similar texture and form, and are disposed nearly in a simple series. If the approximation of these three families be admitted, they may be considered as forming a class intermediate between Polypetalæ and Apetalæ, whose principal characters would consist in the segments of the calyx being disposed in a double series, and in the absence of petals: the different orders nearly agreeing with each other in the structure of their seeds, and to a considerable degree in that of the ovarium.

The formation of this class, however, connected on the one hand with

* *Op. citat.* 65.

† *Eclog.* 1, *p.* 51, *t.* 9.

‡ *Annal. du Mus. d'Hist. Nat.* 6, *p.* 102.

Apetalæ by Samydeæ,* and on the other, though as it seems to me less intimately, with Polypetalæ by Violeæ, would not accord with any arrangement of natural orders that has yet been given. While the admission of the floral envelope being entirely calyx; and of the affinity of the class with Violeæ, would certainly be unfavourable to M. de Candolle's ingenious hypothesis of petals in all cases being modified stamina.

VIOLEÆ.† This order does not appear to me so nearly related to Passifloreæ as M. du Petit Thouars is disposed to consider it: for it not only has a genuine polypetalous corolla, which is hypogynous, but its antheræ differ materially in structure, and its simple calyx is divided to the base. The irregularity both of petals and stamina in the original genera of the order, namely, Viola, Pombalia,‡ and Hybanthus, though characters of considerable importance, are not in all cases connected with such a difference in habit as to prevent their union with certain regular flowered genera, which it has lately been proposed to associate with them.

The collection from Congo contains two plants belonging to the section of Violeæ with regular flowers. One of these evidently belongs to *Passalia*, an unpublished genus in Sir Joseph Banks's herbarium, and described in the manuscripts of Solander from a plant found by Smeathman at Sierra Leone, which is perhaps not specifically distinct from that of Congo, or from *Ceranthera dentata* of the Flore d'Oware. But *Ceranthera*,§ which M. de Beauvois, being unacquainted with its fruit, has placed in the order Meliaceæ, is not different from *Alsodeia*, a genus published somewhat earlier, and from more perfect materials, by M. du Petit Thouars,‖ who refers it to Violeæ. The latter generic name ought of course to be adopted, and with a change in the termination (*Alsodinæ*) it may also denote the section of this order with regular flowers.

Physiphora of Sir Joseph Banks's herbarium, discovered by himself in Brazil, differs from Alsodeia only in its filaments being very slightly connected at base, and in the form and texture of its capsule, which is membranaceous, and, as the name imports, inflated.

* *Ventenat in Mém. de l'Instit. Sc. Phys.* 1807, 2 *sem. p.* 142.

† *Juss. Gen Pl.* 295. *Ventenat Malmais.* 27.

‡ *Vandelli Fasc Pl. p.* 7, *t.* 1. Ionidium, *Venten. Malmais.* 27.

§ *Flore d'Oware*, 2, *p.* 10. ‖ *Hist. des Véget. des Isles de l'Afrique* 55.