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THE LITERARY

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CATALOGUE OF BIRDS FOUND IN THE NEIGHBORHOOD OF CARLISLE, CUMBERLAND COUNTY, PA.

BY S. F. BAIRD.

The following list embraces the species of birds which have been collected during the last five years, and with very few exceptions in a circle of but few miles radius. None are admitted without having been actually killed and preserved; in no case have any been inserted on the authority of others. A residence nearer the Susquehanna would no doubt have enabled us to increase the number considerably, as we have heard of several not in this list which have been killed about Harrisburg. Some of these will be found in a catalogue of additional species procured at Marietta, Pa., most, if not all of which, touch on our eastern border.

The nomenclature employed is based on that of Prince Bonaparte, in his lists of the birds of Europe and North America, 1838, 1842, with the addition, however, of the authority for each species, and various alterations called for, by a strict regard to the law of priority. The name immediately succeeding each species is that of its first describer, and if in parentheses, under a different genus. The second name is his who first placed that particular specific appellation under its present genus. A (†) prefixed, shows that the bird breeds here.

†*Cathartes aura*, (L.) Ill. Turkey buzzard. Rather rare. Summer.

Haliaetos leucocephalus, (L.) Sav. Bald eagle. Rare. Resident.

Pandion carolinus, (Gm.) Bon. *P. haliaetus*, Aud. Fish hawk. Rare. Resident.

Archibuteo sancti johannis, (Gm.) Gray. *Buteo lagopus*, Aud. Rough legged hawk. Very rare. Winter.

†*Buteo borealis*, (Gm.) Bon. Red tailed hawk. Common. Resident.

" *lineatus*, (Gm.) Bon. Red shouldered hawk. Common. Res.

" *pennsylvanicus*, (Wils.) Bon. Broad winged hawk. Rare.

Falco columbarius, L. Pigeon hawk. Rare. Autumn.

†*Cerchneis sparverius*, (L.) Boié. *Falco s.* Aud. Sparrow hawk. Very common. Resident.

†*Accipiter fuscus*, (Gm.) Bon. *Astur f.*, Aud. Sharp-shinned hawk. Abundant. Resident.

†*Astur cooperi*, Bon. Cooper's hawk. Common. Resident.

Strigiceps uliginosus, (Wils.) Bon. *Circus cyaneus*, Aud. Marsh hawk. Rare. Spring, autumn.

Nyctea candida, ( ) Bon. *Surnia nyctea*, Aud. Snow owl. Rare in very cold winters.

†*Scops asio*, (L.) Bon. *Bubo a.*, Aud. Screech owl. Common. Res.

†*Bubo virginianus*, (Gm.) Cuv. Great Horned owl. Common. Res.

†*Otus americanus*, Bon. *O. vulgaris*, Aud. Long eared owl. Rare. Resident.

" *brachyotus*, (L.) Short eared owl. Rather common. Winter.

Ulula nebulosa, (Forst.) Cuv. *Syrnium nebulosum*, Aud. Barred owl. Common.

Nyctale acadica, (Gm.) Bon. *Ulula a.*, Aud. Saw whet owl. Very rare.

†*Antrostomus vociferus*, (Wils.) Bon. *Caprimulgus v.*, Aud. Whippor-will. Abundant in mountains. Summer.

†*Chordeiles virginianus*, (Briss.) Sw. Night hawk. Very com. Sum.

†*Acanthylis pelasgia*, (L.) Boié. *Chaetura p.*, Aud. Chimney bird. Very common. Summer.

†*Progne purpurea*, (L.) Boié. *Hirundo p.*, Aud. Martin. Com. Sum.

†*Chelidon bicolor*, (Vieill.) Bon. *Hirundo b.*, Aud. White bellied swallow. Common. Spring and autumn.

Cotyle riparia, (L.) Boié. *Hirundo r.*, Aud. Bank swallow. Abundant. Spring and autumn.

† " *serripennis*, (Aud.) Baird. *Hirundo s.*, Aud. Rough-winged swallow. Abundant. Summer.

†*Hirundo fulva*, Vieill. Cliff swallow. Abundant. Summer.

† " *rufa*, Gm. *H. rustica*, Aud. Barn swallow. Very abund. Sum.

†*Ampelis carolinensis*, (Briss.) *Bombycilla c.*, Aud. Cedar bird. Abun. Some resident.

†*Ceryle alcyon*, (L.) Boié. *Alcedo a.*, Aud. King fisher. Com. Some res.

†*Trochilus colubris*, L. Humming bird. Abundant. Summer.

†*Sitta carolinensis*, Briss. White bellied nuthatch. Abund. Resident.

" *canadensis*, L. Red bellied nuthatch. Rare. Winter.

†*Certhia americana*, Bon. *C. familiaris*, Aud. Brown creeper. Com. Winter. Some resident.

†*Mniotilta varia*, (L.) Vieill. Black and white creeper. Ab. Summer.

† *Thryothorus palustris*, (Wils.) Bon. *Troglodytes p.*, Aud. Marsh wren. Rare. Summer.

† " *bewicki*, (Aud.) Bon. *Troglodytes b.*, Aud. Bewick's wren. Rare. Summer.

† *Troglodytes aedon*, Vieill. House wren. Abundant. Summer.

" *hyemalis*, Vieill. Winter wren. Common. Winter.

† *Sialia wilsonii*, Sw. Blue bird. Abundant. Summer.

† *Turdus migratorius*, L. Robin. Very ab. Summer. Some resident.

† " *mustelinus*, Gm. Wood thrush. Rather common. Summer.

" *solitarius*, Wils. Hermit thrush. Rare. Spring, autumn.

" *wilsonii*, Bon. Wilson's thrush. Rather common. Spring, aut.

" *olivaceus*, Giraud. Olive-backed thrush. Abundant. Summer.

Mimus polyglottus, (L.) Boié. *Orpheus p.*, Aud. Mocking bird. Very rare. Summer.

† " *rufus*, (L.) Bon. *Orpheus r.*, Aud. Brown thrush. Ab. Sum.

† " *felivox*, (Vieill.) Bon. *Orpheus carolinensis*, Aud. Cat bird. Abundant. Summer.

Anthus ludovicianus, Licht. Titlark. Common. Spring, autumn.

Regulus satrapa, Licht. Golden crowned wren. Ab. Aut. wint. spring.

" *calendula*, (L.) Licht. Ruby crowned wren. Ab. Aut. spring.

† *Parus atricapillus*, L. Black cap titmouse. Abundant. Resident.

† " *bicolor*, L. Tufted titmouse. Abundant. Resident.

† *Sylvicola americana*, (Gm.) Blue yellow back warbler. Rare. Spr. aut.

" *coronata*, (L.) Yellow rump warbler. Very common. Spring, aut.

" *petechia*, (L.) Yellow red poll warbler. Rare. Spring, aut.

" *maculosa*, (Gm.) Sw. Black and yellow warbler. Ab. Spr. aut.

" *maritima*, (Wils.) Cape May warbler. Rare. Spring, aut.

" *virens*, (Gm.) Black-throated green warbler. Ab. Spring, aut.

" *blackburniae*, (Gm.) Blackburnian warbler. Ab. Spring, aut.

† " *icterocephala*, (L.) Chestnut-side warbler. Very abundant some seasons, Summer.

" *castanea*, (Wils.) Bay breast warbler. Common. Spring, aut.

" *striata*, (Forst.) Sw. Black poll warbler. Very ab. Spring, aut.

† " *pinus*, (Wils.) Pine creeping warbler. Rare. Summer.

† " *aestiva*, (Gm.) Yellow poll warbler. Abundant. Summer.

† " *canadensis*, (L.) Black-throated blue warbler. Rather common. Summer.

" *cærulea*, (Wils.) Cœrulean warbler. One specimen, spring 1843.

" *agilis*, (Wils.) Connecticut Warbler. One male, in spring of 1845.

† *Trichas marilandica*, (Wils.) Maryland yellow throat. Abundant in mountains. Summer.

Trichas philadelphia, (Wils.) Mourning warbler. Rare. Spring, aut.
†*Helinaia vermivora*, (Gm.) Aud. Worm-eating warbler. Rare. Sum.
† " *solitaria*, (Wils.) Aud. Blue wing yellow warbler. Rare. South mountain. Summer.
† " *chrysoptera*, (L.) Aud. Golden wing warbler. Very rare. South mountain. Summer.
" *peregrina* (Wils.) Aud. Tennessee warbler. Abundant in autumn of 1843. Once in Spring.
† " *rubricapilla*, (Wils.) Aud. Nashville warbler. Abundant in mountains in summer.
†*Seiurus aurocapillus*, (L.) Sw. Golden crowned thrush. Ab. Sum.
† " *noveboracensis*, Bon. Water thrush. Abundant. Summer.
†*Myiodioctes mitratus*, (Gm.) Aud. Hooded warbler. Ab. in S. mt. Sum.
" *canadensis*, (L.) Aud. Canada flycatcher. Abund. Spring, aut.
" *pusillus*, (Wils.) Baird. *M. wilsonii*, Aud. Green black-cap flycatcher. Abundant. Spring, autumn.
Setophaga ruticilla, (L.) Sw. *Muscicapa r.*, Aud. Redstart. Ab. Spring, autumn.
Tyrannula minima, Baird. *Muscicapa m.*, Aud. Abund. Spring, aut.
" *flaviventris*, Baird. *Muscicapa f.*, Aud. Abundant. Spring, aut.
" *trailli*, (Aud.) *Mus. t.*, Aud. Abundant. Spring.
† " *virens*, (L.) *Mus. v.*, Aud. Wood Pewee. Abundant. Summer.
† " *fusca*, (Gm.) *Mus. f.* Aud. Pewee. Abundant. Summer.
† " *crinita*, (L.) *Mus c.*, Aud. Great crested flycatcher. Ab. Sum.
Tyrannus borealis, Sw. *Mus. Cooperi*, Aud. Olive-side flycatcher. One procured.
† " *intrepidus*, Vieill. *Mus i.*, Aud. Ring bird. Abundant. Summer.
†*Icteria viridis*, (Gm.) Bon. Chat. Common in South mountain, Sum.
†*Vireo flavifrons*, Vieill. Yellow-throated vireo. Rare. Summer.
† " *solitarius*, (Wils.) Vieill. Solitary vireo. Abundant in spring, rare in summer.
† " *gilvus*, (Vieill.) Bon. Warbling vireo. Abundant. Summer.
† " *olivaceus*, (L.) Red-eyed vireo. Abundant. Summer.
Lanius borealis, Vieill. Butcher bird. Rare. Winter.
†*Cyanocorax cristatus*, (L.) Boie. *Garrulus c.*, Aud. Ab. Resident.
†*Corvus americanus*, Aud. Crow. Abundant. Resident.
" *cacalotl*, Wagler. *C. corax*, Aud. Very rare. Resident.
†*Quiscalus versicolor*, Vieill. Crow blackbird. Abundant. Summer.
Scolecophagus ferrugineus, (Gm.) Sw. *Mus. f.*, Aud. Rusty blackbird. Abundant. Spring, autumn.
†*Sturnella ludoviciana*, (L.) Bon. Lark. Abundant. Many resident.

†*Icterus baltimore*, (L.) Golden robin. Abundant. Summer.

† " *spurius*, (L.) Orchard oriole. Common. Summer.

†*Agelaius phoeniceus*, (L.) Vieill. Swamp blackbird. Abundant. Sum.

†*Molothrus pecoris*, (Gm.) Sw. Cow bird. Abundant. Summer.

Dolichonyx oryzivorus, (L.) Sw. Reed bird. Abundant. Spring, autumn.

†*Guiraca coerulea*, (L.) Sw. *Coccoborus coeruleus*, Aud. Blue grosbeak. Rare. Summer.

† " *ludoviciana*, (L.) Sw. *Coccoborus l.*, Aud. Rose-breasted grosbeak. Rare. Summer.

Niphoea hyemalis, (L.) Aud. Snow bird. Abundant. Winter.

Passerella iliaca, (Merrem.) Sw. Fox-colored sparrow. Abundant. Spring, autumn.

†*Zonotrichia melodia*, (Wils.) Bon. *Fringilla m.*, Aud. Song sparrow. Abundant. Some resident.

† " *graminea*, (Gm.) Sw. *Emberiza g.* Aud. Grass finch. Abundant. Summer.

" *pennsylvanica*, (Briss.) Sw. *Fringilla p.*, Aud. White-throated sparrow. Abundant. Spring, autumn.

" *leucophrys*, (Forst.) Sw. *Fringilla l.*, Aud. White crowned sparrow. Common at intervals, spring, autumn.

†*Euspiza americana*, (Gm.) Bon. *Emberiza a.*, Aud. Black throated bunting. Common. Summer.

†*Coturniculus passerinus*, (Wils.) Bon. *Emberiza p.*, Aud. Yellow winged sparrow. Abundant. Summer.

Peucaea lincolnii, Aud. Lincoln's finch. Common some seasons, spring, autumn.

Passerculus savanna, (Wils.) Bon. *Emberiza s.*, Aud. Savannah finch. Rare. Spring, autumn.

" *palustris*, (Wils.) Bon. *Ammodramus p.*, Aud. Swamp sparrow. Abundant. Spring, autumn.

Spizella canadensis, (Briss.) Bon. *Emberiza c.*, Aud. Tree sparrow. Abundant. Winter.

† " *socialis*, (Wils. Bon. *Emberiza, s.*, Aud. Chipping sparrow. Abun. Summer.

† " *pusilla*, (Wils.) Bon. *Emberiza p.*, Aud. Field sparrow. Abund. Summer.

†*Chrysomitris tristis*, (L.) Bon. *Carduelis l.*, Aud. Abund., some resident in winter.

" *pinus*, (Wils.) Bon. *Linaria, p.*, Aud. Pine finch. Ab. Winter.

Linota linaria, ( ) Bon. *Linaria minor*, Aud. Red poll. Rare in very cold winters.

Carpodagus purpureus, (Gm.) Baird. *Enythrospiza purpurea*, Aud. Purple finch. Abundant. Spring, autumn.

Cardinalis virginianus, (Briss.) Bon. *Pitylus cardinalis*, Aud. Cardinal. Very rare.

†*Pipilo erythropthalmus*, (L.) Vieill. Ground robin. Abundant. Sum.

†*Spiza cyanea*, (L.) Bon. Indigo bird. Abundant. Summer.

†*Pyranga rubra*, (L.) Vieill. Tanager. Common. Summer.

Otocoris cornutus, (Wils.) Baird. *Alauda alpestris*, Aud. Sky lark. Abundant. Winter.

†*Dryotomus pileatus*, (L.) Sw. *Picus p.*, Aud. Black woodcock. Common. Resident.

†*Picus pubescens*, L. Sapsucker. Abundant. Resident.

† " *villosus*, L. Abundant. Resident.

" *audubonì* ? Trudeau. Two specimens procured.

Melanerpes varius, (L.) *Picus, v.*, Aud. Yellow-belly woodpecker. Abundant. Spring, autumn.

† " *erythrocephalus*, (L.) Sw. *Picus e.*, Aud. Red-head woodpecker. Abundant. Some resident.

†*Centurus carolinus*, (L.) Sw. *Picus c.*, Aud. Red-belly woodpecker. Abundant, most so in winter.

†*Colaptes auratus*, (L.) Sw. *Picus a.*, Aud. Flicker. Abundant. Resid.

†*Coccyzus erythropthalmus*, (Wils.) Bon. Cuckoo. Common. Sum.

† " *americanus*, (L.) Vieill. Rain crow. Abundant. Summer.

†*Ectopistes migratoria*, (L.) Sw. Wild pigeon. Abundant. Resident. Rare in summer.

† " *carolinensis*, (L.) Sw. Dove. Abundant. A few resident.

†*Meleagris gallopavo*, L. Wild turkey. Rare. Resident.

†*Ortyx virginiana*, (L.) Steph. Partridge. Abundant. Resident.

†*Bonasa umbellus*, (L.) *Tetrao u.*, Aud. Pheasant. Abundant. Resid.

Charadrius semipalmatus, Bon. Ring plover. Two shot, August 1845.

† " *vociferus*, L. Killdeer. Abundant. A few resident.

Pluvialis virginiacus, (Bork.) *Charadrius marmoratus*, Aud. Bull-head plover. Abundant in autumn only.

Squatarola helvetica, (L.) Cuv. *Charadrius, h.*, Aud. Black-belly plover. Rare in autumn.

†*Ardea herodias*, L. Blue heron, Crane. Rather common. Summer.

†*Egretta leuce*, (Ill) Bon. *Ardea egretta*, Aud. White crane. Rare. Sum.

†*Herodias virescens*, (L.) Bon. *Ardea v.*, Aud. Fly-up-the-creek. Abundant. Summer.

†*Ardetta exilis*, (Gm.) G. R. Gray. *Ardea e.*, Aud. Least bittern. Abundant in summer of 1844.

Botaurus lentiginosus, (Mont.) Nutt. *Ardea l.*, Aud. Bittern. Rare. Spring, autumn.

Nycticorax discors, (Nutt.) Baird. *Ardea nycticorax*, Aud. Night heron. Young only seen in autumn.

Heteropoda semipalmata, (Wils.) Nutt. *Tringa s.*, Aud. Rare. Aut.

Pelidna pectoralis, Say. *Tringa p.*, Aud. Jack snipe. Abundant. Spring, autumn.

" *pusilla*, (Wils.) Bon. *Tringa p.*, Aud. Little sandpiper. Rare. Spring, autumn.

†*Actitis macularius*, (L.) Bon. *Totanus m.*, Aud. Spotted sandpiper. Abundant. Summer.

†*Actiturus bartramius*, (Wils.) Bon. *Tringa b.*, Aud. Field plover. Abundant. Summer.

Totanus flavipes, (Gm.) Vieill. Yellowleg. Common. Spring, autumn.

† " *chloropygius*, Vieill. *T. solitarius*, Aud. Solitary sandpiper. Common. Summer.

" *melanoleucus*, (Gm.) Vieill. *T. vociferus*, Aud. Tell tale. Rare Spring, autumn.

Macrorhamphus griseus, (Gm.) Leach. *Scolopax noveboracensis*, Aud. Red breast snipe. Rare. Autumn.

Gallinago wilsonii, (Temm.) Bon. *Scolopax w.*, Aud. Snipe. Abundant spring, autumn, rare in winter.

†*Rusticola minor*, (Gm.) Vieill. *Microptera americana*, Aud. Wood cock. Abundant. A few resident.

†*Rallus virginianus*, L. Virginia rail. Common. Summer.

Porzana carolina, (L.) *Ortygometra c.*, Aud. Sora rail. Common. Rare in summer.

" *noveboracensis*, (Gm.) *Ortygometra n.*, Aud. Yellow-breasted rail.

†*Gallinula galeata*, Licht. *G. chloropus*, Aud. Gallinule. Very rare. Summer.

Fulica americana, Gm. Coot. Rare. Spring, autumn.

Lobipes hyperboreus, (L.) Cuv. Hyperborean phalarope. Two procured Sept. 1843.

Cygnus americanus, Sharpless. Swan. Rare. Spring, autumn.

Anser canadensis, L. Wild goose. Abundant. Spring, autumn.

†*Anas boschas*, L. Mallard. Abund. Spring, autumn, very rare in Sum.

" *obscura*, Gm. Black duck. Abundant. Spring, autumn.

Mareca americana, (Gm. Steph. *Anas a.*, Aud. Baldpate. Common. Spring, autumn.

Chaulelasmus streperus, (L.) Gray. *Anas s.*, Aud. Gadwall. Very rare. Autumn.

Dafila acuta, (L.) Bon. *Anas a.*, Aud. Sprigtail. Abnndant. Spring, aut.

Spatula clypeata, (L.) Boié. *Anas c.*, Aud. Shoveller. Very rare. Spr. autumn.

Pterocyanea discors (L.) Bon. *Anas d.* Aud. Blue wing-teal. Rather common in autumn, rare in spring.

Querquedula carolinensis, (Gm.) Bon. *Anas c.*, Aud. Green wing-teal. Common. Spring, autumn.

†*Aix sponsa*, (L.) Boié. *Anas s.*, Aud. Summer duck. Abundant. Spring, autumn, rarer in summer.

Oidemia perspicillata, (L.) Flem. *Fuligula p.*, Aud. Surf duck. Three shot, Oct. 1845.

" *fusca*, (L.) Flem. *Fuligula f.*, Aud. Velvet duck. Rare on Susquehannah in winter.

Aythya erythrocephala, Bon. *Fuligula ferina*, Aud. Spring, aut. Rare.

" *mariloides*, (Vig.) Bon. *Fuligula marila*, Aud. Little blackhead. Abundant. Spring, autumn.

Fuligula collaris, (Don.) Bon. *F. rufitorques*, Aud. Ring-neck duck. Rare. Spring, autumn.

Clangula americana, Bon. *Fuligula clangula*, Aud. Golden eye. Abundant. Winter.

" *albeola*, (L.) Jen. *Fuligula a.*, Aud. Butter ball. Abundant. Wint.

Harelda glacialis, (L.) Leach. *Fuligula g.*, Aud. South southerly. Very rare, spring.

Erismatura rubida, (Wils.) Bon. *Fuligula r.*, Aud. Ruddy duck. Rare. Spring, autumn.

†*Merganser castor*, (L.) Bon. *Mergus merganser*, Aud. Fish duck. Abundant. Resident. Very rare in Summer.

" *serrator*, (L.) Leach. *Mergus s.*, Aud. Red breasted merganser. One specimen procured.

† " *cucullatus*, (L.) Bon. *Mergus c.*, Aud. Hooded merganser. Abundant. Resident. Much rarer in Summer.

Hydrochelidon fissipes, (L.) Bon. *Sterna nigra*, Aud. Black tern. One procured in autumn.

Xema bonapartii, (Rich.) Bon. *Larus b.*, Aud. Bonaparte's gull. Rare in autumn.

Lestris pomarinus, Temm. Pomarine jager. Adult procured on Susquehannah in Summer.

Podilymbus carolinensis, (Lath.) Less. *Podiceps c.*, Aud. Diver. Ab. Spring, autumn.

Podiceps cornutus, (Gm.) Lath. Horned grebe. Very rare, spring, aut.

Colymbus glacialis, L. Loon. Rare.

The following species of whose existence in our vicinity, we have had strong proof, are not included for want of specimens :

Aquila chrysaetos, L.
Falco peregrinus, L.
Nauclerus furcatus, (L.) Vig.
Loxia.
Conurus carolinensis, (L.) Kuhl. See Barton's fragments Nat. Hist. Penn.
Porzana jamaicensis, (Briss.) *Ortygometra j.*, Aud.

Additional species procured by Mr. J. Libhart, near Marietta, Pa., twenty-five miles south of Cumberland Co.

Strobilophaga enucleator, (L.) Vieill. *Corythus e.*, Aud.
Sylvicola formosa, (Wils.)
Limosa fedoa, (L.)
Calidris arenaria, (L.) Ill. *Tringa a.*, Aud.
Chen hyperboreus, (Pall.) Boié. *Anser h.*, Aud.
Bernicla brenta, (Wils.) Steph. *Anser bernicla*, Aud.
Aythya vallisneria, (Wils.) Bon. *Fuligula v.*, Aud.
Larus zonorhynchus, Rich.
" *argentatus*, Brünn.

	Total of species in Cumberland Co.	202
of which ;	Breeding, - - -	104
	Summer visitors, - - -	66
	Resident, - - - -	38
	Transitory in spring and autumn,	90
	Seen in autumn only, - -	8

Addenda. *Troglodytes brevirostris*, Nutt. Short-billed wren. One procured, Sept. 20th, 1845.

NUGÆ ETHNOLOGICAE, NO. III.

BY PROF. H. S. PATTERSON, M. D. OF PHILADELPHIA, PA.

In enumerating the points of difference which separate man so widely from the rest of animated nature, we next come to the shape, position, and size of the head, and the peculiarities of function dependant thereon. This has already been referred to in speaking of the erect attitude, and the *os incisivum* or intermaxillary bone. In addition, I remark that *in man the head rests directly upon the top of the upright spine.* It is not exactly balanced upon it, as is sometimes represented, much the larger part being in front, especially in those persons in whom the anterior lobes of the brain are most developed. A well-shaped skull, poised upon its point, will incline forwards if unsupported, and this prepon-

derance will be much increased in the living body by the additional weight of the lower jaw, tongue and other soft parts. It is retained in its position by the great muscles of the back of the neck, which keep it *in equilibrio.* In animals it is hung by its upper part to the end of the spine, which in them is horizontal, or nearly so. Hence the necessity for the dense and powerful *ligamentum nuchae*, already mentioned.

The head of man is also pre-eminent in the size of the brain and its enclosing cranium. In him only is this delicate and important organ found in the perfection of its developement. I think it may be said without hesitation, that there is no part of the brain of any inferior animal which is not found more perfect in man, nor is there any which may not be formed from that of man, by abstracting, diminishing, or slightly modifying some of its parts. To him alone has the enjoyment of this crown and master-piece of organization been granted, and to this, again, we must ascribe this grand distinction—*the possession of reason.* I know that this is what some have decried as materialism, and dismissed as though that epithet settled the matter. It would be better first to enquire whether it is true. The unanimous voice of the investigators of nature attests its correctness, and it is indeed so obvious that a child may see it. It is no more certain, so far as our observation goes, that we cannot see without an eye, than it is that we cannot think without a brain. If the first of these two propositions does not startle us, why should the second? The assertion of the absolute necessity of vision, in our present state, to the cognition of form, color and distance, involves materialism just as much as the assertion of the necessity of vitally active nervous matter to the same and similar acts of the mind.—Those phenomena, indeed, which in the aggregate we call mind, such as perception, comparison, memory and imagination, and which, we behold to some extent in animals as well as man, we have never seen except in connexion with nervous matter, and (if we can have any knowledge of the relation of cause and effect,) as the effect of its vital action. Physiologically speaking, then, it may be asserted that mind is a manifestation of a peculiar form of matter in its appropriate state of vital activity. Every argument which proves that the liver secretes bile, (except that we can see it spring therefrom,) proves that the brain thinks. Its function is born and grows with the body, is affected by its diseases, is suspended by fainting, destroyed by wounds, weakened by age, and lost by death. There is no escaping this conclusion, and those who declare it incompatible with their preconceived notions, condemn them and not it. We must take the fact as it is, and if it does necessarily involve materialism, then must materialism be true, or nature is one multiform

lie. No man is entitled to the name of philosopher who fears to follow the truth wherever it may lead him, even though, for the moment, his path seems dark and dubious. Were this the place, it would give me pleasure to enter into this subject and show, as I think it can readily be shown, that the assertion made does by no means lead to materialism, but leaves the question untouched, exactly where it was before. Woe to the man that must look for his religion in the dissecting-room and the laboratory for he is building on the sand. He will find much there to interest him, much to instruct him, much to enlarge and elevate his mind by the exhibitions of beauty and goodness; but immortality and infinity are not things to be kept under bell-glasses or set up in show-cases of an anatomical museum. They are matters that the physiologist, as such, does not presume to meddle with. He sees and knows that which comes under his scalpel or his microscope, and nothing more. They are the instruments of his knowledge of the sensible world, and when he would learn aught of that which lies beyond sense, he shuts his books and throws by his knife, if he is a wise man, and goes down into the depth of his own soul to hold communion with that Inner Witness, which is "the light that enlighteneth every man that cometh into the world." It is, therefore, without the remotest allusion to any theological tenet, that I assert that the proper function of the brain is mind, and that in proportion to the perfection of this organ, are the power and extent of the function.

Now, man possesses it in a degree of completeness far beyond any other creature. Considerable confusion has occurred in the statement of this fact, from the difficulty of specifying with precision the points wherein the difference consists. Thus, it was at one time asserted that the intellect was in direct proportion to the size of the mass of the brain. But that of the elephant is more than twice as large as that of man. It has also been laid down as a law, that the larger the brain is in proportion to the body, the greater will be the intellectual development. But the size and weight of the brain are constant, while those of the body continually vary according to the quantity of fat, &c. Nor will the rule hold good, even with this exception. If true, it would give the mouse ten times the mind of the elephant and the ass double that of the horse. The brain of the humming bird, moreover, is 1-11th of its entire weight, while that of man is but 1-35th. Another mode of comparison is between the brain and the rest of the nervous system. This rule also is liable to numerous exceptions, and is too difficult of application to be relied on. Perhaps the best mode is to compare the size of the cranium proper, which is the receptacle of the brain, and corresponds with it in

form and dimensions, with that of the bones of the face. As the former contains the organ of the intellect, and the latter those of the senses and of mastication, it is presumed that the greater size of the former will indicate the preponderance of mind over sense, and that an excess of the latter will place the animal lower in the scale. There are several methods of estimating this proportion. That which is most generally adopted, is effected by what is called the *facial angle of Camper*, from the physiologist with whom it originated. A line, known as the *facial line*, is drawn from the most prominent point of the forehead to the socket of the front teeth of the upper jaw, and another horizontally backwards in the direction of the plane of the head in its natural erect position. Sometimes the latter is made parallel with the floor of the nostrils, which amounts to the same thing, and as in man it generally passes over the external opening of the ear, the skulls of animals should be placed in the same position, in order to obtain a just comparison. The human face being small and placed directly under the cranium, the angle formed by these two lines is very large, sometimes a right angle and in rare instances even an obtuse one, while in animals it becomes more and more acute as we descend in the scale. There are apparently exceptions to this rule, as in the elephant and owl, but the great prominence of the forehead in these animals depends upon the unusual size of the frontal sinus, a cavity between the two plates of the frontal bone, which exists in man to a slight extent, but is very large in them. Another method of arriving at the same result, is by comparing the area of the cranium with that of the face in a vertical section of the skull, leaving out the lower jaw. It will then be found that in man the cranium is four times the size of the face, while in the cow the face is double and in the horse quadruple the size of the cranium. Yet as these proportions are not invariable in their correspondence with the amount of intellectual manifestation, another mode of comparison has been devised, which regards the size of the separate portions of the brain. Thus, it is found that in man the upper and anterior portions are much larger than in the brains of animals, whose whole mass is equal in weight. According to the recent researches of Bourgery, the cerebral hemispheres, in man, include a nervous mass which is nine times that of the cerebellum and twenty-four times that of the spinal cord. There is no animal in whom this proportion is approached. The surface of the brain, in man particularly, is marked by deep furrows or convolutions, which increase the amount of its surface amazingly. These are said to be deep in animals and even in individuals, in proportion to their intellect. Both these latter modes of estimating the relative amount of the