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# THE CANADIAN SPORTSMAN AND NATURALIST.

No. 2.

MONTREAL, FEBRUARY 15th, 1881.

VOL. I.

## ANSWER TO CORRESPONDENT.

R. B. S., GRAVENHURST, O.—All the North American deer are supposed to be described. You will find correct information from the Game Nomenclature which we are publishing. The deer you mention may be forms of Caribou or monstrosities. Send us drawings of the horns, which may lead to a determination.

## SALMON AND SEA TROUT RIVERS OF QUEBEC.

Passing onward from point to point on the north shore of the St. Lawrence, where *Salmo salar* occur annually, we will, in this instance, make a few remarks on additional localities where the noble fish is taken sometimes abundantly in nets, but scarce in rivers in the immediate vicinity. Omitting the St. Marguerite, Mr. Price's river, a tributary of the Saguenay, which is well known to Canadian and American anglers, we will glance at a narrow river entering the Bay of Esquimaux. A few salmon visit this river. There is a saw-mill near its entrance, and the bay has no depth at low tide. At one time it was considered dangerous for schooners to enter it on account of large boulders, but of late they have been removed by the Government, and it is now a fair harbour for small craft in bad weather. A few hours sail further down, the angler reaches Baie Mille Vaches, a long stretch of sand beach, near the east end of which the Portneuf River enters the St. Lawrence. Although the latter river is only deep for a short distance, it has one pool where salmon and sea trout visit. A saw-mill was in operation at one time above the pool, but the timber is exhausted, and it may now be made a permanent salmon river, by removing the dam to allow the fish to go up to spawn. Near this river, there is a good sea trout fishing place,

called Sault-au-Mouton, where excellent sport may be had in June and July. Now, to reach this place, it will be necessary to take the train from Point Levi to either Riviere-du-Loup or any station between the latter station and Bic. Then hire a boat with a pilot or guide to cross the St. Lawrence. Make for Portneuf River, put up camp, enjoy the scenery, prepare for fishing, sand-flies and mosquitoes.

## TROUT RIVERS AND LAKES OF QUEBEC.

The best trout stream north of Montreal is called the Black River. It takes its source from a Lake called *Lac a la Croix*, about ten miles from Mr. Leprohon's house, at the commencement of the colonization road leading to the Mattawan. It is not expensive to reach this gentleman's residence, where accommodation and supplies can be obtained. The river is a day's ride from the village of Joliette. It consists of a series of pools and lakes from the entrance into the Laurentian Mountains, until *Lac Sauvage* is reached, the latter lake being near its source. The following is the Editor's score of Brook Trout taken on the Black River. The fish averaging from a quarter to a half-pound each :—

June 15th, forenoon,	36 lbs.
" " afternoon,	20 "
" 16th, forenoon,	22 lbs. Rod broken.
" " afternoon,	35 lbs.
" 17th, forenoon,	20 lbs.
" " afternoon,	10 lbs.
" 19th, forenoon,	30 lbs.
" " afternoon,	25 lbs.—198 lbs.

Several miles of the river can be fished from its banks, and parts of it may be waded. The upper portions are composed of a series of lakes or ponds all of which teem with silver-scaled trout, but it is necessary to have a canoe or raft to fish from, therefore, it would be well to take an axe and auger; with these a raft can be put together in a short time, as there is plenty of dry wood accessible. Any kind of

artificial fly will answer on the Black River; the hooks need not be larger than No. 5 or 6, and two flies will suffice on a cast. Parties wishing to visit this mountain lake region to camp in June or July will have to take warm clothing, as the nights are generally cold. A description of the lakes and streams springing from the rocky mountains of the Assomption and Black River is new to sportsmen. Both of these rivers drain the great Laurentian lakes north of Montreal. Many gentlemen who spend their holidays in pleasure of this nature, never heard of this grand mountain camping-ground. They generally visit the seaside, where, in many places, good brook trout fishing can not easily be obtained. Sometimes they have to go as far from the coast to brooks and lakes, as it is from Montreal to the Black River.

## Entomology.

### THE MILK PLANT.

WHY ARE ITS INSECT PARASITES RED AND BLACK IN COLOUR?—BY THE EDITOR.

Mimicry is remarkable in species belonging to almost all Orders of Insects. It is also well defined in some of the reptiles, in the flower-frequenting spiders, and some species of Lepidoptera. With the exception of the common Tree Frog, (*Hyla versicolor*), which has the power of imitating the bark color of the tree it rests on; the spiders belonging to the Genus *Thomisidae*, the bodies of which are imitative of the colors of the flowers in which they hide, little is known of the cause of certain insects that are parasites on plants, and which retain colors almost similar to each other. That the provision of the reptile and spider with this power of mimicry is in order to secure their food, is considered a strategy of nature. The tree frog is an arboreal animal, which can change its color to suit almost any place. The spider, in like manner lies like a wolf imbedded in the flower, preferring, in the neighborhood of Montreal, either white or pink and white,

wherein, with its fore feet erect, it is ready to pounce on any unlucky insect coming within its reach. These instances are understood by the watchful student of nature. What is wished to be inquired into, is the cause of a number of insects occurring evidently as parasites on a single plant, and all the insects having a pre-dominating color, either red or black. This study is certainly interesting, and it has led to these remarks, from the fact that the occurrence have frequently been noticed on the common Milk Weed (*Asclepias*). Why are *all*, and there are quite a number of insects of different Orders, which frequent or feed on the plant during summer, red and black, or entirely red in color? A coleopterous insect (*Tetraopes tetraophthalmus*) is totally red above, with black elytral spots. Another coleopterous beetle, *Labidomera trimaculata*; elytra, red and black. The two latter feed on the plant. An insect of the order Hemiptera, occurs common on the Milk Plant in June. It is blood red in its early stages; indeed on several occasions last year, the above beetles and their larvæ in company with the red Hemipterous bug crowded the plant, and the contrast between the downy green leaves blending with the red and black colours of the insects was what led to this inquiry. Every entomologist knows the butterfly (*Danaïa archippus*), also red and black, in the imago form, whose caterpillar feeds on the Milk Plant. There are doubtless other parasitic insects which may have been overlooked. When the plant is in flower, it is an excellent one for the entomologist to visit—even at night it attracts a few rare moths. Lastly, it may here be remarked, that a Dipterous, or two-winged fly (*Tachina*)—having a red body, covered with hair, is fond of sucking the flowers in daytime. There are some profound inquiries to be made in relation to the above insects and their connection in regard to color, with the plant as food. The larvæ of the archippus butterfly has no red colour, but the imago has it abundantly. In the transformation of *L. trimaculata*, its larvæ

larva has no red. The imago *Tetraopes* is found on the Milk Plant, and its larva is said to feed on it. The history of the red Hemipter is well worthy of investigation. In an article, written by me in the *Canadian Entomologist*, some time ago, relative to the food of insects as influencing their colors, an still of opinion that by careful study chemically, of those that feed on the Milk Plant, much of what was then contended for, may prove correct. This is written with a view to induce some of my many entomological friends to look further into the matter. Our columns are open to intelligent thoughts on the subject.

#### SALT SPRINGS IN LAKE ONTARIO.

In a correspondence which the Editor of this journal has had last August in the *Forest and Stream*, in regard to a salmon called *S. Wilmoti*, a Mr. B. of Grand Falls, New Brunswick, states, that "many reflecting persons" are "of opinion that they, (the salmon) frequent salt springs within Lake Ontario. Can any of our readers give us information regarding this statement? We are anxious to know where *Salmo Salar* goes to when liberated from where it was bred in the hatchery at Newcastle. B. informs us that "this point, however, it is hoped, will be shortly cleared up, as it is expected that facilities for close observation of the habits of these fish will be afforded by the Government. We will watch and see if these observations are made.

#### OOLOGICAL COLLECTION.

Many persons who visited the late Montreal Industrial Exhibition, must have noticed two large show cases which contained a collection of the eggs and nests of North American birds. It was, indeed, one of the most interesting exhibits in the building. Few people are aware of the extraordinary care, labour and expense which the accumulation of a collection of this nature involves. It is the property of a gentleman who has been studying North American

Oology, for years past. He is still adding to it, and doubtless in a few more years, the greater portion of the species inhabiting temperate America, may be obtained. There is more in the study than can be seen at first sight. The classification of our birds is specifically difficult in certain groups, and it is thought a more natural affinity may be attained by a comparison of embryonic form and colour. This is the case with many species, such as Sparrows, Buntings and Finches, whose egg markings, in many instances, blend so similar that it is difficult to separate them, although the birds belong to distinct genera. The same may be said in regard to the warblers which are at present in a mixed condition as to classification.

#### RUFFLED GROUSE SHOOTING.

The Snipe and Woodcock are generally supposed to be the most difficult of all our game birds to shoot, and the sportsman who can bag his four out of five of these birds usually considers himself able to knock over anything that flies. It requires, however, only a day's sport with the Ruffled Grouse to convince him that he has over-estimated his prowess. Frequenting dense covers, and underwood, rising swiftly with a whirr of wings that sometimes startles the most experienced hunter, hard to hit, hard to kill, it is not to be wondered at that only the most enthusiastic sportsman should take pleasure in their pursuit. To the true lover of sport, however, there is no shooting more exciting, his pleasure is enhanced by the difficulty attending it; and, if after a day's hard tramp, he has succeeded in bagging a few brace, he thinks not of the fatigue which he has undergone, or the miles he has travelled; his endurance and skill have secured their reward; and as he throws down his bag containing the spoils of the chase, a happy smile proclaims the enjoyment of his sport; the pleasure of return with a well-filled bag.

WALLACE.

### THE BLACK SQUIRREL.

A black squirrel, in excellent condition, was shot on the farm of J. A. Simpson, Esq., Coteau, on the 13th January. It is said that this animal has not been seen in the neighborhood of the Coteau for years past. Another specimen, the gray variety, was shot on the 6th concession, Roxton Falls, on the 10th of January, by J. I. Newport, Esq., of this city. Although it leaves its hiding place on fine winter days in Western Canada, it is not fond of cold, and it seems strange that it should be abroad when the thermometer was so low.

### PROPER NAMES.

“*Capture.*—M. Fraser a attrapé hier une magnifique poule de prairies, sur la côte du Beaver Hall. Il est très rare de voir cet oiseau au Canada à cette saison de l'année. Il disparaît généralement vers le 20 novembre.”

The above is from *Le Nouveau Monde*. The bird referred to is the Woodcock, the capture of which we noticed to in our January number. The Prairie Hen (*Cupidonia Cupido*) is a Grouse, and does not occur in this Province.

### PROVINCE OF QUEBEC.

#### GAME IN SEASON—FEBRUARY.

Ruffed and Spruce Grouse; Ptarmigan; Wild Geese and Wild Ducks.

#### FISH IN SEASON—FEBRUARY.

Whitefish, Salmon, Trout, Lake Trout, Brook Trout, Bass, Doré, Maskilongé.

### CANADIAN FISHERY LEASES.

A numerous signed petition by the inhabitants residing on the banks of the Rivers Restigouche and Metapedia has been presented to the Minister of Fisheries through Mr Beauchesne, M.P. for Bonaventure. The petition sets forth that at Confederation, the Federal Government assumed the right of leasing the inland rivers for angling. This assumption on the part of the Government, carrying with it many hardships to be borne by the settlers,

has been declared by the Courts of Justice to be illegal; the inhabitants therefore petition the Government not to renew the leases which have expired with 1880, nor to issue new ones. They point out that they have waited patiently for justice at the hands of the Department of Fisheries: at the same time they insist on their legal rights and refuse to acknowledge (as the law is at present) the leases granted by the Federal Government.

### BUCKLAND'S MUSEUM.

The late Mr. Francis T. Buckland, Editor of *Land and Water*, has bequeathed his valuable Museum of Economic Fish Culture to England, and on the decease of Mrs. Buckland, a sum of £5,000 will revert to the nation to be applied for the purpose of founding a Professorship of Economic Pisciculture in connection with the Buckland Museum, and the Science and Art Department at South Kensington, London.

### FISH AND GAME PROTECTION CLUB FOR THE PROVINCE OF QUEBEC.

This Club held their annual meeting on Saturday, January 15, R. H. Kilby, Esq., President.

The following report was read by the Acting Secretary, J. H. Mathews, Esq.:

In March and April several seizures of game were made and the offenders fined; the large quantity of game thus confiscated (over a ton weight) was distributed among the charitable institutions of the city. Seizures were also made from three other parties. Through information given by the Club a great number of nets were confiscated during the past summer, principally round Vaudreuil, where no less than 17 were captured. During the last session of the Quebec Parliament, your Committee, in co-operation with the Sherbrooke Club, made a vigorous attempt to have the present Game Law so amended as to do away with the spring shooting of ducks and other wild fowl which come to breed on our rivers and lakes, and a committee was named, consisting of Judge Coursol, M.P., E. Monk and R. Stephens, to proceed to Quebec to watch our interests. Unfortunately, the amendment was not brought up until the last day of the session, when most

of the members supporting it had left, consequently the matter will have to be brought up again this year. At a meeting held November 24th, it was decided to get up a case as to snaring partridge, and at the next meeting the acting secretary stated that a case had been brought before the Police Magistrate, but that it had been dismissed, as his Honor considered there was some doubt as to the accused being able to tell whether the partridge had been snared or not. Your committee would here draw the attention of the incoming committee to the fact that over two-thirds of the partridge offered for sale in this city are taken by snares, many of them being decapitated to prevent detection. Mr. Euclid Roy, advocate, was thanked for his gratuitous service.

The Treasurer, Mr. W. H. Rintoul, then read his report, which shows that the Society is in a more prosperous state than it has been in for several years. The income for the past year was \$262, and the expenditure \$244.61, showing a surplus of income over expenditure of \$17.39.

The Club numbers 120 members.

The following are the officers for the ensuing year:—

J. C. Wilson, Esq., President; E. C. Monk, Esq., Vice-President; W. H. Rintoul, Esq., Treasurer; J. H. Mathews, Esq., Secretary.

Committee.—R. H. Kilby, Esq., H. R. Ives, Esq., J. H. Stearns, Esq., R. A. Alloway, Esq., Geo. U. Ahern, Esq., J. J. Redpath, Esq., T. J. Brady, Esq., E. B. Goodacre, Esq., T. W. Goodwin, Esq., A. N. Shewan, Esq., J. Johnston, Jr., Esq., L. A. Boyer, Esq., J. B. A. Mongenais, Esq., T. R. Hall, Esq., J. B. Robertson, Esq.

#### CORRESPONDENCE.

To the Editor of the CANADIAN SPORTSMAN AND NATURALIST.

DEAR SIR,—On my arrival in Montreal a few days ago, I was delighted to see that you and a few other enthusiastic sportsmen had decided to supply a want long felt in Canada, viz: a paper devoted to the interests of that class of gentlemen who shoot and fish for true sport, and I feel sure that success will attend your efforts.

I must say I felt flattered when I received your request to contribute something, and only wish I had your facile pen to interest your readers. My summer of 1880 was spent in the N. W. T. of the Dominion. The 20th July last found me in the Duck or Ridg'g Mountains, at the head waters of Bird's Tail Creek, about 51° N., and on the 101st meridian.

These mountains are covered with a dense forest of tall poplars and birch, and thick underbrush of hazel and raspberry, making it impossible to get through without cutting a trail in advance.—This 20th July was a very hot day. We had started at 6 a.m. with a train of thirteen heavily loaded carts, and by 11 a.m. had made about three miles, when a very peculiar noise saluted our ears. Knowing this forest to be full of bears, we at once came to the conclusion that we were in the vicinity of a family; sisters, consins and aunts, of these affectionate creatures. The train was ordered to halt while the chief of the party and myself went forward to prospect. As we advanced the noise grew louder and louder, till we called a council of two, to decide what had better be done; face the enemy or draw on our reserves and advance in full force. While deliberating the chief happened to cast his eyes heavenwards and the mystery was explained—we had struck a heronry—hundreds of these birds were passing to and fro, and on going forward a hundred yards or so, we found the tops of the poplars covered with their nests, the young birds full grown but not able to fly, perched on the highest branches of the trees. Here in the heart of a dense forest, probably never trodden by man before, were thousands of nests of our common blue heron (*Ardea herodias* Linn). We cut down several trees and captured the young, which were cooked and eaten by some of our men with relish, probably because it was the first fresh food for three months. The nests were made of the small dead branches of the poplar and were placed as near the tops of the trees as possible. I kept two of the young birds alive for a few days, when becoming able to fly they took their departure. These mountains are full of small ponds and bottomless muskegs which swarm with lizards and small fish on which the herons feed, and on getting to an open space near the heronry we could see the old birds coming and going in every direction. Those coming home were stuffed to the bill with food for their young, making them present a very ungainly figure, as they lazily flapped their way toward the woods. On pushing our way through this mountain forest we discovered three good sized lakes about one half a mile wide and from one to two miles in length each. We tried them for fish, but only caught a few common chub. In your next issue I will try and give you some account of the game birds of the Little Saskatchewan and Bird's Tail Creek Regions.

Yours truly,

BIRD'S TAIL.

## THE GREAT NORTHERN SHRIKE, &amp;c.

SIR,—With reference to an article that appears in your primary number, page 5, I beg to say that a male Shrike, (*Collyrio borealis*) was shot in a private garden in this town on the 14th of the current month. It had probably been attracted by the numerous English sparrows that now infest our streets, several of which it had killed before it was killed itself. For these sparrows, however, notwithstanding old country associations, I entertain no friendly feeling, inasmuch as they drive away our own native birds, Blue Birds, &c. And yet one cannot but admire their indomitable pluck. No severity of weather daunts them. During the exceptionally cold winter we are experiencing, with the thermometer indicating 18° below 0, and on some days with the mercury never reaching zero, they hop about with as much liveliness and self conceit as if they were "at home." Some other importations of *Fauna* and *Flora* into the Colonies from England are anything but desirable, e.g. the Rabbit in Australia, and the Scotch Thistle in America. A fine specimen of the Long-tailed duck, (*Heralda glacialis*), was shot on one of our back lakes last November.

VINCENT CLEMENTI.

Peterboro', Jan. 22, 1881.

The Long-tailed Duck occur abundantly in the Niagara River and Lake Ontario in winter and spring, in fact, it is the most common wild duck frequenting the Canadian Lakes. It is a pretty duck, but not at all palatable, for it is neither "fish, flesh nor good red-herring, although partaking largely of the nature of all these, being exclusively a fish-feeder."—ED.

## SWIVEL OR PUNT GUNS.

SIR,—I am glad to observe that a correspondent over the signature "Wallace," in your first number directs attention to the "wholesale destruction of wild ducks on Lake St. Francis, by American pot-hunters by means of swivel guns." Such guns, or rather their use, for the purpose of killing wild fowl, is contrary to law in the Province of Ontario, and any person using them to kill game subjects himself to the penalty of twenty-five dollars for each offence. There surely must be sportsmen of the legitimate class living in the neighborhood of Lake St. Francis, who will take some interest in preventing such a flagrant breach of the

Game Act. We have no objections to see our brother sportsmen from across the border, whenever they chose to come to Canada, to enjoy themselves; but pot-hunters who kill for the market are always objectionable; and if they cannot, as they ought, be prevented from killing game, they should at least be compelled to do so according to law. I hope that no such illegal and unsportsmanlike modes of killing ducks, by swivel or punt guns of any kind will be allowed during the coming season.

Yours truly,

HAMMERLESS GREENER.

Ottawa, Jan. 27, 1881.

## THE REDPATH MUSEUM.

The building to be hereafter known as the Peter Redpath Museum, in connection with McGill University, we are pleased to state, is progressing, and after the removal of the Geological Survey's Cabinets, the citizens of Montreal may have one good collection to refer to. The present room is too small to contain the yearly increasing material, which is either purchased or donated to the University. Dr. Dawson deserves the thanks of the public for his efforts in procuring the specimens and advancing this educational department.

## MONTREAL BRANCH ENTOMOLOGICAL SOCIETY.

The eightieth meeting of this Branch of the Entomological Society of Ontario, was held on the 8th inst., at the residence of the Secretary, Mr. G. H. Bowles. Mr. Caulfield read a paper on the Coleoptera of the Island of Montreal. A number of insect dissections were also examined by the microscope.

A successful reunion of the Fish and Game Protection Club, of the Province of Quebec, was held at the St. Lawrence Hall on the evening of the 20th January. The menu, very properly, was largely composed of fish and game, and was served in a manner highly creditable to Mr. Hogan, the proprietor of the Hall.

## OUR GAME.

## REPORT ON NOMENCLATURE.—Continued.

*Cariacus*—"Horns smaller, curving forward, the first spur short, curving upward; tail long; hoofs rather elongate; size smaller."

Now, in all conscience, what earthly object is achieved in all this but a general muddle? A sub-family is erected on the ground that certain forms have deciduous horns, or that they may want these ornaments, forgetting also that the so-called non-deciduous horns are deciduous at some time of their existence. This is certainly factitious, so we may discard the sub-family *Cervine*, and thereby benefit true science.

Now, look at the genera: *Alces* and *Rangifer* are separated namely on the ground of a few hairs at the tip of the nose, which are by no means constant, and the possession of horns by the females of the latter. To follow the rule, the females might constitute a genera by themselves, as their horns are rarely palmate. Again, the presence or absence of horns is by no means a generic characteristic, scarcely even a specific one, as it is now known that there is a tendency among all these genera to horns in the female. *Cervus* and *Rangifer* are separated on the grounds of want of marked palmation in the former, and absence of antlers in the female sex. *Cariacus* is divided on the basis of a rather more elongated hoof, the angle of curvature in the antlers, and—horror of horrors—a faint difference in tail.

Now, gentlemen, here is not evidence sufficient to found a genera, though of undoubted value in the distinction of species. Formerly, great stress was laid upon the supposed fact that the young of the moose and caribou never exhibited the spotted coat, but the falsity of this has been shown by the researches of Capt. Campbell Hardy. This leaves no ground whatever for the puerile classification and nomenclature exhibited, and we may with propriety return to *Cervus* as the generic title of all our deer; there is no mistaking *Cervus Alces* for the elk or moose deer, *Cervus Rangifer* for the reindeer, *Cervus Canadensis* for the

wapiti, and *Cervus Virginianus* for our common species. Judge Caton has already recognized this fact, and took the initiative in his work on the "Antelope and Deer of North America."

Even to erect a new species is a grave mistake if it naturally coincides with any other. We have at present *Cervus (Cariacus) Cucurus* and *Cervus Mexicana*, which are but the common Virginia species slightly modified by range, climate, differences in food, etc. It is a well known rule of classification, but little recognized by the pseudo-scientists of the day—that to give birth to a new species—letting alone genera—it is necessary that characteristics should be observed that are prominent, constant and uniform in every individual, and wanting in all other individuals of the same class, and that cannot by any possibility be attributed to variation in habitat, food, climatic causes, etc. Let this, then, obtain with us as a body and as individuals.

Of birds, the same may be said in a general way as of mammals. But this report is already too long to admit of reviewing their classification as thoroughly as has just been done, following step by step down to well-known objects; such would be taxing an already over-taxed patience. Let us commence at once, therefore, with our grouse.

Under our present absurd method of classification and nomenclature, America possesses no less than six genera of grouse, exclusive of the ptarmigan. These genera are divided into twelve species, or six species and six varieties of species, viz: the spruce grouse and Franklin variety of the same, the dusky grouse, and a darker variety, the pinnated grouse and a variety, two forms of sharp tail, one sage, and three ruffled grouse.

The following table exhibits the different genera and the characteristics on which each is supposed to be based; the genus *Dendragapus* has been denied by one author, and relegated to *canace*, as he evidently felt that its discoverer was poaching on his preserves, but its existence is equally valid with those at present accepted.



GENERA AND CHARACTERISTICS OF AMERICAN GROUSE.

FEATURES.	GENUS.	GENUS.	GENUS.	GENUS.	GENUS.	GENUS.	GENUS.
	TETRAO.	CANACT.	DENDRAGAPUS.	CUPIDOSIA.	PEDIECETES.	CENTROCERCUS.	BONASA.
TAIL.....	18 feathers; 2-3 length of wing.	16 feathers; about equal to wing in length.	20 feathers; 2-3 length of wing; sometimes more.	18 feathers; one-half length of wing.	18 feathers; one-half length of wing.	20 feathers; about equal to wing in length.	18 feathers; about equal to wing in length.
TARSUS.....	Feathered to the toes.	Do.	Do.	Do.	Do.	Do.	Feathered about $\frac{1}{2}$ their length, with hexagonal scales anteriorly.
TOES.....	Middle and claw longer than tarsus.	Middle, and claw as long or longer than tarsus.	Do.	Middle toe and claw longer than tarsus.	Do.	Do.	Do.
HEAD.....	Indications of crest; pectinated processes over the eyes.	No crest; pectinated processes over the eyes.	No positive crest, pectinated processes over the eyes.	No positive crest, though sometimes apparent. Pectinated processes over the eyes.	Faint indications of crest. Pectinated processes over the eyes.	No positive crest; pectinated processes over the eyes.	Slight crest; no pectinated processes over eyes, being replaced by a row of short, stiff feathers.
NECK.....	No unusual feathers on neck, nor true gular sac.	No unusual feathers on neck. No gular sacs.	Gular sacs present.	Plumes on neck; gular sacs present.	Slight indications of elongated feathers on neck. No gular sacs.	Stiffened feathers on neck; gular sacs present.	Plumes on neck forming a ruff; gular sacs wanting.
BILL.....	Lengthened.	Slender.	Medium.	Medium.	Slightly stouter than cupidonia, yet difference not always appreciable.	Lengthened. Resembles tetrao.	Medium.
Indications wanting in all other genera.....	None.	Two less feathers in tail.	None.	None.	None.	None.	Stiffened feathers instead of pectinated processes over eyes. Well developed ruff.