mile of the upper coal beds but separated from them by the whole thickness of the Eocene and considerable of the Cretaceous. Again these deposits are always in the immediate vicinity of large deposits of bituminous shales or clays quite full of fish bones and the like but showing few or no vegetable remains. That a distillate should have come up from the far underlying Cretaceous coal beds through fissures and have spread out in certain beds only of the Miocene, while exactly the same conditions as to permeability prevail throughout the upper Cretaceous and Eocene with no hydrocarbons, would of itself preclude the supposed origin even if there were great fissures through which the material could come. In addition, however, there are no fissures cutting the formations where the deposits occur; the beds lie almost and often quite horizontally and show no signs of disturbance for the most part. Here and there are little irregular seams very rarely more than a foot wide, though in one case four feet wide, into which the hydrodarbon has oozed from the surrounding clays and made a deposit of the pure article. Were these fissures, which are evidently only local and shallow, the source and not the receptacle of the hydrocarbons, then the surrounding shales and clays would be saturated most at the point of contact and less and less as the distance from them increased, but the fact of the case is they are if anything less saturated at the point of contact and fully as much impregnated miles away from any fissures. Wherever we find even a seam the thickness of a knife-edge in these beds we find hydrocarbons, and where they are absent we find no deposits of hydrocarbons at all. The only beds which show a thinning out of their contained asphalts are the sandstones, which are nowhere evenly impregnated but are full of asphalt only where there is a crack or fissure leading up or down to the bituminous beds in the immediate vicinity. There are also several places where crude asphalt has oozed out of the sandstones and formed from a thousand to a million tons of matter more or less pure, assaying from 11 per cent to 75 per cent crude asphalt; the larger deposits are still flowing slowly, perhaps a barrel a day or the like. This material when it first comes out carries a large percentage of the more volatile hydrocarbons and considerable of the paraffine series, while the fixed carbons are low. To my mind these have the same origin as the other deposits, the connection with the overlying bituminous beds being very extensive through the small seams in the sandstones and the means of exit being the gentle slope of the beds. That the asphalt is composite is due either to the quantity and its wide origin or to lack of facilities for the volatilization of the lighter elements. Another remarkable feature in our hydrocarbons is that no two deposits so far discovered in Utah are alike in their chemical composition excepting the asphalts just mentioned. The so-called ozokerite at Pleasant Valley Junction is black and somewhat flaky, containing an excess of fixed carbon for one of the paraffines. Some fifty miles south is a deposit a few inches wide, containing a paraffine as pure as beeswax and of the same color, approaching closely to the typical ozokerite. At a place near Pleasant Valley Junction there are quite a number of seams of the asphalt series and one place where it oozes very slowly out of a layer in the bituminous shales and forms little balls which at length break off and roll down the slope. These have about the appearance of pure Trinidad asphalt and go low in the paraffines and contain small percentages of the lighter hydrocarbons. In the same region are several seams of the pure asphalt, none of them workable, in which the matter is as pure as the Uintahite or Gilsonite of commerce and has a fracture varying in the various seams from cubical to conchoidal, according to quantity of contained paraffine. A few miles farther north, but in the same geological horizon, are the only known deposits of what has recently been called Wurtzellite, which is an asphalt with an excess of paraffine. Some 100 miles farther, but in the same horizon, are the great deposits of Uintahite or Gilsonite, which has become so well known as a varnish and insulator. In my judgment these variances in composition are due to local causes, affecting the matter as it has oozed out of the shales into the crevices which have received it, such as exposure to the air, oxidation, etc.

Though the theory of the animal origin of our hydrocarbons, which was long ago ably advocated by Professor Newberry, seems to be the only tenable one, it must not be taken as proved by any means, for I have never yet seen sufficient remains of animals to account for the quantity of our hydrocarbons, though there may be sufficient in the beds as a whole. A significant fact is that these beds contain multitudes of tracks of birds and mud cracks indicating their being nearly on a level with the water. It is possible that many of the bones have disappeared by decay; this is plausible, since I have never found the bones of any animal intact but always scattered, broken and tangled in wild confusion, and yet plentiful.

The above remaks apply to the hydrocarbons of which mention has been made in *Science* and other journals. They are not the only ones in Utah, however. At the base of the Cretaceous, or at least as low as the base of the Colorado of Emmons, are other hydrocarbons wholly different from those mentioned above, which are nearly identical with the petroleum of the east, containing more paraffine only. So far they are not known to be extensive. In one locality there seems to be natural gas, but with what pressure is not definitely known,

In Salt Lake Valley is quite an extensive local deposit of natural gas of Pliocene age giving a pressure of at least 200 pounds to the inch. Its composition does not vary materially from that of the east, though it seems to give more heat and less flame.

BIRDS SELDOM SEEN IN SOUTH CAROLINA.

BY PROF. J. C. HARTZELL, JR., B. S., M. A. O. U., ORANGEBURG, S. C.

For some time the writer has been endeavoring to make a list of those birds that are uncommon in South Carolina. The undertaking has proved a very arduous task. The following is a partial list as the result of the undertaking. A fuller list is not given on account of the unsatisfactory data of a few species observed. The majority of the species noted below are in the writer's possession:

Clangula hyemalis; A. O. U. 154. Bays and coast in fall and winter. Food, shell-fish. Nest in long grass. Eggs bluish-white.

Grus americana; A. O. U. 204. Salt marshes and swamps. Food, Indian corn and sometimes mice. Nest on the ground. Eggs pale blue, spotted with brown,

Bonasa umbellus; A. O. U. 300. Hills, northwestern part of state. Nest under fallen log. Eggs white.

Aquila chrysætos; A. O. U. 349. Food, mammals and birds. Mountains in northern part of state. Nest on ledge of rocks. Eggs whitish.

Archibuteo lagopus sancti-johannis; A. O. U. 347a. Open fields. Nest in tree. Eggs whitish and drab. Food, field-mice.

Strix partincola; A. O. U. 365. Marsh lands and meadows. Food, rodents. Nest in old building. Eggs whitish.

Contopus borealis; A. O. U. 450. Pines and fruit trees. Food, insects. Nest in fork of pine tree. Eggs creamy with brown spots.

Corvus corax; A. O. U. 486. Inaccessible cliffs. Food, birds, mammals and grains. Nest in very tall tree. Eggs light green, clouded with brown.

Plectrophanes nivalis; A. O. U. 534. Mountains. Nest in crevice of rock. Food insects in summer, seeds in winter. Eggs so varied in marking as to be indescribable.

Ammodromus condacutus; A. O. U. 549. Salt marshes. Food, shell fish and small crabs. Nest in grass. Eggs bluish white with brown spots.

Ammodromus maritimus; A. O. U. 550. Coast Nest on ground. Eggs grayish-white with brown spots. Food, shell fish.

Petrochelidod lunifrons; A. O. U. 612. Jutting eaves. Food, insects. Eggs white with reddish-brown spots.

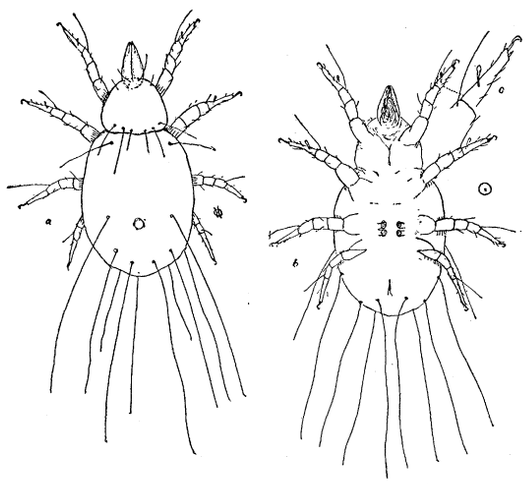
Vireo pheladelphicus; A. O. U. 626. Food, insects. Did not see nest or eggs.

Sitta canadensis; A. O. U. 728. Pine forests. Food, seed of pine tree and larvæ of insects. Nest in stump. Eggs bluish-white, with light red spots.

A NEW MITE INFECTING MUSHROOMS.

BY HERBERT OSBORN, AMES, IA.

SOME time since I received from Professor J. A. Lintner specimens of a mite which had been found infesting mushrooms quite seriously, and from its habits and the statements concerning its numbers it is likely to prove a very important pest of this crop. From the literature which is available it does not appear to be described and is certainly different from the species described as infesting mushrooms in Europe. It approaches more nearly to the *Tyroglyphus phylloxeræ* of Riley but is quite different in many structural details. Since it is likely to prove of importance it seems desirable to describe it, even though it may possibly prove identical with some of the described European forms.



Tyroglyphus lintneri, n. sp.
a, dorsal view. b, ventral view. c, tarsus, much enlarged; length shown in circle to right.
From nature, by H. Osborn.

Tyroglyphus lintneri, n. sp.—The mandibles are large, chelate, strongly toothed, the palpi terminating with a strong hook, the tarsi hooked with no sucker visible, the last segment long, slender, spiny at tip and on the two anterior pairs bearing a clavate appendage. The hairs are very long, those on the posterior part of the body equal to or greater than the length of the body and their origin marked by chitinous rings, six located on the posterior portion of the anterior division of the body and standing quite erect, ten on the posterior portion, two at anterior angles, two behind the middle and others near the margin on the posterior third of the body, abdominal suckers four, located between the abdominal legs.

This species differs from *T. phylloxerae* Riley, particularly in the greater length of tarsal joints, greater curvature of tarsal claw and the much greater length of the hairs, those at the end of the abdomen being as long or longer than the body, while the *phylloxerae* Riley describes as about one-third the diameter of the body. It is also larger than specimens I have determined as phylloxeræ, and the second pair of legs is further back on the body than shown in Riley's figure.

I have named it in honor of Dr. Lintner, who has taken a most lively interest in the various forms of acaridea, besides having made many valuable observations on these and other important insects.

THE ARCTIC CURRENT IN THE ESTUARY OF THE ST. LAWRENCE.

BY ANDREW T. DRUMMOND, MONTREAL, CANADA.

THE great Arctic Current of northeastern America takes its rise in Baffin's Bay and, after skirting with its broad surface the coasts of Labrador and Newfoundland, appears to largely lose itself as a cold surface current, as it impinges on, and, in part, parallels, the Gulf Stream. Every traveller to America by the St. Lawrence route has his attention drawn forcibly to it by the coldness of both the atmosphere and the water, and by the presence of the picturesque icebergs, which, though floating slowly southward with the current, suggest to the imagination a broad submerged mountain chain with the glaciered topmost peaks and snow-clad pinnacles alone left to view.

As the great steamship passes inward to the Gulf of St. Lawrence by the Straits of Belle Isle, the traveller is equally struck with the fact that although the current appears to have been crossed, huge bergs are still met with, floating in a new direction toward Anticosti. The explanation is that a branch of this Arctic or Labrador Current finds its way through the Straits of Belle Isle and past Anticosti to the River St. Lawrence, up the estuary of which it ascends on the northerly side toward Quebec. On the way it meets with and is tempered by the warmer waters coming from the Great Lakes above, as they pass outward to the sea, and returns on the south side of the estuary as a modified current, which, after skirting the Gaspe Peninsula, is finally lost in the Gulf of St. Lawrence. This is the substance of our present knowledge.

The temperature of the water in the estuary of the river becomes interesting as bearing on the existence of this current. During the early part of August, last, the opportunity presented itself at Murray Bay, on the north shore, of obtaining some surface and bottom temperatures. The instruments used were Negretti and Zambra's reference and deep-sea thermometers. The conditions on the 5th of August, when the following readings at different points were taken, were those of calm air, clear sky, and fairly strong sun; the time, 8 A. M. to 8:30 A. M., and the position about a mile and a half off Cap a l'Aigle, a jutting headland four miles below Murray Bay village:

	1	2	3
Air	59° F.	——	59½° F.
Water on surface	46¼°	46½° F.	46¼°
Water at 17 fathoms	——	——	38¼°
Water at 18 fathoms	38½°	——	——
Water at 31 fathoms	——	38½°	——