

to genera they can tell but little, indeed, they can only confuse the student. The names *Chondropoma*, *Chocanopoma*, *Colobostyhis*, *Thadora*, etc., mean nothing applied indiscriminately as they are.

When Simpson and I first attacked the mountains about San Diego our first impression was that we were gathering the very same species taken before many miles west at Vinales, Sumidero etc., and it was easy to fancy ourselves back in our old haunts of two years ago. We were, however, deceived by the similarity only of the species of the two localities. The majority are different species, especially, as one might anticipate, among the Urocoptids. It is only the genera and the sections that are the same.

The delights of mogote collecting are hard to exaggerate, and there are many mogotes all about San Diego de los Banos. Each is a little treasure trove full of life and a bower of tropical luxuriance and we worked them all within a distance of several miles of the town. A day spent on La Guida, a splendid mountain of the main range, will give perhaps a good example of our daily work while at San Diego. An early morning walk of about six miles brings us to the "sacred presence" and we leave the so-called road to ford a river and plunge into the fearful jungle at the base of the mountain. There are no shells in this jungle, but upon reaching the actual base of the mountain great rocks are first met and among them the dead shells give an index to what we may expect when we get up a little higher. Traveling is most difficult here until the first line of rocks is passed and the steep sides are reached. Then somebody picks a *Cepolis parrana* off a tree and we begin to look sharp for Liguus. Then we reach a region of huge masses of limestone broken off and fallen from the great cliffs above, all smothered in vegetation. Here we discover on the rocks and the trees *Urocoptis irrorata* and in the smaller crevices *Urocoptis guirensis*, *saxosa* and one or two closely allied species. Simpson calls out that he has a *Macroceramus (elegans)*, and then we grub for a time in the soil about the bases of the rocks and turn out *Megalomastoma manu* and that splendid *Alcadia (Emoda) sagratana*, and there are also here many smaller things as *Lymbasis angustata*, *Plectardiella acuticostata* and its curious variety *horrida* of Pilsbry. Climbing still higher we reach the foot of the great perpendicular wall towering naked above us for several hundred feet, and new conditions are at once met. *Eutrochatalia regina* is very common and we cease even to gather it. An occa-

sional colony of *Eutrochatalia acuminata* keeps our enthusiasm warm, and then we discover a colony of that perfect little gem among land shells, *Eutrochatalia chrysochasma*, with its pinkish cast and flaming red aperture. The big *Chondropoma shuttleworthi* are quite abundant and we only take the best looking specimens, but the more rare *Chon. segeberti* is much more shy; we get but a few of them living. *Annularia blaini* is everywhere, and we tell our Cuban guide not to take any more of them. An occasional *Pleurodoxie (Thel.) rangelicana* with its commoner cousin *Pl. auricoma* is taken. *Oleacina o. straminea* and the smaller *solidula* along with the species that have the incised lines upon their spires are fairly abundant. Less so are the *Rectoleacina cubensis* and *R. episcopalis*, but they are there to be had for the search. Some one warns the rest that it is getting time to pull out for home, and we reluctantly drop the work and scramble back to the river, an hour at least to go half a mile. In the river we enjoy the luxury of a swim in the cool, clear water, and revive our energies for the long "hike" back.

Wherever the naturalist wanders there is always a beyond that is guided by imagination and mystery. From a high point we could gaze into a beyond of high sierras among which our native guide pointed out the great Pan de Guajabon, far away and indistinct as a cloud peak above the mass of mountains. Guajabon has always been our dream mountain for future conquest. It was visited a half century ago by that most enterprising of Cuban collectors, Charles Wright, but since then it has guarded well its conchological treasures.

DISTRIBUTION OF SOME FRESH WATER SHELLS OF THE ST. JOHN'S RIVER VALLEY IN MAINE, NEW BRUNSWICK AND QUEBEC.

BY OLOF O. NYLANDER.

For many years I have been collecting shells in the valley of the St. John's River and its tributaries, the Aroostook and Fish Rivers in Maine, and Madawaska and Green Rivers in New Brunswick and Quebec. Every tributary has some interesting forms, of which many are peculiar to a single locality. Many of the tributaries of St. John's River are in the forest. It is a lumbermen's field for harvest, and great quantities of logs are floated down these rivers every year. Sawmills large and small are to be found nearly every-

where. The sawdust and other waste is thrown in the water, and is forming extensive deposits in the river and tributaries. It is very destructive to Molluscan and other animal life.

*Anodonta marginata* Say. Is distributed in the main river and the lakes and tributaries on muddy bottom. Common.

*Alasmidonta undulata* Say. St. John's River at Fort Kent and Conners. Also in the Aroostook and Fish Rivers. Rare.

*Margaritana margaritifera* Linné. Is found in the Aroostook River and some of its tributaries. I have not seen *M. margaritifera* in any of the St. John's River tributaries above Grand Falls. If it is living in the upper part of St. John's River it is rare.

*Unio complanatus* Solander. Generally distributed in the Aroostook and Fish Rivers, rare in the St. John's River. In Temiscouata Lake is a small form of this species that is common in deep water in the lakes of Maine (Fish River lakes).

*Sphaerium striatum* Lamarck. Common on rocky bottom in Fish River, in St. John's River at Fort Kent, and in Madawaska River at St. Rose.

*Anulus borealis* Morse. In 1899 I found five specimens of this rare shell in the St. John's River at Fort Kent.

*Lymnaea (Galba) emarginata* Say. Second Eagle Lake, Fish River and St. John's River at Fort Kent, abundant on rock bottom feeding on *Confervee*.

*Lymnaea (Galba) emarginata mighelsi* Binney. This variety is represented by fine large specimens at Square, Cross, and Portage Lakes. The type of *Lymnaea ampla* Mighels came from Square Lake.

*Lymnaea (Galba) emarginata canadensis* Sowerby. A large colony was found on rocky bottom on the north side of Mt. Wissic, Temiscouata Lake, Province of Quebec. The colony is located in a partly sheltered cove in water two to ten feet deep or more. Among those found here I have noted certain peculiarities that are common to all species that are found on rocky bottom in more or less sheltered position. Each colony has its peculiar variations and need a geographical name to express their habitat rather than a specific designation of any individual. See F. C. Baker's work on "The Lymnaeidae of North and Middle America."

*Physa heterostrophus* Say. Common in the St. John's River at Fort Kent, also in the Fish and Aroostook Rivers.

*Physa ancillaria* Say. Common at Square Lake inlet; dredged in Second Eagle Lake and Portage Lake on Fish River. A single specimen was seen at Mt. Wissic, in Temiscouata Lake.

*Physa sayi* Tappan. A large colony exists in the Caribou stream at Caribou village, Me. A second locality is at the Third Falls on Green River, New Brunswick. The shells are common below the falls and of large size.

*Planorbis bicarinatus* Say. Common in the St. John's River at Fort Kent, in the First Lake on Green River New Brunswick, and in the Fish and Aroostook Rivers, Maine.

*Planorbis bicarinatus aroostookensis* Pilsbry. Has only been observed in the towns of Woodland and Caribou, Maine.

*Planorbis bicarinatus portagensis* Baker. It is apparently a deep water form and is found in Fish River, Maine. Specimens of this variety are also found in First Lake, Green River, New Brunswick.

*Planorbis campanulatus* Say. Common in Fish River Lakes, Maine, and First Lake, Green River, New Brunswick.

*Planorbis deflectus* Say. Salmon Brook, Aroostook County, Maine, and First Lake, Green River, New Brunswick.

*Planorbis tricolis* Say. Is well distributed in the Fish River Lakes and in the Aroostook River Lakes. It is represented in the First Lake, Green River, New Brunswick, by a large form with the whorls somewhat flattened.

Of landshells, *Succinea retusa* Lea is common around Temiscouata Lake.

*Polygyra albobabris* Say, is common on Mt. Wissic, Temiscouata Lake.

*Pyramidula striatella* and *Zonitoides arboreus* seem to be common in the Northern part of New Brunswick.

*Zoogenitis harpa* Say, I have collected near Green Mt. on Green River.

*Succinea ovalis* Say is common at Grand Falls, New Brunswick. *Polygyra monodon cava* Pilsbry was collected at St. Leonards, New Brunswick.

When a complete survey can be made of the St. John's River there will be many interesting varieties or mutations discovered. This survey should be made before the lumber operators and the sawmills have destroyed the most important lakes and tributaries.