THE BOY WITH THE U.S. NATURALISTS

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THE BOY WITH THE U. S. NATURALISTS

BY

FRANCIS ROLT-WHEELER

With Forty-one Illustrations from Selected Photographs

BOSTON
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The Boy With the U. S. Naturalists

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FOREWORD

The Author desires to thank the members of the U. S. Biological Survey, who have assisted him with counsel, personal material and have read the manuscript of the book, especially Mr. E. W. Nelson, Chief of the Survey. Appreciative thanks are also tendered to Mr. Ernest Harold Baynes, one of the leaders in the Bird Sanctuary movement, and to Mr. Gilbert Pearson, secretary of the National Association of Audubon Societies. Obligation is expressed to Mr. Frank M. Chapman for material used from the "Handbook of Birds of Eastern North America," and to the Lippincott Co., the Macmillan Co., and Doubleday, Page & Co. for the use of copyrighted illustrations. Appreciation of courtesy furthermore is expressed to the American Museum of Natural History, for the use of pictures of museum exhibits and other photographs of bird life made by the members of its scientific staff.

PREFACE

Mystery and wonder wing their way overhead with every stroke of a bird's pinions. Every greensward, every tree, every league of sea or spread of beach is replete with adventure and romance, not less thrilling because its knights and heroes are born with feathers. Rescues and hair-breadth escapes are the daily portion of these cavaliers of the air.

Little though we may think it, our fate lies in the keeping of the birds. Let them but fail us for one season, and all our vaunted civilization goes to naught. Their lives are our surety, their protection is a debt of gratitude that we should pay willingly and eagerly. Nowhere in the world is there to be found a truer appreciation of kindness than in the heart of a bird.

The United States Biological Survey, the Audubon Societies, and the Bird Sanctuary movements are three of the great forces of America for the protection of birds. Where the Pacific surges beat against coral reefs, Uncle Sam's sailors do

battle with crews of armed poachers; on lonely sand spits may be found the graves of Audubon agents who have died, rifle in hand, defending their posts against feather pirates; while, far and wide over the country, war wages between game officials and desperado pot-hunters. Carelessness and ignorance are on the side of the enemies of birds. To reveal to the lads of the United States the needs of their feathered friends, to show the magnificent work being done by the United States government, and to give every American boy the opportunity of winning his spurs in the service of American birds, is the aim and purpose of

THE AUTHOR.

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THE BOY WITH THE U. S. NATURALISTS

CHAPTER I

MENACED BY BEAK AND CLAW

"WHERE'S Bull Adam?" demanded the stranger curtly.

Shan looked up from under his eyebrows with a suspicious glance. Strangers were not welcome at the cabin, which deservedly bore a sinister reputation.

"I don't know where he's gone," the boy answered sulkily. The thought ran through his mind that this was the very sort of man his uncle wished to avoid.

"See here, boy," the stranger continued, with a peremptory note in his voice which grated on Shan's ears, "it ain't no good to lie to me. I reckon, generally, on findin' out what I go after. Tell what yo' know, an' tell it straight. Where's Bull?"

"I don't know, I tell you," the boy persisted; "he don't stay round the cabin much, daytimes."

"No, nor night-times, either," said the other, shortly, "judgin' from all I hear. Did he say this mornin' which way he was goin'?"

"He said something about the Forks," Shan replied reluctantly.

The stranger eyed the boy keenly, convinced that he was being misled. The heavy indifference of Shan's expression, however, gave no clew.

"I reckon I'll make that my road, then," said the visitor, swinging his rifle into the crotch of his arm, "though I don't nowise feel sure o' meetin' him there. Yo'll probably see him before I do, eh?"

"Maybe," returned Shan, cautiously.

"Well, if yo' do, yo' can tell him that Ned Thompson was lookin' for him."

"I'll tell him," said Shan.

Once more the stranger scanned Shan's features resultlessly, and, with a muttered exclamation, strode away swiftly. Shan watched him go, resentful of his curtness, misliking the man at first sight and convinced that his visit boded no good.

The stranger was no sooner out of sight, however, than the lad's sleepy manner changed. He

got up from the rough door-sill of the cabin, on which he had been sitting, and slipped into the woods. The stolid expression was gone, his face was awake with the woods cunning. The spirit of the hunter, which lies deep in every boy's heart, had taken possession of him.

The lad's bare feet made little noise, for several years of trailing had taught Shan how to walk without unduly disturbing the wild life of the forest. As he crossed a brook, however, a Belted Kingfisher rose up from the limb of a tree, rattling his danger cry and alarming every forest creature within hearing. But Shan was after bigger game and pushed on. The Kingfisher flew back to his chosen perch and resumed his watch over the water, in which the gleam of a shining scale would mean dinner.

Shan knew well the windings of the road by which the stranger had gone and was aware that the short-cut he was taking would soon bring him to a point where he could overlook the road and make sure that the unwelcome visitor had indeed gone in the direction of the Forks. Having arrived at the place, Shan slipped into a dense clump of bushes, where he could see without being seen, and set himself to watch.

He did not have many minutes to wait. Presently the stranger came striding along the road, his eyes roving from side to side and seeming to take note of every leaf and twig. When almost opposite the clump of bushes where Shan was hiding, he stopped and spoke.

"Yo' might as well come out o' those bushes, boy," he said; "yo' can't hide from me, that way."

Crestfallen, Shan stepped out.

"Yo' wanted to make sure that I was gone," the man remarked, sourly, "so as yo' could tell yo' uncle, who, likely, is off the other way. Ain't that so?"

The boy made no reply.

The stranger, rightly interpreting this silence to mean that his guess was correct, proceeded,

"I'm goin' down to the Forks, as yo' see, an' if Bull Adam ain't there, I'll know yo' were lyin'. It's easy enough to tell when there's some one in the forest, if yo' ain't deaf, blind, or a fool. I reckon yo've been wonderin' how I knew yo' were there."

Shan looked up with a quick eagerness. That was exactly what had puzzled him.

The stranger glanced down contemptuously.

"Folks like you-all live in the woods all yo'

lives an' never learn to listen," he said. "Didn't yo' hear the Kingfisher rattle?"

"Uh-huh!" assented the boy.

"Have yo' ever seen a Kingfisher make a fuss over nothin'? He looks after his own business well enough, but he's always got an eye on what's goin' on aroun'. An' more, a couple o' Wrens, a Vireo an' a Yellow Warbler flew across the road a piece back, all goin' the same way. Somethin' sure was movin' on a line with me. Right by this bush I heard a buzzin' an' saw the wild bees hoverin', their heads all pointed inwards. It don't take no great amount o' guessin' to know some one was hid there, an' that some one could only be the boy who knew which way I was goin'."

This man really knew the woods. Shan felt that, if his manner were not so offensive, he could have admired him.

"Now," he continued, "I'm goin' on to the Forks to see Bull Adam, since yo' say he's there."

It was on the tip of Shan's tongue to admit that his uncle was not at the Forks, but he had been strictly cautioned never to give out any information, and so he stood, sheepishly, rubbing one bare foot on the other, as the stranger went down the road.

Satisfied that the visitor really was on his way, Shan doubled on his tracks and headed for another part of the forest. He had covered the better part of five miles and his legs were well scratched with briers before he reached the section he sought. There he stopped and whistled three times the alarm call of the Scarlet Tanager:

"Chip-cherr! Chip-cherr! Chip-cherr!" the first note high and shrill, the second note being a downward slur, five tones lower in the scale.

From time to time as he advanced, Shan repeated the call, and, at last, the triple cry came in response. Guided by the sound, the boy made his way through the woods and came upon a little glade where his uncle was seated on a fallen tree, his gun on his knees, waiting for his nephew.

In a country-side not much given to nicknames, Jefferson Adam had been called "Bull" Adam, as far back as any one could remember. His headstrong and violent temper had made him feared by all the countryside. While not morose, he was a silent man. When Shan appeared through the trees, Bull merely turned his head sidewise a trifle to show that he was aware of his nephew's coming.

Shan, himself, was not greatly more communica-

tive. He slouched down on the fallen leaves, close beside his uncle, plucked the outermost young tendrils of a wild grape-vine near by and began to chew them. For several minutes neither made any remark, and then Shan said, casually, without any suggestion in his tone that he had been hurrying hot-foot through the forest to carry the news,

"Stranger up at the cabin this morning."

"So?" drawled Bull, a slight note of interrogation in his voice.

"He told me to tell you he wanted to see you."

The old woodsman glanced questioningly at the lad, and Shan continued,

"Ned Thompson, he said his name was."

Bull's lips tightened a trifle, but, otherwise, the news seemed to have no more impression on him than on the fallen tree upon which he was sitting.

The noises of the forest, arrested for the moment by the sound of human voices, recommenced. A Yellow Warbler, astray from the cut-over woodland near by, undisturbed by the almost motionless figures of man and boy, fluttered to a bush at hand and poured out rapidly his characteristic song of six sharp notes with a downward slur.

Bull Adam, interested only in game birds, paid no heed, but Shan's eyes noted the bright little

fellow, locally wrongly called a "wild canary." Wrongly called, for a Canary is a seed-eating bird of the Finch family, with a strong, short conical beak, and comes from the Canary Islands; while all the Wood Warblers are distinctly American, are found only in the western hemisphere, have sharp and slender bills and live on insects. The boy's attention was so fully centered on the Yellow Warbler that he started when Bull spoke again, referring to the stranger.

"Game warden, ain't he?" he said, putting his remark in question form, though he had no reason to suppose that the boy would know the fact.

"Acts like one," hazarded Shan in reply, and in drawling sentences, he told of his hiding in the bushes and his subsequent discovery. "So," concluded the lad, "he's likely enough to be a game warden, knowing the woods like that."

Bull grunted in reply. A long pause ensued. Conversation in the thinly settled districts of North Carolina cannot be considered a fine art.

"It's an unhealthy trade!" was Bull's next remark, and there was a threat behind the words.

Shan glanced sharply at his uncle. Although resentful of his ignominious discovery by the warden, he bore no malice, and even the infrequent

gossip which had reached the boy's ears had taught him that his uncle's enmity was a thing to be feared.

"Which-all way was he goin'?" Bull queried.

Shan plucked off another grape-vine tendril and chewed it before he answered, slowly,

"I told him you-all were down at the Forks."

The man grunted approvingly and tilted his straw hat on one side to scratch his head. The gesture displayed his hair, still plentiful, of brown streaked with gray, resembling the plumage of a Song Sparrow. His face was tanned with sun and exposure; his eyes, though but half open, were observant; and, though his slouching attitude suggested indolence, it would be hard to find a wild animal more alert in response to danger. His hard, set expression reminded one of the calm ferocity of a bird of prey.

"Did he have anythin' else to say?"

Shan repeated, almost word for word, the brief conversation at the cabin door, and, when he had finished, there was a deepened shadow on Bull's face.

"I reckon I'm a bit too old to have any game warden worryin' around as to when I go out o' nights an' when I don't," he said.

And again he repeated,

"It's an unhealthy trade!"

Bull ought to know what an unhealthy trade was, for he had been engaged in little else all his life. Poacher and pot-hunter by profession, he was even better known in the region as a moonshiner, or maker of bad whisky in defiance of the law.

Revenue men had been after Bull Adam many and many a time, but he had never been caught. The old man had no confederates, asked no one's help and could keep his tongue between his teeth in any and all circumstances. Would-be informers, who had a grudge against him, several times had tried to make him drunk with his own whisky, but they could not make him talk. An incautious spy had been dropped with a bullet in his knee.

Even Shan, with all his knowledge of the countryside and his close acquaintance with his uncle's ways, had not the slightest idea where the moonshine still might be located. He could truthfully say that he had never seen a drop of whisky in the cabin and he had far too much fear of his uncle's anger to go spying on him.

Between the old pot-hunter and the lad there was a genuine affection. Bull had two interests

in life; his old hound, Dinah, and his orphaned nephew, Shan. The big tom-cat, Bob, came in but a poor third.

Bull had taught Dinah all the hunting tricks that a dog should know. In exactly the same spirit, he had gone to considerable pains to teach Shan all those things which he considered a boy ought to know. The lad could read, write, and add a column of figures, and, at that point, Bull deemed his education complete.

"If yo' can shoot, fish, an' use a hoe," he was wont to say, "yo' won't starve in the country; an' if yo' can read, write, an' cipher, yo' won't starve in the city. An' that's all there is to it."

The library in the cabin was not extensive. It consisted only of a Testament, a series of almanacs advertising a malaria cure, which Bull brought every year from the store where he did his trading, and a stray volume out of a set of "Encyclopædia of American Birds," which Bull had found in a deserted duck-blind one spring, probably left there by some city sportsman the winter before.

This volume of the "Encyclopædia of Birds" was, second to Bull himself, the strongest influence in Shan's life. Possibly, if the whole Encyclo-

pædia had been there, and especially if he had been compelled to read the set throughout, the lad might not have discovered any special interest in it, but, rather, might have developed a distaste for ornithology. As it was, however, the volume in his possession only covered the letters DRA to GYR and the information that it gave was resultantly tantalizing. It was, undoubtedly, because this particular volume contained a long article on "Ducks" that Bull had found it in the duck-blind.

Shan, therefore, was well informed on the question of "Ducks." Naturally, also, he knew a great deal about "Goose," but hardly anything about "Swan." The "Eagle" was in the Encyclopædia and also in Shan's knowledge, but not the "Hawk" nor the "Crow." The "Finch" was an old friend, but not the "Blackbird" or the "Thrush."

The chief feature of this particular volume, however, came under the heading "Eggs." There was a colored plate illustrating a score or so of birds' eggs, showing differences in sizes from the huge egg of the ostrich to the tiny sphere of the humming-bird; in shapes between the round egg of the Owl and the conical egg of the Plover; and in coloring, from the white egg of the Woodpecker

Courtesy of Mr. Richard Kearton.

DESCENDING A CLIFF.

The climber puts his legs through a rope with two loops, takes the guide rope in his hands and boldly steps backward off the edge of the cliff. The right-hand picture is an enlargement of the left hand.

to the gaily painted egg of the Guillemot. More important still, the eggs were arranged under a system of classification, which gave the Orders and Families and Species of birds in their proper relationship, the kind of nest made by each species, the number of eggs in an average "clutch" or nestful, and their shape, size and coloring.

Here was a provocative of knowledge! Of all the birds which flitted round him in the shrubs and trees of the forest or in the reeds of the marsh, Shan could only identify those whose names chanced to begin with the letters between DRA and GYR. Grackles he knew, but Sparrows he did not; Flycatchers were familiar and Warblers quite unknown.

The eggs of birds, however, gave a clew, though a meager one, since the eggs of many species of birds are closely similar. Since the Encyclopædia gave the name of the Species as well as the description of the egg, if Shan found a bird's nest with a clutch of eggs in it, he could sometimes learn to what species a bird belonged by observing the parent birds.

Each nest he could trace as belonging to a different species, then, was a link in this great puzzle of Bird-land. Where interest and study

might have failed, curiosity and the love of solving a mystery kept the boy on the alert. Small wonder, then, that Shan found a passion in bird's-nesting.

Partly because Bull's livelihood depended to a certain extent on his knowledge of the habits of game birds, the old pot-hunter had looked at first with amusement and then with favor on his little nephew's interest in birds' eggs, and, from time to time, he would bring nests home to him. As the years passed by and Shan developed into a sturdy lad, well able to go bird's-nesting on his own account, Bull realized that his own interest in the collection of eggs was little less strong than that of the boy. He became as eager as Shan to put a black pencil mark in the Encyclopædia as a sign that another species had been identified. The eggs of over eighty species were in Shan's collection, well housed in home-made boxes of aromatic cedar, with leaves of wild thyme to keep out insects.

It was not unusual for Bull to make a few blaze-marks along a trail to some nest that he had discovered during his long tramps through the woods or which he had noted in his solitary boat-trips along the upper waters and tributaries of the

North Alligator River. So there was nothing especially unusual, when, one evening, a few days after the game warden's visit, Bull said to the lad,

"There's a chance to get some Fish-Hawk eggs, I reckon."

"Where?" asked Shan, eagerly, straightening up from his dish-washing, one of the household tasks that always fell to his share.

"Down the river a ways," the pot-hunter answered. "I ran across it a day or two gone by an' didn' think to tell yo'. It's a big un, too, must have nigh on to a cart-load o' truck up there. Right near the top of a cedar it is, 'bout sixty feet up."

"Do you suppose I can get at it?" asked Shan. "The last Fish-Hawk's nest I found, the spring before last, was easy enough to climb to, but I couldn't get over the edge of it."

"Couldn't yo' catch hold o' the edge an' swing on up?"

The boy shook his head.

"I tried," he said, "but just as soon as I started to pull, the sticks came apart and didn't give me any sort of hold. It was about a hundred feet up, too, and looked like a long way to drop."

"I didn't project 'round this nest none," said

Bull, "only jest noticed it from below the ridge, maybe a quarter of a mile off."

"Do you suppose there are eggs there?"

" 'Bout the season for 'em, ain't it? Fish-Hawks nest early. An' I saw one o' the birds snoopin' 'round. Yo' can always have a look an' find out. It's a right smart ways from here, though. Yo'll have to go down by boat."

"Are you headed that way soon, Bull?" the boy asked, anxiously.

"Goin' down there to-morrow," the pot-hunter answered, "that's why I'm tellin' yo' about it. I'm runnin' clear down to the Sound, but, if yo' want to, I'll drop yo' on the bank near the ridge an' pick yo' up again on my way back."

"That'll be fine, it'll give me nearly all day," said Shan; "I sure ought to be able to get the eggs in that time, if there are any."

It was scarcely daylight the next morning, when the sound of his uncle stirring about in the cabin brought Shan out of his palmetto-leaf bed with a rush. Fetching wood and water was his job. Taking the wooden bucket, he hurried to the shallow well, about fifty yards from the door of the cabin, filled the pail quickly and hurried back. Next, he piled beside the stove a small heap of

shavings and twigs. The wood-box was full. It was always full, for on this point the pot-hunter was a martinet. He was shiftless enough himself, in some ways, but Shan had to do his own share of the work.

Bull, meanwhile, was busy making the regular morning corn-bread, at which he was a master hand. By the time that Shan had returned with the water and the shavings, the bread-batter was ready. Bull lighted the stove, while the boy cut off some pieces of the crudely salted meat of razor-back hog and put them in the frying-pan. In a few minutes, a roaring fire heated the little oven and the bread began to bake.

This same breakfast, of corn-bread with syrup, fried hog-meat and coffee, Shan ate unchangingly every day in the year.

Breakfast over, Bull shaved, for with all his rough manner and negligence of dress, the pot-hunter was never seen with an unshaven face. Meanwhile, Shan washed the dishes and swept the cabin floor. One hour from the time of rising, everything was done, breakfast eaten, and the cabin—such as it was—put in order. The two went together to the landing.

Bull's boat, like his guns, was of the best.

Probably there was not a better boat in all the district than that of the pot-hunter. It looked dirty, yet it was in a far better condition than many of the trimmer-looking boats which might be seen at the occasional landings along the river. There was no boat in which a single oarsman, however good, could overtake Bull when he did not wish to be overtaken.

The sun had risen and the forest was full of the twitterings of birds when Bull and Shan took the oars and the boat started down the dark brown waters of the stream, brown from its infusion of juniper needles, like most of the rivers of that swamp country. Here and there a rough log-like object stretched out on a mud-bank revealed itself to Shan's eyes as an alligator, and once he remarked to his uncle, as they passed an exceptionally large specimen,

"He'd be worth getting!"

But, though Bull's minor activities occasionally extended to alligator-catching—in which event, he caught the reptiles barehanded—this day the pot-hunter was bent on another purpose. A flat object, covered with tarpaulin and lying at the bottom of the boat, Shan knew to be a battery gun. Not for worlds would he have admitted that he recognized

it, for, since the weapon was never seen in the cabin, the boy rightly assumed it to be unlawful. Bull had thoroughly drilled into his nephew the wisdom of not seeming too curious with regard to other people's affairs.

"Much fish down this way?" he asked, after an hour's pulling.

"A-plenty," his uncle replied concisely, and continued rowing.

The sun had risen above the trees, now, and the day promised to be hot. The marshes on either side steamed with a blue mist, although it was as yet only spring. The malarial odors which haunt that region began to suggest themselves.

"Right smart warm for this time o' year," remarked Bull, at last, as he turned the bow of the boat in for the shore, close to a point where a huge bald cypress grew well out from the bank, its roots deep in the water.

"It sure is hot," Shan agreed, shipping his oars and wiping his forehead with the back of his hand. He picked up his home-made collecting-box and made ready to land, listening the while to his uncle's directions.

"Strike in about half a mile south-east o' here," said Bull, "or, maybe, a little further an' yo'd

oughter be able to see a ridge o' pines. There's three big uns in a clump, standin' right out against the sky-line. At the north end o' that ridge is the big cedar that I told yo' about, with the Fish-Hawk's nest. See what yo' can do, an' be back to this cypress 'long 'bout an hour afore sun-down."

"All right," said Shan, "I'll be here waiting," and he jumped out upon a big log against which his uncle had directed the prow of the boat.

"There's a right smart plenty of cotton-mouths 'round," warned Bull, as he pushed off; "there ain't no special need o' bein' reckless."

"I'll watch out," replied Shan, and nodded to his uncle as the boat slid down the brown river.

The caution was unnecessary, though well-meant. Shan, whose feet had never known shoes or stockings—at least not since the time that his uncle had taken the little orphaned lad—had all the instincts as well as the training of a bare-footed savage. He never stepped into boggy or marshy water without probing in advance of his footsteps with a stick, knowing that the deadly water-viper, generally known as a "cotton-mouth moccasin," will always escape if he is given a chance and will only strike in defense with his

Courtesy of U. S. Biological Survey.

THE MURDEROUS BIRD-CANNON.
Cumbrous weapon illegally used by a pot-hunter on the Potomac River. It would disable eighty birds at one shot.

venom fangs when surprised, alarmed or attacked.

Snakes, as the boy knew, like all other creatures of the wild, fear Man. He is incomprehensible to them and therefore terrible. Escape is the universal instinct.

Of all the poisonous snakes found in North America (sixteen species) probably the only one which will actually force an attack on Man is the fer-de-lance, common enough in South America and some islands of the West Indies. The rattlesnake will give warning, even when cornered; the copperhead is a lazy little beggar and will crawl away without a thought of harm, unless trod on; and the cotton-mouth will content himself with frogs and small fishes unless suddenly driven to irritation in his watery domain.

Shan had hardly taken a dozen steps into the marsh when he heard a distant "Cooey!" from his uncle, and, looking round, he saw that the pothunter had stopped rowing, and, holding the handles of both oars in one hand, was pointing upwards with the other.

"There's yo' bird!" Shan heard him call, the words coming faintly over the vapor-laden water.

The boy waved his hand in reply, and stared upward into the sky.

Shan had good sight, and, having once before seen the freebooting deed which he was again to witness, he was able to follow in detail every move of the aerial piracy.

Rising slowly and heavily from the waters of one of the open marshes, half-way between the place where Shan had landed and the waters of Pamlico Sound, could be seen a large Osprey, or Fish-Hawk, with a good-sized fish gripped in its powerful claws. Only one other bird in all the world has a foot like the Fish-Hawk. The outer toe is reversible, so that the bird can clutch a fish with two talons on either side of its body. Moreover, in addition to the opposed claws, spicules or little spikes stud the under surface of the toes, giving a grasp which holds a live fish so firmly that all its squirming is of no avail.

This particular morning, as Shan saw, the Fish-Hawk must have won a valuable prey, for the bird was flying slowly and heavily, his powerful wing-strokes as he made his way back to the nest contrasting with the customary soaring flight when looking for his prey.

Suddenly, from high over Shan's head, came a harsh shriek, so full of threat that it could come only from the throat of one fierce bird—the Eagle.

Down from some distant eyrie, whence, with his incredibly keen vision, he had been watching for the return of the Fish-Hawk, swept the Bald Eagle of Mattamuskee Lake.

The Osprey looked up despairingly.

Well he knew the call of the robber, that "Hands up!" of the air.

With a smaller fish, perhaps, he might escape, but now he was too heavily laden.

The Eagle swooped down, its ruffled feathers and huge size causing it to seem like a monster beside the Fish-Hawk, himself of no mean proportions.

As the living thunderbolt fell, the intended victim, a master flyer, swerved swiftly upwards and to one side.

Out into the full width of their seven-foot spread shot the wings of the great Bald Eagle and his stiff tail spread outward like a fan to stop his downward plunge, the very force of his fall giving him impetus to rise again in a sweeping curve. Half a dozen powerful wing-strokes brought him once more above the harassed Fish-Hawk.

Not yet, however, was the latter ready to give up his prey.

At the second swoop of the Eagle he swerved again, knowing well that his pursuer's tactics were

for the sole purpose of forcing him to drop his glistening prize.

The Bald Eagle, however, was a bird of quick temper, little accustomed to being thwarted. When his second swoop failed to make the Fish-Hawk drop his prize, he brought up with a quick jerk, and, on whirring wings, came up squarely in front of the Osprey, his yellow eyes glaring and his great talons held as though to strike.

"Here's where the Fish-Hawk had better look out for himself!" exclaimed Shan, as he watched this contest in the air.

A third time the Eagle soared, higher than before, and a third time plunged down, not in threat, this time, but in deadly earnest.

No creature of the air, not even the great Wandering Albatross of the southern seas, could abide a determined attack from a full-grown Bald Eagle. With a cry of baffled rage, the Osprey let go his fish, which glinted silver in the sunlight as it fell.

Thus lightened, the intended victim had just time enough to wheel away from the descending vengeance, and the Eagle, aiding his plummet-like fall with a push of his strong wings, outraced the gleaming fish in its descent to earth, caught it before it touched the ground, and, with slow majestic

wing-strokes, flew back to his eyrie to feed his little ones with the booty.

The hungry Fish-Hawk, robbed of his morning catch, had no redress but to fly back to the lake to catch another fish, in the hope that he might be able to get home with it before the Eagle's mate should see him. Many a time before, his entire morning's fishing had thus been stolen from him before his tyrants would allow him to take to his own nest the results of his work.

"Some day," said Shan, aloud, "I'm going to get the eggs of that old Bald Eagle and pay him out for thieving."

Shan's indignation was just, yet, though he did not know it, the Bald Eagle is not the worst, though the largest, of the pirates of the air. The Jaegers are even worse than pirates, they are parasites who can only live by piracy. Though sea-birds, with fish as their only diet, they do not catch fish for themselves but live on the food which other birds have caught. They are rarely seen, therefore, except in the company of Gulls and Terns, whom they chase and threaten, as soon as they see a fish caught, forcing the successful fisher to disgorge the food he has already swallowed.

Not less a buccaneer is the Frigate Bird or Man-

o'-War Bird, the greatest of all flyers. Although this powerful bird possesses wings with an eight-foot spread and only a small body to lift therewith, he also lives by stealing. Boobies and Gannets are his slaves and he forces them to disgorge their catch, though, on occasion, he is able to labor honestly for himself and catch flying-fish or similar prey which has leaped out of the water.

Taking note of the Bald Eagle returning to his eyrie and the Fish-Hawk disappointedly winging his way back to the fishing-grounds, Shan turned into the faint track through the marshes toward the pine ridge of which his uncle had spoken.

The "Clap!" "Clap!" "Clap!" of a Rail reached his ears, as he passed through the marshy grasses, and Shan peered here and there in the hope of winning sight of the bird. He had little hope of doing more than see it, for the Clapper Rail, as he knew, is almost impossible to catch, possessing, as it does, a network of low runways made in the reeds, along which it scoots and dodges at an astounding speed.

The boy was eager to stop and hunt for the nest, for the cry was on a slightly different note from that with which he was familiar, and the unseen bird might belong to a species of which his egg

collection lacked specimens. He knew, however, that even if he found the nest, the eggs of the different species of Rail were so much alike that he could not be sure as to the value of his find until he had seen the parents return to the nest to identify them. On the other hand, Rails are suspicious birds, and Shan remembered that he might have to lie motionless near the nest for several hours before the parent birds would dare to return, and he felt himself pledged to attempt the capture of the Fish-Hawk's nest.

So, plodding on through the soggy marsh ground, avoiding the treacherously bright green patches which looked solid but always told of quagmire to a trained eye, Shan came to a sandier part of the country, dotted with yaupon bushes and scrub palmetto. Thence the ground rose slowly into a thinly wooded district with holly, live-oak, persimmon, swamp pine, hickory, and sand-bar willow.

Here, bird life was abundant, and though his eye was attracted to the darting presence of a little Redstart, that candle-flame of the woods, Shan had thought for only one thing—the Fish-Hawk's nest. It seemed a shame to rob the bird of his eggs just after the Bald Eagle had robbed him of his break-

fast, but Shan thought of the empty place in his collection and of the delight it would give Bull Adam as well as himself to put a big black mark against the word "Osprey" in the Encyclopædia at the Cabin.

Once arrived at the pine ridge there was little need for further direction as to the location of the Fish-Hawk's nest. There it stood, high in the branches of the old cedar, a big conglomeration of branches and bits of wood, round as the top of a large dining-table. A few minutes' sharp walking brought the lad close to the tree.

He glanced up. It was not going to be an easy climb.

Most of the lower limbs of the old cedar were dead, and Shan had learned from painful experience the treacherous brittleness of dry cedar branches. The boughs of most trees give a little "crick!" before they snap, but a cedar branch will break right off without a sound of warning. The larger branches, also, were badly situated for climbing, that is, badly, from the boy's point of view.

"It almost looks," said Shan, dolefully, "as if that Fish-Hawk had picked out the worst tree to climb in the whole county!"

The Encyclopædia talked about the use of climbing-irons when bird's-nesting, but there were two main disadvantages to this advice in Shan's case. In the first place, he did not have the climbing-irons; in the second place, he wore no boots on which to strap them. Not, however, that they would have done him much good in this case, for the scaly reddish bark of the red cedar, with its broad plates and narrow fissures, gives a poor foothold.

He recalled the injunctions once given him by his uncle:

"The only way to climb a tree, boy," he said, "is with hands, feet, teeth and eyelashes."

Shan thought that this was undoubtedly the system he would have to adopt that day.

"I don't believe there's anything doing," the boy commented, after he had spent a quarter of an hour studying the tree from every angle, "but I've just got to have those eggs. I'd hate to have Bull know I was beaten by a Fish-Hawk!"

He set down his collecting-box, pulled off a leaf from a wild persimmon tree and went to chewing it thoughtfully. The boy had all the day before him, and it was not worth while to undertake the climb unless he were reasonably sure that there

were eggs aloft, or, at least, that it was not an abandoned nest.

An hour passed by without any sign of bird-life except for an Oven-bird near by, probably about to make its ground nest among the pine needles, which seemed to be complaining of the boy with its characteristic cry of "Teacher!" "*Teacher!*" "TEACHER!" This absence of any movement about the nest meant one of three things: either that the Fish-Hawk was having poor luck with his fishing that morning, or that the Bald Eagle was steadily robbing him of his catch, or that the nest overhead was an old nest, not being used by the birds this season.

The second of these explanations was the true one. The Bald Eagle had twice, again, robbed the Fish-Hawk of his well-earned breakfast, but the fourth fish had been caught by the Osprey immediately after the third ravishment and he was able to carry it to his own nest before the robber baron of the skies had time to wing his way from his more distant eyrie. Shan, therefore, soon saw a black speck in the distance which resolved itself into the characteristic flight of a Fish-Hawk carrying a fish in his down-clutched talons.

The bird came straight for the nest in the old

cedar tree. Seeing the boy on the ground below, he wheeled about the tree, uttering an alarm cry.

There came a peevish call from the nest:

"Creech!"

Some one else was hungry for breakfast.

In obedience to the cry, the Fish-Hawk sailed up and alighted on the nest. He stayed there but a moment, then flew away again to the waters of the lake. He had given his mate her morning meal, now he was off to get his own.

From where he watched, Shan could hear the female Fish-Hawk tearing the prey. Unlike Gulls and other fish-catching birds, who sometimes eat their catch on the wing, first tossing it up in the air and catching it adroitly head first so that the sharp gills of the fish shall not stick in the bird's throat, the Fish-Hawk eats his prey on a chosen perch. There he holds the glittering morsel with his talons and tears it to pieces with his sharp, hooked beak.

The boy was sure, now, that the nest was occupied, equally sure that there were eggs in the nest, for the hen-bird was sitting. Otherwise, as Shan realized, she would have been out fishing with her mate.

Difficult or not, that tree had to be climbed!

The sooner the better, too, before the full heat of the midday sun made itself felt.

Instinctively the boy felt to see if his skinning knife were safe in its sheath, tossed off his much-battered big straw hat so that it should not be in his way during the climb, and began the ascent.

Yes, the tree was treacherous. Even the lower branches broke off when he grasped them. It bid fair to be a tricky piece of climbing.

Branch after branch snapped under the weight of hand or foot, and, for a space, Shan was compelled to hug his way up the tree, taking advantage of every knot and bole. He had skinned his hands and barked his shins a couple of times before he reached a branch solid enough for him to sit upon and get his breath again.

The next dozen feet were easy climbing, but the hard part still lay ahead. The cedar forked twice. At the lower fork, a single branch—almost half the tree—grew out and upwards. It was a sturdy stem, green and flourishing, but did not come nearer the nest than about five feet. On the main trunk, which became more slender after the lower fork, the branches were small and weak, though, Shan thought, they might stand a fair strain because they were still green.

When he reached the lowermost fork and prepared to climb higher, Shan saw in the sky, in the direction of the lake, a decidedly discomfiting sight.

The male Fish-Hawk was returning to the nest.

Shan whistled in dismay. This would complicate matters. It would be bad enough to face the female Fish-Hawk, eager to protect her eggs, but two angry birds might be more than he could manage. Perhaps, after feeding his mate, the big Osprey would go away. Shan settled himself in the fork of the tree to wait.

As before, on seeing the intruder, the Fish-Hawk circled the tree several times before alighting, but at last decided that his mate was too hungry for delay and soared to the edge of the nest. He did not stay after dropping his fish, but flew away at once, sailing in wide circles round the tree, watching the strange boy-creature ensconced in the crotch of the cedar right below his nest.

Shan waited.

So did the Fish-Hawk.

The only method of success with wild creatures is silence and immobility. Settling into a comfortable position, Shan became motionless. The Fish-Hawk wheeled about the tree, keeping his eye

on the boy, but Shan did not move. Puzzled by this stillness, the Fish-Hawk seemed to wonder if he had not been over-ready to anticipate danger. He flew back to the nest, as though to assure his mate that there was no immediate cause for alarm, and after a final gyration, sailed off for the fishing grounds.

No sooner was he gone than Shan straightened up and began to climb. He was now at the hardest part. The little green twigs did not break off, but were almost as pliable as rubber, giving practically no foothold. However, the trunk of the tree was small enough for the boy to put his arms around and thus swarm it.

Shan had overlooked one thing. That was the marvellous power of sight possessed by the Fish-Hawk. A bird which gains its living by diving at a faint gleam of silver scales seen in the water some hundred feet below, can watch its nest from far. The Fish-Hawk was a long way off, but not too distant to prevent him from observing the movements of the boy in the tree.

Shan climbed warily.

The Fish-Hawk flew back swiftly.

Convinced, now, that the queer animal in the tree boded ill to his nest, the big bird wheeled

swiftly around the cedar with harsh cries of alarm. Shan, startled at the sound, for he had thought the Fish-Hawk far away over the waters of the lake, made an incautious movement and his foot slipped.

Almost at the point of falling, he clung to the tree with both arms.

The Fish-Hawk, with that sure instinct of the creatures of the wild which tells when an enemy is defenseless, dropped to strike, but just as his talons were near the boy, he swerved away, not quite daring to make the attack. He soared up again, and Shan, realizing that threat might turn to action, shifted to another branch, only slightly stronger than the one which had slipped under his tread, and drew his knife from its sheath.

Again the Fish-Hawk plunged, but the same instinct which a moment before had told him that the boy was defenseless, now warned him that the intruder was ready to give fight. As he shot past the boy, he swerved only slightly, striking the lad a sharp blow in the face with his wing.

This was less like hunting than being hunted, but Shan was not made of the stuff that gives in easily. He had started to get those eggs and he was going to get them. Finding that the Fish-

Hawk did not actually attack, he slipped his knife back into the sheath and set himself to the next point of advance.

Again the great bird swooped, but again the fear of the unknown, the deep-rooted instinct by which a wild animal or bird rarely strikes anything but the food he eats, protected the boy. The Osprey bore away to one side and circled high, rapidly repeating the high complaining whistle which was his alarm note.

Shan was not far from the nest, now, but the branches by which he was climbing were little more than twigs. The short, twin needles of the cedar need little wood to bear them. Each foot of advance was perilous and there was the constant menace of the bird overhead. Yet up the boy went, gaining courage with every inch won.

Here was the nest at last!

Yes, here was the nest. But how was he to get into it?

Like most of the ramshackle structures of the Fish-Hawk, like the nest which the boy had tried to pillage two years before, the great mass of criss-crossed branches projected from the fork of the tree in every direction. As Bull Adam had said, at least a cartload of sticks had gone to the

building of it. Probably it had been used for a number of years, for such nests are usually continuously occupied and most Hawks mate for life. One Osprey's eyrie, on a ruined castle turret in Scotland, is known to have been steadily occupied for a century with one short lapse of six years.

The smell justified the belief that the nest had been in long use. The Fish-Hawk is not a cleanly eater, and several years' deposit of decayed bits of fish give rise to a fearful odor. It almost turned Shan sick and faint.

Crouched on the only branch under the nest which would bear his weight, Shan could just reach the edge of the loose structure with his fingers. He was chary of doing so, however, for he knew that the hen-bird was on the nest and if she should strike at his hand with her tearing hooked bill, it would make an ugly wound.

The nest was at least six feet across. A half-dead branch, which projected from the great bough dividing at the lower fork of the tree, would give him purchase enough to swing into the nest, if it would hold. But—would the dead branch hold?

The boy reconnoitered the situation. If he descended to the first fork and climbed up the other half of the tree, he would be able to launch himself

into the nest by a reckless jump. There was no assurance, however, if he did so, that the nest would support his weight. It was built for young Fish-Hawks, not for boys. If he tried that leap and missed, or if the nest gave way, nothing could keep him from plunging to the ground below.

Shan looked down. It was a sixty-foot drop.

No, that was a bit too dangerous. He would have to risk the half-dead branch. If it broke, he was still near enough to be able to swing himself back to the main trunk. The boy raised himself gingerly on the suspected branch. It held.

Cautiously, in order not to put too sudden a strain on the frail support, and grasping the lower branch with his toes rather than with the sole of the foot, so as to keep the point of weight as near the trunk as possible, Shan brought up his other foot, raising himself so that his head was almost on a level with the top of the nest. He felt a moment's sense of loss of balance and his left hand shot out to grasp the sticks which formed the foundation of the nest.

The sight of the boy's hand actually touching the nest was too much for the enraged Fish-Hawk.

He closed his wings and shot downward, striking with his talons.

Courtesy of American Museum of Natural History.

DUCK HAWKS NEAR NEW YORK CITY.

Nest of predatory birds on the palisades. In spite of their name, these hawks kill few wild ducks.

Shan ducked.

The talons ruffled through his hair.

In ducking, however, the lad was compelled to throw his entire weight on the branch whereon he was perched so precariously.

Crack!

Cedar gives no warning and the boy's right foot shot from under him. Instinctively he threw his whole weight on his left hand which clutched the nest. Consisting of nought but a heap of branches loosely piled, the stick he had grasped began to pull out of the nest.

It was neck or nothing.

With a yell, Shan let go his other hand, grabbed wildly at the nest, and, with hands, feet and teeth, scrambled up the pile of dry and rotten sticks which composed the nest. They snapped, broke or gave way, as he climbed.

The noise and sudden rush were too much for the hen-bird. Instead of striking at the boy's fingers, as he had feared, she rose from the nest with a hoarse shriek and joined her mate in the air, adding her cries to his.

In the dust and panicky confusion of that wild scramble, wherein he clawed and grabbed at anything and everything, Shan vaguely expected, each

second, to feel the talons of the infuriated birds in his back, but, somehow, he managed to crash and break his way over the edge of the nest and rolled, half-blinded and utterly breathless, into the more firmly woven center, just saving himself from falling on the eggs.

That instant the Fish-Hawk struck.

The talons went into the boy's shoulder, making four ugly wounds.

The boy yelled with the pain, but he was safe. Had the Fish-Hawk struck one second earlier, nothing could have saved Shan from a fall, which would have meant death or crippling. Now, at least, he was in the nest.

A Fish-Hawk's eyrie seems of huge size, when looked at from below, but its interior gives small space for a combat with two fierce and angry birds.

Shan drew his knife and crouched.

The birds wheeled in circles overhead, screaming savagely. Instinctively they knew that the boy's knife spelt danger.

For several minutes the lad waited, tense, momentarily expecting a dropping blow from the sky. None came. Without relaxing his vigilant watch, Shan cautiously shifted his position until, stamping his foot clear through the loosely woven nest,

he found firm foothold in the fork below, in the crotch wherein the nest was built.

Easier in mind, now that he could brace himself solidly, Shan found time to glance at the eggs. He drew an inward breath of delight.

There were two of them. Both were of a pale peach-blossom ground color, but one was marbled with purple, while the other was so heavily splotched with a dark brown as to be almost chocolate in hue. As a matter of fact, Fish-Hawks' eggs cover a wide range of color, being spotted, blotched or marbled with every shade of purple, and brown, passing from lilac and delicate pink to violet, chestnut or brown-black.

The sun beat down hotter and hotter on Shan's head, but he could not move. At the slightest evidence of relaxed watchfulness, one of the Fish-Hawks would circle closer.

Once Shan risked the chance of picking up one of the eggs to look at it closer.

The hen-bird sped from the air for vengeance.

Out shot the talons of the bird, up lunged the arm with the gleaming knife.

Both blows missed.

Shan laid down the egg.

The battle developed into a contest of endur-

ance. The Fish-Hawks would not leave their nest to the mercy of the intruder, and Shan could not get down, even if he had any intention of giving up the fight.

Dinner-time came, but there was no dinner for Shan. Neither was there any dinner for the Fish-Hawks. The midday sun began to beat on the boy's brains, for he had left his straw hat on the ground with his dinner, and, though it was spring-time, the sun is hot in North Carolina.

The long afternoon hours passed slowly by. The boy watched the birds, and the birds watched the boy. There was but one way of escape for Shan, and that was to pull the nest to pieces, bit by bit, and so make a clear way to the upper crotch of the tree. Shan would not go without the eggs, though, and he knew that the moment he picked one of them up, both Fish-Hawks would attack him at once so viciously that he would be unable to defend himself.

The welcome evening drew near and soon, in the distance, Shan heard the call of the Scarlet Tanager, repeated three times:

"Chip-cherr! Chip-cherr! Chip-cherr!"

That meant Bull—and rescue. He repeated the call and, a quarter of an hour later, the pot-hunter,

his rifle as usual in the hollow of his arm, slouched up the pine ridge.

"What-all's wrong?" he called.

"I'm treed," Shan answered, "like a 'coon. I've been up here since morning. I can't get down, 'cause the branch I got up by, broke, and the Fish-Hawks are after my scalp. I've got the eggs, though."

"Ain't hurt, are yo'?" his uncle queried.

"My shoulder's a bit clawed up," the boy replied. "They got me, once."

"Could yo' get down if the birds was out o' the way?"

"Reckon I could," said Shan; "it would be a heap easier, anyway."

Bull threw his gun up to his shoulder and fired, almost, it seemed, without aiming. The male hawk fell like a stone. A second shot, right on the heels of the first, caught the hen-bird and, with a fluttering flight, she tried to wing away, then fell also.

This done, without any comment, Bull rested the butt of his gun on the ground, crossed his hands on the muzzle and watched the boy.

No sooner had he seen the second bird fall than Shan commenced to tear away the nest until he

had a hole big enough for him to get through. Then, bulging out his shirt in front, just below the collar, he tied an egg on each side with a couple of pieces of string. Experience had taught him that trouser pockets were injudicious storage places for eggs when descending a tree. Small eggs he usually kept in his mouth when descending, but these, almost as large as hen's eggs, were too big.

A little more than half way down the tree, Shan's senses reeled and he almost fell. He steadied himself, however, and summoning all his will-power, reached the ground in safety. He tottered and stood, white-faced and exhausted, leaning against the trunk of the old cedar.

Without a word, but with a rough kindness in his manner, Bull laid his nephew on the pine needles strewing the ground. He placed the eggs carefully on one side and slid the boy's shirt off his shoulder. The clutch of the Fish-Hawk's talons had been sharp, but not deep, and, though the wounds were stiffening, no great harm was done.

"Them eggs gave yo' some trouble," he said, helping the lad to his feet.

"They were worth it!" said Shan, looking proudly at his prizes.

"Whether they were worth it or no," said the old man, "there ain't no excuse for not finishin' what yo've once begun."

CHAPTER II

THE POT-HUNTER'S DEFIANCE

"JUST yo' tell him that Ned Thompson wants to speak to him!"

The words rang threateningly in Shan's mind, the next time that his uncle brought a brace of wild ducks to the cabin. It was close season, and to shoot wild duck out of season meant liability to fine and imprisonment.

Bull Adam was well aware that his daily habits bordered more or less on crime, but he continued his work of killing game birds in and out of season, and defied all attempts to bring him to justice. In this he was greatly aided by the confused medley of game laws in North Carolina, wherein almost every county has a different set of laws and there is no game warden for the state. The county game wardens, though many of them are efficient men, are not paid enough to enable them to give their whole time to the work.

Although wild duck in March is illegal eating, the laws do not affect the taste. Shan found the

game a welcome relief from the corn-bread and miserable hog-meat which formed the staple diet of the district. Yet the visit of the game warden stuck in his remembrance, and, one day, while he was busily plucking and cleaning a couple of Mallards which his uncle had brought home before daylight, the lad said,

"Bull, aren't ducks out of season?"

A growl was the only answer.

Shan continued plucking, silently, knowing from experience that nothing would make the old man talk, unless he happened to be in the humor. The subject had been broached, however, and, after a while, the pot-hunter asked,

"Has that game warden feller been 'round here again?"

"Not so far as I know," replied Shan; "I was just wondering, that was all."

"Who told yo' 'bout open an' close seasons?" queried the old man, suspiciously.

"You did," the lad answered, "one night you were grumbling about the game laws. You said that shooting duck after February the first is against the law."

"So 'tis," snorted Bull Adam, and relapsed into silence. But the subject was a sore one with him,

one on which he had brooded sullenly many a winter evening, and presently he broke out angrily,

"It beats me what business these law-makin' folks have got interferin' with other folks' affairs. What swot-hingled concern is it of Ned Thompson's if I shoot a duck, now an' again? They ain't his ducks, are they?"

This seemed to call for an answer.

"These are wild ducks, anyhow," agreed Shan, therefore. "At least, I reckon so."

"O' course they're wild duck! They don't belong to nobody. I ain't no thief. I don't go to a man's farm-yard an' shoot his tame ducks, do I? Why not? 'Cause they're his. He's got a right to 'em. He puts a fence round 'em. They're on his property. He feeds 'em.

"There ain't no fences 'round the wild ducks. They ain't on no one's property. There ain't no brand on 'em. There ain't no one feeds 'em corn. They're mine jest as much as they're anybody's. Who's got the right to tell me whether I can shoot 'em or no? My father an' my grandfather, yes, an' his grandfather before him, shot duck on these here marshes. An' I reckon I'm goin' right on, goin' to shoot duck, when, where an' how I've a mind to!"

Courtesy of Mr. Richard Kearton.

LASSOING PUFFINS.

Light pole thirteen feet long, tipped by a hazel twig and a noose of mixed gannet quills and horsehair. As many as 400 puffins have been lassoed in one day by one man.

There was nothing to say to this and Shan continued his task of plucking feathers. After brooding a while longer, Bull continued,

"What were ducks put here for, I'd like to know? To look at? Or to listen to 'em squawk? Or to write songs about 'em? These here law-makin' folks can say what they like, but I tell yo', boy, ducks were put here to be eaten.

"I'm no religious man, myself," Bull went on, "but I've heard my father tell that the Old Book says all the animals were put here for man's use an' for his food. Anything what's fit to eat was meant to be eaten. Any animal what's got fur fit to wear was meant to be skinned an' the fur worn."

He snorted anew.

"They'll be havin' a close season on blackberries, next, askin' a gun license for pickin' wild grapes an' makin' it a prison offense to eat a huckleberry off'n a bush."

Again the old man paused. This time the pause was longer, and Shan, looking up, saw Bull Adam's black eyebrows drawing down into a gloomy frown. When he spoke again, it was in a sullen, resentful tone, the heavy speech of a silent man unduly stirred.

"It makes me tired," he said, "when I hear

folks talkin' about the 'poor birds.' Why don't they make a fuss 'bout the po' sheep, or the po' beef critters, or the po' hogs? An' as for the cruelty o' killin', yo' can't get mutton or beef or pork without killin' a critter, can yo'?

"It's so swot-hingled unreasonable. It's 'poor bird' when yo' shoot a Wild Turkey, but it's only a matter of eatin' when yo' chop the head off'n a tame one. It's state's prison to shoot a Wood Pigeon squab, but it's 'good business' to raise squabs of another breed for the market. Yo' can only shoot Prairie Chicken for one month in the year an' that only in a couple o' states, but yo' can wring the neck of a Leghorn chicken any day in the year in any state in the union.

"An', if yo' ask me," persisted the old man, "it's a durn sight worse to raise a fowl or critter like a house pet an' then kill him an' eat him. Yo' might as well shoot the house cat or the yard dog fo' dinner, or make a pie out o' caged canary birds. Man ain't no different from the rest o' the animals, he's got to live by killin' same as they do, but he might as well hunt for his dinner, fair an' square, like them.

"They call me a 'pot-hunter,' " he continued, with a savageness which showed that the word of

contempt had rankled, " 'cause, when I shoot, I do it to eat the birds or sell 'em. Why shouldn't I? That's my livin', ain't it? I don't aim to interfere with the way city folks makes their livin', though there's plenty makes it less honest than I do.

"I'm a 'pot-hunter,' but when a rich dude comes from the city to shoot ducks, some feller who doesn't need either the birds to eat nor the money from sellin' 'em, he's a 'sportsman'! Why, I'd like to know? Nine times out o' ten, he's a dub. He has to have a fisherman build him a blind, a guide tell him where the ducks are, an' a nigger paddle his canoe there. An' when, by usin' decoys, the birds fly right in front of his gun, if he happens to get one or two, he's a great shot an' wins a silver cup for shootin' an' all that sort o' fool trash.

"I've been up at those millionaire duck-shootin' clubhouses on Currituck, just north o' here, an' I know what I'm talkin' about. They wanted me to act as guide. Me! Just one day o' what they called 'sport' was enough. What with duck-blinds, stands, decoys, an' the rest of it, they made as much fuss over a bag o' ducks as a crazy guinea-hen when she has laid an egg.

"Their shootin' wasn't so bad," he admitted grudgingly, "but it was their talkin' I couldn't abide. They'd yap, yap, yap about shootin' a duck, tellin' where it flew, an' how it flew, an' jest how they fired at it—shucks! you'd think it was the first an' only duck ever shot since the world began.

"Not only that, but they'd yap over what kind of a duck it was an' toss around a bunch o' names no one had ever heard of. An' it's to favor these here rich 'sportsmen' that they try an' stop a man who's lived here all his life from shootin' his dinner when he needs it. Game laws! I'd like to tell the people who made those laws what I think of 'em!"

Bull Adam's anger was slowly waking up. Shan knew the signs, for the old moonshiner, when rage was on him, was his own danger signal. The worst licking the boy had ever received—it had put him on his back for three days—had been for an entirely unjust cause during one of Bull's black tempers. He regretted having started the storm, now, and sought to pacify his uncle by turning the subject.

"And when it came to knowing ducks, I reckon," he said, "you could put it all over them?"

"Knowin' ducks!" the pot-hunter exploded, falling in with the lad's ingenious leading, "most of 'em couldn't tell a Goose from a Pintail! That day, when I told one o' the 'sportsmen' that the bird he was lookin' at was a Goosander, he says, in an irritatin' way,

" 'You're wrong, my man, I never heard of such a bird!'

" 'His man!' " the pot-hunter bellowed, "when I could have doubled him up an' rammed him down the barrel of his own gun!"

Storm signs were in the air again and Shan hastily turned back to the question of the birds themselves, feeling it safer.

"The Goosander's one of the Mergansers, isn't it?" he asked, as he put the plucked ducks in the oven, and added a stick of wood to the fire.

"Sure it's a Merganser, the big kind. I've never tried to shoot a Goosander drake but I've seen a right smart few of 'em. They're easy to tell, beetle-green neck, black back, white wings an' salmon-colored breast, but they're not easy to hit, I'm told. They swim deep, so there ain't much to shoot at, an' they dive at the snap o' the trigger, like a Loon. There's a smaller Merganser, with a red breast, I've brought down a few times,

an' I saw one Merganser with a hood on his head one season I was down in Georgia."

"But Mergansers aren't ducks, are they, Bull?" the lad asked. "They're more like geese, aren't they?"

"No, they're ducks, I reckon," said the pot-hunter, calming down as the conversation led away from the question of the hated game laws; "Dad used to call 'em Sawbills or Shell-drakes, 'cause their bills are toothed like a saw an' 'cause they live on shell-fish an' fish, swimmin' under water to get 'em."

"They're rarer than other ducks, aren't they?" the boy asked. "I mean, pond ducks, like this one—" he held up the foot of the Mallard, "which haven't got any web on the little hind-toe."

"They're not common like Mallards, Teals, Pintails an' Shovelers," was the reply. "But there's other pond ducks, marked like yo' say by havin' no web on the hind toe, which yo' can't spot so easy."

"How can you tell the others apart?" queried Shan. He had often wanted to get his uncle started on this subject, but had never been able. Now, however, Bull had relaxed from his taciturnity.

"To start with," the old hunter replied, "all that bunch are tip-up or dabblin' ducks. Yo've seen 'em dabblin' along shore an' yo've seen 'em tip up with their tails out o' water while they stand on their heads, haven't yo'?"

"Lots of times," said Shan; "I always figured they were finding food in the mud at the bottom of the shallow water."

"That's what they are doin', I reckon," the other agreed, "leastways, their bills look like it."

"How?" queried the lad. "What have their bills got to do with it?"

"Yo' can generally tell a bird's habits by his bill an' his feet," said the old man, who had become a keen observer in his dubious trade, "an' if yo' ever want to learn about birds, boy, yo've got to keep yo' eyes open.

"See that gutter on the side o' the bill?" he continued, pointing to the head of the Mallard which the boy had left on the table.

Shan nodded.

"It looks to me like that was meant for a strainer," said the pot-hunter. "A duck paddles along, then takes a header with his tail in the air an' roots with his bill for what he can find on the bottom. He ain't none too particular, he'll take

grubs an' worms an' tadpoles as well as vegetable stuff. When he closes his bill, the act o' shuttin' it jest forces out the mud an' water, through this strainer, like. When yo' see a duck doin' that 'round here, yo' can reckon it's either a Mallard, a Teal, a Shoveler, or a Pintail."

"But how can you tell which is which?"

"Yo' can't make no mistake over a Shoveler," was the reply, " 'cause his bill is bigger at the tip, ends right smart like a shovel, an' he's the only duck 'round here built that way. A flock o' Pintails will always have some drakes in it an' they can be told a ways off by their long necks an' spindlin' tail-feathers. When yo' see a Wild Duck that looks like a tame duck flyin', yo' can be right sure it's a Mallard, or if the feathers are a bit dark, a Black Duck. Any swift-flyin' small duck, with a white face, aims to be a Blue-Winged Teal."

"What's that fancy duck that Widow Gray has up at her place?" the lad asked. "That's a tip-up duck of some sort."

"It's a Wood Duck," the other answered. "There used to be thousands of 'em 'round here. They say it's bad luck to shoot 'em, an' yo' can't sell any. They're mighty good eatin', too."

Courtesy of A. Radclyffe Dugmore.

WILD MALLARD DUCK RISING.

A marvelous photograph. Note that the splash in the water has not subsided, although the bird is five feet above the surface.

"Dabbling ducks are always better eating than diving ducks, aren't they?"

"Reckon not," said the old hunter. "Canvasback is a divin' duck, with a web on the hind-toe, an' it gets the biggest price in the market. It's a bit hard to tell a Redhead from a Canvasback, when flyin', though the Canvasback is bigger. A Scaup Duck's got a body like a float an' the line markin' off his greenish or purplish-black neck an' white belly is right sharp. The Golden-Eye makes a lot o' noise with his wings when flyin', an Old Squaw drake has long tail-feathers an' the Scoters mostly stay by the sea, feedin' on clams, mussels, an' scallops."

"But scallops lie in deep water!" exclaimed Shan.

"That don't hinder a Scoter none," the old man answered, "nor any other o' the divin' ducks. I've seen 'em go after scallop on shoals that I know was fifty or sixty feet deep. They don't dive down like Terns, but swim 'way down. I've heard say they can get down a hundred an' fifty feet, which is deep swimmin' for a duck. Scoters use their wings an' feet under water, Canvasback an' Redhead use only their feet."

"Do Geese go down deep?" asked Shan.

"I've only seen Canada Goose an' Brant," his uncle answered; "they feed on eel-grass mostly, an' I ain't never seen one dive. For that matter, I don't reckon Swans dive, either. There's any amount o' Whistlin' Swan on Currituck Sound, but I've never bothered with 'em, though some folk like their meat. They're handsome enough, I'll say that for 'em. Long 'round the first o' December, when a thousand or two Wild Swan, each bird weighin' twenty pound or more, with a four foot spread o' wing, fly over yo' head, it's a right pretty sight. That don't stop the 'sportsmen,' though. The birds ain't no manner o' use to 'em, but the rich dudes from the city come down to kill 'em—just for the sake o' killin'!

"An' there's another thing about this bird protection business," Bull continued, heating up with the subject again, "and that is that these here game laws are jest fixed up for the rich. I can kill fifty duck a day an' ship 'em to the city markets. Folks who live in the city an' ain't rich, can have a bit o' game once in a while that way.

"The game laws try an' stop that. The poor mustn't have no game. Ducks have got to be preserved an' protected so that the rich 'sportsmen' who haven't nothin' to do in winter can come down

an' play poker in a club-house all night until it's time for the dawn shootin', go out to a duck blind, kill a bunch o' birds an' then sleep all day. Game laws an' game wardens! I don't want 'em 'round here, an' it ain't goin' to be healthy for any of 'em that comes 'round here. An' any one who wants to, can tell 'em I said so!"

How much longer the harangue would have continued there was no saying, but the Mallards which had given rise to the conversation being thoroughly roasted by this time, Bull and the boy sat down to dinner. The meal, as usual, passed in silence, the old hunter—like most of his kind—eating fast and devoting all his attention to his plate.

After dinner, Shan took all the feathers, as well as the heads and feet of the two ducks, and buried them deeply in a hole dug in the forest. The lad had been taught to do this, many years before, but it was only lately that he realized that Bull's insistence that not a feather should fly away was because the presence of Wild Duck feathers might be incriminating in the event of a visit from the game warden of the county or some similar official.

Ducks were Bull's addition to the table, and Shan had nothing to do with them beyond plucking and cleaning them. Turtles and crabs, however,

were a different matter. It was a part of the boy's job to keep the larder supplied with these from time to time.

Accordingly, a couple of days later, Shan started off to visit his turtle traps. Although there is not much flesh in a snapping turtle, the meat is rich, and, in the spring of the year, large quantities of eggs may be found, nearly an inch in length, strong in flavor, with shells like tough white paper.

Shan had made the turtle traps himself. They were simple enough in construction. Around three wooden barrel hoops, two feet apart from each other, the boy stretched a stout tarred net, leaving about eighteen inches of the net projecting from either end of this net-barrel. These ends he threaded with a draw-string and drew them half-closed, making an opening about ten or eleven inches in diameter, large enough for the biggest turtle in those swamps to creep through. The two ends were then pushed inside the length of the barrel, and in the middle the boy placed some fish, several days old, which had a smell that carried for half a mile. The traps were then dropped in a swamp—the more malodorous the better—and visited from time to time.

A snapping turtle, scenting the fish, crawls

round the barrel net. From the outside he cannot reach the fish suspended within. At either end of the barrel, however, as he crawls forward, he gets nearer and nearer to the high-smelling dainty, until, by the time he reaches the narrow opening, he can almost touch it. He pushes his way through the hole, tumbles into the barrel and makes a good dinner on the odorous fish.

When the turtle tries to get out, however, he finds it a different matter. In entering, he had pushed open the small entrance hole, thus drawn taut, but once inside, the net fell slack. Now, the hole is difficult to find. Even if an unusually clever turtle should find the hole, he could not get out, for the slack net would give no purchase and the clumsy claws would become entangled.

Luck was with Shan that day. Instead of the ordinary snapping turtle, he found a terrapin, which, as the boy knew, is one of the dainties of the world. Bull was particularly fond of terrapin and the lad went on his way rejoicing.

Even a terrapin could not take Shan's mind off the question of birds' nests, and, as he made his way out of the swamp, swinging the turtle by the tail—it is the safest way to carry turtles, for they have a vicious bite—he kept a sharp look-out to the

left and right. Suddenly he halted in his tracks, fixing his eyes on a spot of the forest floor where it seemed to him he had seen something alive.

He stared at the spot steadily and intently, but found no confirmation of his first idea. At least, nothing moved.

Shan was woods-wise enough to have learned that the eye is only a moderately good organ, and that it is quite possible to look direct at a thing and not see it. He was familiar with the old Indian trick of squinting at an obscure object, and, without taking his eyes off the suspected point, he turned his head slowly round.

Like a view on a dissolving lantern slide, the form of a Chuck-Will's-Widow sitting on her nest leaped into sight.

Slowly Shan turned his head back and stared full at the bird.

There was nothing to be seen!

The boy was not more than ten feet away and though the Chuck-Will's-Widow is a big bird, a foot in length, he could not see a sign of her, motionless on the open ground.

Again he turned his head slightly away and looked at the bird a-squint.

Yes, there she sat, almost exactly the same color

as the dead leaves and twigs, looking straight at him, not a muscle moving.

This time Shan studied the bird's outline carefully and marked it against the background, noting well the pattern of bill, back and tail against the leaves. Then he turned his head to face the bird and she dissolved from sight.

"Protective coloration for sure!" the boy muttered under his breath. In an article in the Encyclopædia it spoke of protective coloration, which consists mainly of two factors: having the color of the body of a hue harmonizing with the general background and having these colors disposed so that the color is darkest where they receive most light and palest where there is the deepest shadow. A bird which is brown all over, would show up clearly against a brown background, for the shadow on his underside would make him almost black. This is known as the law of counter-shading and is exactly the opposite of the process employed by the artist, when he paints in shadows to make his objects on a flat canvas stand out as if they were solid. The second law, that of obliterative markings, is designed to make the bird harmonize so well with his surroundings that the surface of the body must bear a picture of such back-

ground as would be seen through if transparent. Thus, a Woodcock bears vague markings, the light and shade relations of which conform to dead leaves, twigs and grasses irregularly disposed over shadow-holes, Wilson's Snipe is indistinguishable among grasses and the Upland Plover is hard to see among weeds. Brown Creepers are the color of the trunks up which they creep, Snow Buntings are the color of the snow. The young Gulls, Terns, Skimmers, Stilts, and Avocets are protectively colored, and if an intruder visits the colony the strikingly marked adults fly away and the youngsters squat motionless.

This law of protective coloration may be stretched too far. It explains many of the facts of bird color, even some of the brightest, but it does not explain all. In many cases, colors have run riot in a bird's feathers and this impulse has not been checked by the bird's natural enemies, either, because the bird has learned better ways of concealment, more wariness, or swifter flight. Thus the Flamingo can afford to be a bright pink, for there is no bird big enough to feed on him, the Crow can dare to be black for he is one of the wariest of all birds and the Humming Bird can sport rich colors, partly because of his background

of flowers, but still more because of his swift-darting flight.

The Chuck-Will's-Widow, right in front of Shan's eyes, needed protective coloration. Hunting mainly in the early morning and evening, and making a nest on the ground, it was all-important to her that she should be as little visible as possible. The boy had carefully surveyed his points, however, and, remembering that her head was just by a certain twig and the tail exactly in line with an orange toadstool, bit by bit he was able to puzzle out the shape of the bird, like a figure in a hidden picture.

Snatching off his straw hat, the boy made a sudden dart forward, in the hope of catching the bird, though he was handicapped by the burden of the terrapin swinging by its tail in his left hand. Before he could touch her, however, the bird rose on silent wings and flew a few feet into the bushes, where she suddenly dropped to earth and fluttered away feebly as if she had a broken wing.

The boy knew this ruse.

"You don't fool me that way!" he exclaimed, "it's not you I want, it's the eggs I'm after."

At almost the same moment he thought he heard a noise on the path behind him, but decided it must

be the bird, fluttering along the ground in the hope of making the boy follow her. This well-worn trick would undoubtedly have fooled the bird's natural enemies, such as a fox or a 'coon, since the animal would be more eager for the wounded mother than for the eggs and would chase after the flutering bird. Then, when the intruder had been decoyed sufficiently far from the nest, the wounded wing would suddenly become whole and the bird would wing her way back in powerful flight, out of reach of the murderous jaws. And, by the time the animal had returned to the nest, the eggs would be no longer there, the mother having carried them away in her capacious mouth.

Shan wanted the eggs and he knew better than to follow, even with his glance, either the fluttering bird or the noise which he had thought he heard on the path behind. He kept his gaze absolutely fixed on the spot whence the bird seemed to have flown, advancing, meanwhile, with shuffling steps of not more than a few inches at a time. This careful progress brought him to the spot where the bird had been sitting, and there, as he expected, were two dull white eggs with brown spots and markings, looking exactly like the faded and washed-out leaves of the previous season, on which

Protective Coloration — Woodcock on Nest.

Courtesy of Mr. H. Keightley Job.

Protective Coloration — Whippoorwill on Nest.

they lay. The eggs of the Chuck-Will's-Widow, like the bird herself, need to be protectively colored, for the bird lays but two eggs and cannot afford to run any risks of losing her young.

Strange birds are these "goatsuckers" or "night-jars" as they are popularly called. Their legs are weak, so weak, indeed, that the birds cannot walk, but shuffle along. The small feet cannot support the weight of the body and hence the Night-Hawk, the Whip-Poor-Will and the Chuck-Will's-Widow, the three principal North American species of this Sub-Order, do not usually perch on a branch like most small birds, but rest lengthwise on a bough or on the ground, the breast, as well as the whole length of the foot, supporting the bird's weight.

Unusual as are the weak feet and squatting position of these birds, their bills are even stranger. Although the beak of the Chuck-Will's-Widow is very short, not more than a half-inch in length, the mouth opens with an enormous gape, two inches from corner to corner. This huge mouth, which is almost a monstrosity among birds, is made still more of a trap by the addition of long, stiff, curving hairs around the upper lip. These form a broad scoop-net to entangle any swift-

flying insect which tries to dodge or to slip out of the small beak.

Though the regular food of the Chuck-Will's-Widow consists of June-bugs, big flying beetles, horse-flies, locusts and a small proportion of dragon-flies, Humming-birds and even small Sparrows have been found in its stomach. Probably these were mistaken for large night moths, but a Chuck-Will's-Widow has been seen to pursue and catch Warblers on the wing.

The Night-Hawk or Bull-Bat, as he is familiarly known, a smaller member of the family, is a master chaser of the air, and, contrary to general opinion, is one of the farmer's best friends. No winged insect, however speedy, can escape his marvelous flight. His average meal, each night, is from four to five thousand insects. Two or three pairs of Night-Hawks on a small farm will almost abolish potato and cucumber beetles, will nearly exterminate rice and cotton boll weevils, will banish bill and squash bugs and destroy the armies of the cotton worm moth. To the forest he is just as useful. Eighteen species of bark beetles, all of them destructive, have been found by U. S. Biological Survey experts in the stomach of a single Night Hawk.

Eggs of a bird as valuable as any one of these three species should never be taken, just as these birds should never be shot. Shan knew nothing of economic values. He was conscious of complete satisfaction that at last he had a clutch of Chuck-Will's-Widow eggs for his collection. He picked them up and was examining them intently when suddenly he heard a harsh voice over his shoulder:

"What are them eggs?"

Surprised, Shan turned round, to face the hard gaze of the game warden.

"Chuck-Will's-Widow, I reckon," the boy answered, looking first at his questioner and then, past him, at another man, a stocky figure dressed in city clothing, who had been a few steps behind on the path and was now coming forward..

"Put 'em back where yo' took 'em from!" ordered the game warden, curtly.

Shan returned the man's gaze unflinchingly. He recalled Bull Adam's attack on the alleged injustice of the game laws and all his uncle's venom found an echo in him.

"I'm not going to!" he answered, defiantly.

The game warden strode forward as though to knock the eggs from the boy's hand, but the

stranger laid a restraining hand on his comrade's arm.

Shan saw the threatening gesture and blazed up at once, using, unconsciously, his uncle's arguments,

"They're not your eggs," he said, "they're mine; I found them. That wasn't your bird on the nest. You didn't raise it. You didn't feed it. It's a wild bird. Why should I put the eggs back on your say-so?"

The boy noted that the newcomer smiled and turned his head toward the game warden with an air of great interest in his reply. The latter, angered by the boy's defiance, answered bluntly,

"Yo'll put 'em back because I tell yo' to. I'm game warden o' this county, an' what I say—goes!"

Shan looked at him with that dull, uncomprehending gaze which revealed nothing of his thoughts. He rubbed his cheek meditatively with one of the eggs. His expression gave no hint of a slowly hardening determination. Presently he said, heavily,

"And if I don't put them back?"

"Then yo' go to jail!" snapped the warden.

If Shan wavered in mind for a moment, there

was not a quivering line in his face. He stood stock-still. The stranger, watching the two closely, decided to himself that the boy would not weaken.

Shan's brain was slowly revolving the thought that Bull Adam had been facing jail nearly all his life and that nothing had ever come of it. He knew his uncle well enough to be sure that the old man would do everything possible to keep him out of prison for defying a game warden.

He looked up and faced Thompson squarely. They made a strange couple thus opposed, the long, rangy Carolinian with his rifle and the barefoot boy with a couple of eggs in one hand and a turtle dangling by the tail in the other.

"I haven't shot anything," said the boy, "and I believe you're lying when you say you can put me in jail for taking a couple of wild bird's eggs. If you are lying, or if you're trying something you haven't any right to, it's Bull Adam that you'll have to answer to. He was sayin', just the other night, that being a game warden is a dangerous trade!"

It was the game warden's turn to hesitate. He was aware, himself, that he might have difficulty in getting a local jury to convict a boy for taking a

couple of Chuck-Will's-Widow eggs and he could not dodge the fact that to arrest Shan would be to make a deadly enemy of the old moonshiner. On the other hand, if he allowed a mere boy to flaunt him like this in the presence of strangers, what would become of his authority? He decided for stern measures.

"Yo' can tell that to the judge," he said. "I'll put yo' under—"

The stranger interrupted.

"Here, Thompson," he said, "that's not the way to handle a case like this. Let me talk to the lad."

He turned to the defiant figure standing sturdily on the sunlit woods path.

"Well, son," he said, cheerily, "what's your name?"

"Shan," answered the boy, sulkily.

"Good. Tell me, Shan, why you wouldn't put back the eggs."

" 'Cause they're mine."

"Suppose they are. What do you want them for?"

"I want them just 'cause they're mine," repeated the boy stubbornly, "I found them. They're not his!"

"But you're not so hungry as all that, are you?" the stranger persisted. "There's hardly a mouthful in the two eggs together."

Shan made an indignant movement.

"Who wants to eat them?" he retorted. "I want them for my collection."

The word aroused the stranger's interest.

"You have a collection?" he asked, with the easy disregard of the expert for the amateur.

"I've got over eighty species," Shan answered crisply. He was proud of his collection and did not want it made light of in the presence of Ned Thompson. But he was not prepared for the stranger's sudden change of tone from casual interest to keen attention.

"How do you know what species they are?"

"From the book."

"You have a book on birds' eggs?"

Shan explained the lone volume of the Encyclopædia.

"And you've positively identified eighty species in this neighborhood?"

"More than that."

"But that's a splendid record!" exclaimed the stranger.

He turned to the game warden.

"Going a bit too fast, weren't you?" he said, reprovingly.

Shan looked at him suspiciously a moment, then, seeing that the new-comer's appreciation was genuine, his eyes lightened.

"Have you any other Chuck-Will's-Widow eggs in your collection?" the city man asked.

"Of course not," said Shan, "I wouldn't need these if I had."

The stranger nodded appreciatively and the boy realized that he had found a friend.

"Eggs aren't worth much in a collection," he said, "unless they're properly dated and labeled. How do you go about it?"

"I'll show you," said Shan, losing his self-consciousness, "if you'll hold my turtle a minute."

The stranger smiled at the offer, but seeing that the lad was in earnest, he reached out and took the terrapin by the tail. Shan, then, pulled out from his pocket an old five-cent note-book and the stub of a pencil, licked the point and wrote toilsomely, but legibly,

"April 10. Weather—sunny. Bird—Chuck-Will's-Widow. Nest—open ground under swamp bay tree, eggs lying on faded leaves. Clutch—two. Color—white, lilac marks and brown spots. Ob-

servations—hen-bird on nest, fluttered off, imitating broken wing."

Here the boy looked up.

"That's about all I know how to do," he said. "The long name of the bird I get out of a book at home and I blow and measure the eggs there."

The stranger looked over the lad's shoulder with whole-hearted appreciation.

"That's good, thorough, systematic work," he said approvingly. "You deserve a lot of credit."

This was different talk from the game warden's threat of jail, and Shan darted a self-satisfied look at his former tormentor.

"Look here, Shan," said the stranger, "do you mind putting the eggs back on the nest for a minute? You can have them again, afterwards."

"Honor bright?" asked the boy, a little dubiously.

"Honor bright."

"And you'll see that he doesn't touch them?" queried Shan, jerking his head in the direction of the game warden.

"I don't want your confounded eggs," rejoined the other, surlily.

"That's not the way you talked a while ago," retorted Shan, who had lost none of his hostility to

the warden. Notwithstanding, at the stranger's request, he stepped forward and laid the two eggs exactly where they had lain before.

"Better keep your eye on them," he warned; "they're right easy lost sight of."

"I can see them," said the stranger.

From the pocket of his coat he took a camera, small in size, but with a good lens, focused it and took a picture of the eggs as they lay in their ground nest. Then he handed the camera to Shan.

"Take hold," he said, "you'll find that photos give you a much better idea of nests than you can get by merely writing a description. I'll send you a bunch of films and you can learn how to develop them."

The boy looked at him with bewilderment.

"You mean—I'm to keep this?" he gasped.

"Sure! I can get another, when I go back to the city. Good field observers are rare enough in these parts for us to be ready to help them all we can."

Shan commenced to stammer out some thanks, but the stranger stopped him abruptly.

"Oh, that's all right,' he said, "but I'd like to see that collection of yours."

"I'll show you," replied Shan eagerly, for he

was hungry for the stranger's appreciation. He picked up the eggs again and started along the path toward the cabin. But before he had taken three steps he stopped.

"What's the trouble?" asked the stranger.

Shan turned shamefacedly.

"I was forgetting," the boy replied. "Bull, he doesn't like having any one come to the cabin. He's never asked any one in, not as long as I can remember."

"He's got reason enough, from all I hear!" growled the game warden.

The stranger glanced authoritatively at his companion, who fell silent, though sulkily. It was evident that further sharp speech trembled on his lips, but he did not utter it.

Therein he was wise, wiser than he knew, for, in the bushes, within easy earshot, stood a black-browed figure with hair of dark brown streaked with gray, and a gun in the crook of his arm. He had smiled grimly when Shan said that Bull Adam never invited any one to his cabin.

"He's not very hospitable, is he?" said the city man, with a shrug of his shoulders. "I'm sorry. I suppose, then, you can't show me your collection."

"I could bring the boxes out," suggested Shan, hopefully, for he was anxious to show the gratitude he felt, not only for the gift of the camera but for the stranger's kindly interest. "I reckon Bull wouldn't mind that."

"Bull didn't raise the woods nor put a fence round them," said the stranger with a half-smile, retorting on the boy with his own argument.

Shan's eyes brightened.

"That's right," he said, "the woods are anybody's. Bull's always fair. He'd see that."

The figure in the bushes frowned at this application of his own reasoning. He had always regarded the woods near his cabin as his own domain and resented the approach of strangers. Rude justice made him see that the boy was right. Unseen, he followed the three as they went along the path through the woods.

"What started you collecting birds' eggs, Shan?" asked the stranger.

"Learning to read," answered the boy. "It was Bull who taught me to read, like he's taught me everything I know. Bull's been right good to me," and he told of the long winter evenings when the old hunter worked to teach his nephew the little he knew.

"This doesn't sound much like the desperate outlaw and gunman you've described to me, Thompson," remarked the stranger.

"It's new hearin' that there's something decent about Bull Adam," was the sullen retort.

Which the figure following heard.

Shan, once started on the question of birds' eggs, rattled on, soon finding out that his new friend knew a great deal about the subject.

"I used to think," the boy said, "that only birds laid eggs, but I've seen eggs of turtles and alligators, and eggs of fishes and flies. I reckon everything lays eggs, excepting animals, doesn't it?"

"There are two kinds of mammals which lay eggs, besides," the stranger answered, "the spiny ant-eater or echidna and the duck-billed platypus. The platypus even makes a nest and sits on its eggs. Most reptiles lay eggs, you've seen the eggs of turtles and alligators yourself, but a few of the lizards and some of the snakes give birth to live young, just like animals."

"All fishes lay eggs, don't they?" asked the boy.

"Several form of sharks have babies," was the reply, "and many little bright colored tropical fish, such as people keep in aquaria, are viviparous. As a rule, though, fish lay eggs and some have very

curious shapes. The 'mermaid's purses,' two inches long by one wide, with a curling tendril on each corner, so often picked up on sea beaches, are the egg cases of a skate.

"The most wonderful eggs are found among the insects. The stick and leaf insects, for example, make egg-cases carved and ornamented in the shapes of beautiful vases, with hinged lids decorated in elaborate designs. Some insects' eggs are square, some shaped like stars, others are like small pyramids, and there's no end to the variety of ways in which the young make their exit. If you had a microscope, Shan, you'd find a collection of insect eggs even more wonderful than those of birds."

"But all birds' eggs aren't the same shape," protested Shan, eager in defense of his hobby.

"Indeed they're not," the stranger answered. "The eggs of Owls and Kingfishers, which are laid in a hole in a tree, are round; small-bodied birds which lay four large eggs in a clutch, like the Snipe and the Plover, lay them pear-shaped, which are put into the nest pointing in and down so that the small hen-bird can keep them all warm together; the Murre, which has only one egg and lays that on a narrow ledge of rock, has a pyri-

form egg, pointed at one end, so that if the wind should blow hard on it or anything should touch it accidentally, the egg would whirl round on its own axis and not roll off the ledge of rock into the sea."

"But why do some birds have only a few eggs, while others have a lot?" the boy asked. "Is there any particular reason, or does it just happen so?"

"In Nature, nothing 'just happens,' " the other replied; "everything has a reason and generally a very important one. Take these eggs, now. You can be sure that birds which lay only one or two eggs have few enemies and can be moderately sure of hatching their eggs and of the baby birds living to maturity; birds which lay many eggs are those who are surrounded by dangers and which, therefore, must expect that a certain proportion of nests will be destroyed and the young killed.

"Look at the Murre, who lays that single egg, pointed at one end, of which I spoke a minute ago. The Murre breeds in great colonies, together with the Razor-billed Auk and the Puffin, and these colonies are on a barren rock in the sea. The nests are so close together that there isn't an uncovered spot on the rock large enough to put down

your foot. The Puffins, too, are fighters, and could make fearful wounds with their sharp, heavy beaks. There's nothing to keep the young Murre from growing up.

"On the other hand, look at the nest of the Chickadee, that little scrap of valor, with its seven or eight eggs. It takes as many as that to keep the Chickadee tribe alive. The gallant Chickadee doesn't live in colonies with a sharp-beaked friend, nor can he put his home on a rocky islet in the sea to which no animal can go. His nest is in the midst of a thousand dangers. Robber birds, like the Jay, Grackle, or Crow may fly down and eat the eggs; animals, like the 'coon, 'possum or red squirrel will dine readily on either the eggs or the baby birds; the snake—that dragon of the bird-world—climbs trees stealthily and greedily; and if there's a pussy within five miles, no nest is safe. Out of every four Chickadee nests, at least two are ravaged.

"Eggs differ greatly in size as well as in the number to be found in a clutch. The smallest egg known is that of a West Indian Humming-bird, which is smaller than a pea; the largest egg known is that of the extinct Æpyornis of Madagascar, which was over a foot in length and held over

Courtesy of American Museum of Natural History.

EGGS OF GIANT BIRDS COMPARED WITH HEN'S EGG.

The largest is the egg of the Æpyornis; the next in size, that of a moa; the third, that of an ostrich; the smallest is the hen's egg.

two gallons or six times as much as an Ostrich egg.

"Don't run away with the idea, though, that the Æpyornis was six times as big as the Ostrich. The size of the egg isn't always a clew to the size of the bird. The Raven is twice the size of the Guillemot, but his egg is considerably smaller."

"But what is it that makes birds' eggs all different?" queried Shan.

"The same thing that makes birds all different," was the answer; "they have developed in different ways during the millions of years that they have lived on earth. It's too long a story to begin now, how birds began.

"So far as eggs are concerned, however, their differences are of two kinds, texture of shell and coloring. Sometimes the surface of a shell is glossy, as in the Kingfisher; or opalescent, as in some of the Woodpeckers; in the Tinamou, a curious good-sized bird of Guiana, something like a Partridge in appearance, the eggs have a glazed surface like burnished metal, peculiar to this bird alone; the eggs of the Emu look as though they had small-pox; the eggs of Ducks are greasy; while they are rough, with a chalky film, in the Gannet.

"The color is due to certain pigments or stains which the mother-bird uses when she is laying, while the egg-shell is still soft. There are seven of these. One of these colors is brown-red, one is brick-red, one is umber, two are different shades of blue and two are different shades of yellow. In general, the same bird of the same species will lay eggs marked in the same way, though Terns and Hawks are an exception to this. For the species as a whole, the markings will be generally similar, though the character of the blots, splotches, zig-zags or smears may differ. The eggs of the European Yellow Hammer, for instance, look exactly as if they had been written on."

"And there is a reason for that, too, like the reason for the shapes?" asked Shan.

"Certainly. In a great many cases, the eggs are protectively colored. You remember how hard it was to see the Chuck-Will's-Widow's eggs when you put them back on the ground. As a general rule—which, however, has several exceptions—you can say that eggs which are laid in protected places, such as the holes of hollow trees, are white; eggs that are laid in exposed situations are colored, more or less in keeping with their surroundings. Thus Kingfishers, Woodpeckers, and Owls,

who lay in holes, have pure white eggs; Woodcock, Snipe, and Plover, who lay on the ground, have eggs protectively colored.

"Even the exceptions partly support this rule, for while Mourning Doves lay white eggs in open nests, the father-bird and the mother-bird take turns in sitting on the nest, so that the white eggs are rarely exposed. Similarly, while the Grebes also lay white eggs on open nests, it is their custom, when they leave the nest, to cover the eggs with water-soaked vegetation of which the nest is made.

"There's one more thing, too, Shan," his informant continued, "and that is that eggs differ a good deal in size and so forth upon whether the young birds are altricial or precocial. Do you know what that means?"

"No," said Shan, "I never heard the words."

"An altricial bird," the stranger explained, "is one that is hatched naked, blind, and helpless in the nest and which would die unless fed and tended by its parents."

"Only little song-birds have young like that," commented Shan."

"Not at all," the other rejoined. "Baby Parrots are among the most helpless chicks in bird-

land, their eyes don't open for a week after they are hatched and they can't leave the nest for a month or six weeks. The savage Hawks and the greedy Crows hatch naked birds, and even wild sea-birds like the Gannets have altricial young.

"Compare that helplessness with Ostrich chicks, the most precocious of all birds. They have a full coat of quill-like feathers when hatched and can run about briskly the moment they leave the egg. They'll run, sometimes, before the egg-shell has dropped off their backs. They are able to pick up food at once. A Duckling, a few minutes out of the egg, can swim about on the water, paddling with his feet. Chickens may be heard 'cheeping' while still in the shell. Most Water-birds, on hatching, swim with ease in deep water, though they have to be taught to dive. An hour or two after birth a young Sandpiper can run like a race-horse, and a Partridge chick can jump over an obstacle four times its own height when only a couple of days old."

This conversation brought them to the clearing, and there Shan halted and looked at his new friend.

"This is Bull's place," he said. "If you'll just wait a minute, I'll bring out the boxes with my

eggs. I'd like to ask you inside, but Bull hasn't ever told me that I might."

The stranger looked directly at the boy.

"What's he hiding in the cabin?" he asked.

"I don't know of a single thing," Shan answered, "and, even if I did, it wouldn't be right for me to tell, would it?"

The newcomer hunched his shoulders forward.

"No," he said, "I suppose it wouldn't. As you say, it's his house."

"Well," put in the game warden, becoming more angry as he found himself at the very place where he had been rebuffed before, "I'd go right in an' search it, if it was me!"

"And the owner would have the right to shoot you for burglarious entry," answered the other, calmly, "provided that you hadn't any ground for suspicion. That bullheadedness of yours, Thompson, is going to get you into trouble one of these days. Being a county game warden doesn't make you sheriff and judge and jury besides.

"From all I hear, this Bull Adam is a crank and an inhospitable one, at that. But if he wants to be let alone, that's his affair. You wouldn't think of breaking into his house, if he lived in the city. Why should you, in the country?"

"I've got a right to go," replied the other, "if I think he's got Duck in there out o' season. I stand by my rights as game warden o' the county. Yo' can say what yo' like about it, but I'm goin' in to see!"

"You're getting after this in the wrong way, Thompson," the other warned him, "we don't want to set people against the game laws, they're hostile enough about them as it is. You ought to reason with them, show them that the game laws are for their good, just as for every one else."

"Reason with 'em!" growled the game warden. "Reason with Bull Adam! Much good that'd do! No, I'll search the house first an' reason afterwards. I'm county game warden and this is my job."

He strode forward across the clearing.

"An' how long do you-all reckon yo're goin' to hold down that job after yo' put a foot in that door?" said a voice in a tone of malignant sternness.

The query struck Ned Thompson like a cold douche.

Both men turned, to see the menacing figure of Bull Adam outlined against the bushes. His gun was still resting idly in the crook of his arm, but

it needed no great shrewdness to guess that the butt would fly to the shoulder if the implied threat were unheeded.

The game warden stopped. He seemed to be considering the chances.

"'Burglarious entry,' I heard it called a minute ago," the pot-hunter continued grimly, "an' I'll have a witness to the act."

The stranger knew that the game warden carried a revolver and, fearing that a tragedy might result, he stepped between the two men.

"You're Mr. Adam?" he queried.

"I'm Bull Adam," came the reply, "as yo' said, 'a crank and an inhospitable one at that.' I'm goin' to talk to yo', stranger, in a minute."

He paused.

"But first," he continued slowly, "that slouch what calls himself a 'game warden' has got to get ten clear feet away from that doorway or I'll pepper him full o' holes."

The stranger kept between the two.

"You'd better get back, Thompson," he advised; "I warned you, before."

"Who wants yo' warnin's?" came the angry retort. "Yo' Washington riggers think yo' know it all. I'd ha' had the goods on him, but for yo'!"

He turned to Bull Adam.

"An' as for yo'," he said, "the whole durn county knows yo're breakin' the game laws. I'm goin' to get proof, an' I'm goin' to get yo'! No squatter with one foot in the grave is goin' to defy the law while I'm game warden. An' now yo're told. That's what I come befo' to tell yo'. Next time, there ain't goin' to be no tellin'."

"There ain't," said Bull, "for the next time yo' plan to come within a half a mile o' this cabin, send word to the county that they can elect a new game warden. Yo' post'll be vacant. Now—git!"

Still the game warden hesitated, but a second look at the old moonshiner's expression cowed him. He turned on his heel, muttering.

"Shan!" called the pot-hunter, "trail that yellow dog off'n the place."

CHAPTER III

THE GREAT MASSACRE

When the figure of the game warden had disappeared, the two men remaining looked at each other, Bull Adam, as always, with the gun in the crook of his arm, the stranger with his hands in his pockets. Bull was scowling.

"Well," said the pot-hunter, "an' now we'll find out what yo' might be a-wantin'?"

The other countered promptly.

"I want to find a man who knows something about the woods," he replied, "a man who isn't a coward, who's got the nerve to back up his opinions and who can keep his tongue between his teeth. I want a man who's not too obstinate to learn and not too pigheaded to admit when he's been in the wrong. The United States can use a man like that, Bull Adam, even if he is a crank and an inhospitable one at that."

The taunt stung. The pot-hunter colored under his weather-beaten skin.

"Yo' said yo'self," he retorted, "that if a man wants to be let alone, it's his own affair."

"So it is. But if his country needs him, what then?"

"What do yo' mean?"

"If you were called as a soldier, Bull Adam, would you dodge?"

"Me? I'd jump at the chance. My dad fought under Johnston at Shiloh."

"So did my grand-dad. I'm looking for recruits. As the grandson of one Confederate soldier to the son of another, I ask you, will you join?"

The old man drew himself up proudly.

"I don't know yo' name, stranger," he said, "nor yo' business, but if yo' grand-dad was my Dad's comrade at Shiloh, yo' don't need to stay outside. There ain't much to my cabin, but yo're welcome. Come in an' tell yo' story, sir. Come in!"

The stranger hesitated.

"I'm a Federal game official!" he said, with a curious intonation.

The impassive woodsman started at the words as though he had seen a snake, but the invitation had been given.

"I'm sorry to hear it," he said, "sorry to hear it, but yo're a Southerner an' the grandson of a Confederate soldier. Come in!"

The official looked round the cabin with curiosity as they entered.

"You seem comfortable enough in here," he remarked.

The pot-hunter looked at his guest with a challenging directness.

"Savin' for Shan, my nephew," he said, "yo're the only man beside myself to put foot in this cabin for twenty year."

"By which you mean that you want to know why I'm here. I'll tell you just why. You said your father fought at Shiloh?"

"Yes," said Bull.

"And he fought there, I reckon, for the same reason that my grandfather fought, because they both thought the North hadn't any business interfering in the rights of slave-holding states. Wasn't that about it?"

"Just about," the woodsman agreed, wondering where this preamble might lead.

"Of course we'd both have been Confederates if we'd lived at that time, you and I," the official continued, "but, looking at it now, don't you think

it's better for the country that we didn't split in two?"

"I'm a Southerner," the pot-hunter answered, "an' I ain't never been too friendly to the North. But I reckon we're all together for the United States now."

"Good," said his guest, "I thought you'd feel that way. Now, when you come right down to hard tacks, don't you think we're all ready to stand by the union because we feel that every American ought to be under the same laws and be given the same chance?"

"That's the way it ought to be," agreed Bull Adam, "even if it ain't."

"About the youngsters, now. Oughtn't they to have as good a chance as we've had?"

"Better, if we can fix it," came the reply.

"Then that," said the official, leaning forward in his chair, "is what I'm here for, and what the game laws are here for. They're to give every man in the United States an equal chance to hunt or shoot or fish, and to provide that his children and his children's children shall have the same chance."

"How do yo' make that out?" growled Bull Adam. "All I can see in those cross-eyed, stone-

ribbed, bone-headed game laws is that they keep a man from shootin' game when he needs it, so as to save it up for the rich fellers to shoot who don't need it."

"Hold on there a minute," said the younger man. "You think the poor ought to have the same rights as the rich?"

"That I do!" declared Bull, banging his fist on the table, "an' I'm dead sot against any law what soft-soaps the millionaire. An' what's more, I'm a-goin' to fight any such law!"

"Of course," the official rejoined calmly, "so would I. But don't you think that the rich man ought to have the same rights as the poor?"

This was an entirely new point of view to Bull Adam, and he stared blankly at his questioner.

"No, I'm not joking, I mean it exactly that way," affirmed the Biological Survey man. "Take Wild Duck, for example. You know, as well as I do, that there are only a few places where the duck go for winter quarters. Why should one man shoot them all, just because he happens to live there, and, that way, prevent any one else from having a chance."

"I ain't preventin' no one," said the pot-hunter, in defense.

"Mainly because the game laws don't let you," the official retorted. "Men like you forget that it's only because there is a law that there's any commercial profit in breaking it. Suppose there weren't any game laws, how long do you think it would be before the city marketmen sent a couple of dozen men here with motor boats and pump guns? They'd clean up all the duck in Currituck and Pamlico Sounds in a couple of weeks and where would you be? If it weren't for the law, you wouldn't have the chance to shoot half a dozen duck a season and in ten years there wouldn't be a duck wintering in the country."

"Yo' don't know what yo're talkin' 'bout," said the pot-hunter, contemptuously, "yo' ain't never seen the Duck that come here. There's millions of 'em. Yo' couldn't kill 'em off with an army shootin' 'em down."

"You think not?" said the expert; "let me tell you something. Do you remember the Wild or Passenger Pigeon? You must have seen plenty of them when you were young."

"What did they look like?"

"Like a Mourning Dove, only twice as big, blue on the back, salmon-buff on the breast and white at the tip of the tail-feathers."

Courtesy of "Bird-Lore."

THE LAST OF HIS RACE.

The Passenger Pigeon, once numbered in America by billions, now absolutely extinct, the last specimen having died in 1914.

"I've shot hundreds of 'em," said the pot-hunter; "they used to come round here in flocks bigger'n yo' could count."

"Seen any lately?"

Bull Adams puckered his forehead in thought.

"I ain't seen none in twenty years," he said. "What's come to 'em?"

"There aren't any more to see," answered the Biological Survey expert, "they've gone where the buffalo has gone."

"But there used to be millions an' millions of 'em!" exclaimed the old woodsman.

"Yes," agreed the other, "they used to be one of the wonders of the world. Nothing to be compared with the Passenger Pigeon flocks existed anywhere on this earth. As you say, they traveled in flights of over a billion birds.

"Wilson, a famous early American ornithologist, observed one such flock near Frankfort, Ky., in 1808. The birds moved in a column whose front was more than a mile in width, they were flying at the rate of a mile a minute in a cloud so dense that they darkened the afternoon sun, and the column took four hours to pass. After a careful calculation, Wilson estimated that this flock alone contained nearly two and a quarter billion pigeons.

"In 1813, Audubon, the greatest of all our American students of birds, driving from Henderson to Louisville, Ky., once undertook to count, by thousands, the Passenger Pigeons which passed him in an hour. After twenty-one minutes, his figures had reached into the tens of millions and he gave up as impossible the task of counting or even estimating the number of the birds.

" 'I traveled on,' writes Audubon, 'and still met more the further I proceeded. The air was literally filled with Pigeons, the light of noon-day was obscured as by an eclipse. The continual buzz of wings had a tendency to lull my senses to repose. Not a bird alighted, for not a beech-nut or acorn was to be found in the neighborhood that year, they passed high overhead. At sunset they were still passing in undiminished numbers, and this tremendous procession continued for three days.' "

"What killed 'em off?" the pot-hunter asked again.

"The same agency that killed off the buffalo—Man!" the expert answered. "They were shot for food. There's nothing in the world so destructive as Man when he finds that something has a market value.

"The Passenger Pigeons were butchered, massacred by millions. The fact that they roosted and nested in densely packed colonies, unhappily simplified matters for the destroyers. There were colonies which completely filled forests forty miles long and three to four miles wide, few trees having less than a dozen nests and the larger trees averaging from fifty to a hundred. Each nest contained one or two fat squabs.

" 'When the squab harvest was ripe,' says Baynes, describing the scene, 'vast armies of men, women and children came from all over the surrounding country to gather the crop. Some of the folk came in tents, that they might camp on the scene and kill Pigeons as long as there were any to kill, while others came with sacks, baskets and barrels, in which to collect the spoils, and horses and wagons with which to remove them.

" 'Then began a fearful massacre, in which no one thought of anything save how he could secure the greatest number of Pigeons in the shortest possible space of time. Some used guns, others clubs or long poles with which to beat down the frantic victims, and still others suffocated the birds with pots of burning sulphur. The fat squabs in the nests were considered even more desirable prizes

than the old birds, and scores of men spent their entire time in throwing to the ground, by means of long poles, all the nests within reach. Others, for whom this method was too slow, attacked the trees with axes, bringing down a hundred nests at once.' "

"That was hoggin' it," the pot-hunter declared, blamingly.

" 'Eyewitnesses testify that the spectacle was an awful one,' " the official continued, 'savage Indians and still more savage white men, with many women and children, all engaged in killing birds. With hands and faces smeared with blood and with feathers sticking in their clothing, many of them looked scarce human in the uncertain light, as they ran back and forth over the blood-slippery ground, shouting at the tops of their voices in order to make themselves heard above the thundering roar created by the wings of millions of Pigeons.

" 'All night long this awful slaughter continued, and at dawn the woods were seen to be carpeted with dead and dying birds. Sneaking away through the shadows of the woods could be seen the dim forms of mountain lions, foxes, wild cats, skunks and other night prowlers, and then, in the air, would appear Eagles, Hawks, and Vultures

coming for their share of the feast. The slaughtered Pigeons were gathered up and piled in heaps until every one had all that he could cart away, and then droves of hogs, sometimes driven from far away, were turned into the woods to fatten on the remainder. This massacre, repeated year after year, nearly exterminated the breed, the hapless Passenger Pigeons being driven and followed from one nesting-place to another.

" 'In addition to those destroyed at the breeding grounds, hundreds of thousands of old birds were taken in clap nets, upwards of three hundred being taken in a single haul, perhaps six thousand a day. Many were sent by schooner-loads to New York, where they were sold at one time for one cent apiece, and they were so cheap in some places that the hogs were fed on them.' "

"An' those everlastin' droves of Pigeons are all gone for good an' all?" the pot-hunter queried incredulously.

"Not one single Passenger Pigeon is left alive on the face of the earth," the official replied solemnly. "In 1904 a single specimen was killed near Bar Harbor, Me. In 1906, a single bird was received from Black River, Ark., by a St. Louis game merchant. In 1907 a taxidermist reported

the stuffing of a specimen shot in the Province of Quebec.

"This left nothing but a few captive birds. In 1878 the Cincinnati Zoölogical Society bought ten pairs of Passenger Pigeons. These bred as long as they lived, but their young, born in captivity, were almost barren. At last only one pair survived and the male died in 1911. The female lived until September 1, 1914, when she, too, expired, at the extreme old age of twenty-nine years. By her death the species became extinct. Not only is there not a single Passenger Pigeon left alive on the globe, but there are only a few stuffed specimens in all the museums of the world."

He turned sharply to the old man.

"That's the result of pot-hunting unprotected by game laws," he said. "Suppose there had been a restriction on the shooting of Passenger Pigeons, forbidding the young to be taken from the nests and allowing a bag of only so many pigeons a day during certain seasons, one of our best food birds would have been saved and would have been a part of the nation's wealth forever. Tell me, Bull Adam, do you think it right that the Passenger Pigeon should have been wiped off the face of the earth?"

"No," answered the old woodsman, "I don't. Them game-hogs should have left somethin' for the folk to come after 'em. But Pigeons don't prove nothin' 'bout Ducks. We don't worry Ducks when they're nestin'."

"Because they don't nest in this country," came the quick retort. "And, as for the Passenger Pigeon being only one case, there are a dozen valuable birds that Man has made extinct in the last century. The Great Auk, or Gare-Fowl, a flightless bird as big as a goose, became extinct in 1844. Yet, in the eighteenth century, vessels trading to America did not trouble to carry fresh meat, for they could stop on the islands off Newfoundland and kill all the Great Auks they might need for food, merely knocking them down with a stick, they were so tame.

" 'As extinct as the Dodo' is a proverb. The Dodo, also a flightless bird, became extinct when Europeans introduced pigs into the island of Mauritius, which was the Dodo's only home. Cats in Samoa almost, if not quite, have destroyed the entire species of Tooth-billed Pigeons.

"The Eskimo Curlew is another bird that market-gunners have shot to extinction. In 1872, they were still to be found in such numbers in New

England that they were for sale at six cents apiece. Cape Cod was one of their stopping places on the great annual migration from the North Pole regions to the South Pole lands."

"Were they good eatin', too?" asked Bull.

"So good that they were popularly known as 'dough-birds,'" the expert replied. "Labrador and Newfoundland fishermen used to salt down hundreds of barrels of them every year. It is possible that in their nesting-range in Alaska or Labrador, or maybe in their wintering range in Patagonia, a few scattering specimens may be left, for one was shot, as recently as 1913, in Massachusetts. But the Labrador Duck is entirely gone. The Long Island markets used to be glutted with the birds but the last living Labrador Duck was seen in 1878.

"It's not only the food-birds which go that way," he continued. "When you were down in Florida, years ago, maybe you remember seeing some small parrots down there?"

"Quite a few," agreed the pot-hunter, "yellow head an' neck an' all the rest green, the way I remember 'em."

"That's the bird," agreed the official; "we call it the Carolina Paroquet, though there hasn't been

a specimen in either of the Carolinas for sixty-five years. It's about gone, too.''

''Why, the Florida swamps was jest a-blazin' with 'em!'' declared Bull.

''Yet in 1904 only thirteen birds could be found in the state and, a few years later, they were thought to have become extinct. In 1912, however, Kennard secured definite evidence that there were then at least seven birds left alive in the state. The Carolina Paroquet was killed off by fruit-growers, by plume-hunters, by that terrible scourge—the ignorant negro with a three-dollar gun—and by the so-called 'sportsmen' who shoot any bird they can see, merely for the sake of shooting.

''Some of the most beautiful of all our birds are gone or are going. The clarion call of the great Trumpeter Swan is forever silenced, and the Great White Whooping Crane whoops but rarely now. A frenetic demand by women for the wedding plumes of the Snowy Egret has hounded that exquisite heron to the verge of extermination.

''The small birds suffer equally. Do you know that professional song-bird catchers have immigrated here from Italy? That they put up 'roccolos' or bird-traps made of netting to catch Mock-

ing-birds, Orioles, Thrushes and similar song-birds? That they hang around these nets a number of cages containing imprisoned song-birds whose eyes have been burned out with a hot wire because blind and suffering birds call oftener than those who see—''

Bull Adam started up.

''Ain't no one put a hot iron in their eyes?'' he thundered.

''That catches you, does it?'' said the game official. ''I thought you had red blood in your veins if you were probed deep enough. But they're doing it, Bull Adam, doing it all the time. Robins, Goldfinches, Warblers—every kind of tiny song-bird they call 'game' and there are scores of men who do nothing else but snare these little birds and sell them in the Italian districts.''

''I'd stamp on 'em like I would on a tarant'ler or a stingin' spider!'' declared the woodsman, hotly.

''You think game laws are all right for them! But they haven't any more use for a game warden than you have. An Italian song-bird poacher fired both barrels of his shot-gun into a game warden the other day, near Boston, because he was threatened with arrest. He thought the 'land

of the free' meant that he had a license to kill every song-bird in his part of the country.

"It isn't only immigrants, either. You've seen gangs of negroes, with their 'bird dogs,' going for a night's shooting in the winter among the holly trees and coming back with hundreds of robins. Haven't you seen thousands of birds sold in any of the little villages around here?

"I ask you frankly, do you think it's right that all the woods of America are to be made silent, and all the insects are to be allowed to ruin our crops, merely to give a few meals to a bunch of shiftless negroes who are too lazy to work for their grub?"

The pot-hunter looked at his guest, feeling what was coming.

"What is their excuse, Bull Adam? They'll say that the birds are wild an' they've a right to shoot them. There's no fence around a Robin and no one throws grain to the Trumpeter Swan. Oh, I can tell where Shan got his arguments.

"Where are you any worse or any better than a gang of negroes shooting robins, or an Italian catching song-birds with a blinded but living decoy?

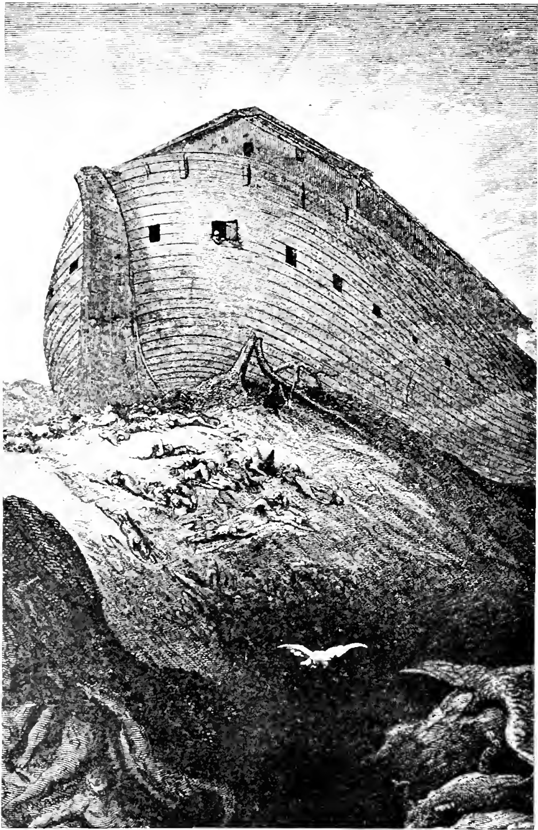
"Go on! Shoot for your pot! Shoot for your

dinner! Blaze away in season and out of season at everything that flies. But, if you do, Bull Adam, don't call yourself a decent American; and, if you do, turn your father's portrait to the wall to show that you're unworthy to be the son of a Confederate soldier!"

Bull glared and his fists were clenched, but the federal game law official feared no man. He paused, and then went on more quietly.

"You talked about game laws being made for the rich, Bull Adam. You're talking like a blind man or a fool. They're a durn sight more advantageous for the poor. There's places in the North Carolina marshes, as you know well, that can't be reached either on foot or with a boat. There, the duck are tolerably safe. But it would be easy to fly over those marshes with an aeroplane and pot everything at sight, wouldn't it? So, in 1917, North Carolina passed a law forbidding the shooting of waterfowl from an aeroplane over any waters of the state. Who does that law hit, Bull Adam, the rich or the poor?

"Game laws made for the rich? Don't you think it! The Biological Survey has drafted and prepared most of those laws and you can bet they're pretty fair all round, Who pays the big



THE DOVE SENT FORTH FROM THE ARK.

In the oldest story of the World, birds were man's first messengers to bring back the story of the desolated earth and of the return of fertility.

license fees? The rich non-resident, not the people who live in the state. Who is most handicapped by the bag limit? The sportsman who can't send his kill out of this state. How many deer can an outsider get in this state? Two in a season. And this is one of the easiest states in the union.

"You say game laws are made in favor of the sportsman. That's true. They are—and why? Because a sportsman shoots for sport, not for killing, because it is his rule to give the wild creature as much chance as possible, so as to increase the interest and the skill; because he is willing to leave some of the birds for other people. Does a sportsman shoot a bird on its nest or fire a battery-gun into a flock of sitting birds, killing and wounding indiscriminately? Who does that, Bull Adam, the sportsman or the pot-hunter?"

But Bull Adam sat silent.

"The game laws back up the sportsman. Agreed. But there's no finer compliment in the world than to call a man 'a true sportsman.' Uncle Sam has just two ideas in this game law matter. One is to save the birds which are threatened with extinction because of their market value for food or feathers, and the other is to preserve

the birds which are valuable to the farmer because they eat the insects and grubs which destroy the crops. It's a question of playing the game fair and square and the sportsman backs the government. Where do you stand?"

The pot-hunter glowered at his guest from under drooped eyebrows.

"An' if I do shoot a bird out o' season, now an' again, what then?"

"Then you're disobeying the law and ought to be punished for it," answered the official promptly, "just the same as if you broke any other law. Of course, if you could prove that you were compelled to shoot the bird because of hunger, that would put an entirely different face on the matter.

"In Alaska, for example, the laws provide that game animals and birds may be killed at any time for food and clothing by native Indians, and by Eskimos, or by prospectors and explorers in need of food. Canada has the same rule in the Yukon.

"I can remember a case in which a lighthouse keeper wrote and asked the department if it were permissible for him to shoot birds out of season, when his food supply was running short, and, by reason of stormy weather, his relief ship did not arrive. Of course I had to write and tell him that

he did not have the right to disobey the law, but if he'd gone ahead and shot such birds as he absolutely needed for food, he'd never have got into any trouble with the department.

"The game laws are for every man. They're for you, Bull Adam, just as much as for the millionaires in the Currituck club-houses, but they're for them just as much as for you. They're Uncle Sam's way of giving a square deal to the birds and a square deal to the people, as well as a square deal to the generations to follow us. We've no more right to steal from our neighbors in the future than from our neighbors in the present.

"In every neighborhood there's one man, who, because of the bigness or the dominance of his character, sets the pace. If you go on defying the law, weaker folks will follow you and you'll make it ten times harder for us, for the district, and for the folks that'll follow after we're dead and gone. I can get any amount of little men to join me in a move to play square with the birds, but I don't want little men for leaders, I want big ones. Where do you stand, Bull Adam, with the Italian bird-torturers and the negro robin-hunters or with the United States?"

He stopped, and in the silence that ensued,

Shan's cheery whistle was heard as he returned up the woods path.

The pot-hunter paid no attention. He had not shifted his gaze, which was fixed full on the federal official's face. When at last he spoke, it was with a heavy and ponderous assurance.

"I ain't the man to cheat no one o' their rights," he began, "an' I ain't never done it, spite of all yo' say. Yo've got some reason on yo' side, I'll admit it, but yo're layin' it on a bit too thick. If a kind o' bird is goin' to die off, yo' can't pump ginger into the breed by a bunch o' laws in Washington. Birds an' men lived on this here earth long afore any one worried about protectin' 'em. An' if I'm hungry, I'm not goin' to be stopped from gettin' my dinner 'cause some New England school-ma'am likes to see the Wild Duck fly or hear the Wild Geese honk.

"I've lived here, young man, for nigh to sixty years, an' my father before me, an' his father before that. My folks come here an' settled when the place wasn't nothin' but a wilderness. 'Twas us that made the State of North Carolina. We fought the Indians an' we wrestled with the wild life here. It was use yo' gun or starve! There wouldn't have been no Washington an' no union

but for folk like me an' mine. I don't break no law around my cabin, 'cause round my cabin, I'm the law. An' I don't reckon to be held to consequences for a duck or two. I don't make no promises, mind yo', but I'll say this—that I'll do nothin' to hinder yo' in yo' game law work. Only—" and his face darkened, "yo'd better keep Ned Thompson away from here, or I'll be apt to take him for a duck an' forget it's close season."

The other heaved a disappointed sigh. He had hoped to enlist Bull Adam in his campaign against the indiscriminate killing of birds, but he reflected that, probably, he had gained as much advantage as was possible.

"All right," he said, cheerfully, "I suppose I'll have to be satisfied with that. I'd just like to say, though," he added, "that, if you've been setting Shan against the game laws, you'll let me tell him the other side of the story, so that he won't grow up with the wrong ideas."

The pot-hunter glanced sternly across the table.

"I ain't never agreed they were the wrong ideas," he said, "but the boy has a right to hear both sides, there's no denyin'. I'll tell him, square enough, but in my own time an' my own way."

"That suits me," said the official, half turning in his chair as Shan came through the open door.

"Shan," said his uncle, "yo' can go get some kindlin'. This stranger is stayin' for supper."

CHAPTER IV

IN THE UNCHARTED SKY

The presence of Shan at the supper table did much to remove the restraint which had developed between Bull and the federal game official, for the lad was so evidently on fire with delight over his new camera that both men found a link of interest therein. The old pot-hunter had never seen a camera, and Baker, the official, had to explain all its workings.

Supper over, and the pipes lighted, Bull Adam himself suggested that the egg collection be brought out and the discussions and questions with regard to the eggs of certain species kept up to so late an hour that it became too late for Baker to return to the village.

"Reckon you-all had better sleep right here," said the old man, when the official's watch showed that it was almost midnight. "Yo' can have my bunk."

"But where will you sleep?" Baker answered.

"I've got a nest in the trees, like the Crows,"

the old man answered. "Yo' don't need to feel yo're puttin' me out none; Shan'll tell yo' I'm away from home nights a right smart plenty."

"That's right," the lad agreed, "quite often Bull doesn't sleep here."

"Well," the official answered, "in that case, I'll be glad to stay over. It's a long way back to the village and I don't know the trail."

To a certain extent, this was true, but the game law official's main purpose in staying was the hope of securing from Bull Adam an even more definite assurance of his support than he had yet received. The enthusiasm of the old moonshiner for the egg collection was proof positive to Baker that, if he could win Bull Adam definitely to his side, he would have an invaluable assistant in the district.

Soon after daylight Bull Adam appeared at the cabin, as unchanged as though he had just turned out of his bunk, and Shan, in the customary manner, commenced the preparation of breakfast. It was soon evident that the pot-hunter had been thinking, during the night, of the new arguments on the game laws which had been so drastically put before him.

The corn-bread mixed and in the oven, Bull turned to his guest with a questioning air.

"You-all said, last night," he remarked, "that the Wild Pigeon an' a lot of sea-fowl whose names I don't rightly remember, were killed off by pot-huntin' durin' the nestin' season."

"Yes, that's right," the official answered.

"Where do the Wild Duck nest, these here duck that come down to Currituck an' Pamlico marshes?"

"North," was the answer, "far, far north. Of the forty species of wild ducks which visit the United States, only half have their main breeding range under the Stars and Stripes. The Wild Duck nest in Greenland, in Labrador, on the shores of Hudson Bay, in the Mackenzie River country, the islands of Behring Sea or Southern Canada. Some, like the Brant, go as far as Ellesmere Land and the borders of the North Polar sea.

"Ornithologists on the Polar expeditions, which, with untold suffering and at tremendous expense, have forced their way to those frozen wastes, find that, with the first burst of spring sunshine, the birds are there beyond them. Where the almost perpetual sun of the Arctic day frees the ponds and marshes from ice, where the frozen tundra thaws down for a couple of feet, there you will find the flocks of ducks which have been win-

tering in Currituck and Pamlico settling down for their nesting time in the cradle made for a few weeks each year in the lap of the eternal snows."

"What takes 'em so far north?" the pot-hunter asked.

"Many birds nest at the coldest point of their range," the expert answered, "provided that there are suitable sites and food at that point. United States birds go to the northern parts of Canada; European, North Africa and Asiatic birds go to Siberia. On the southern side of the equator the movement is much less marked. This is due to the fact that in the northern hemisphere the land area widens out, leaving a large shore around the North Polar Sea; in the southern hemisphere, the land area narrows down to a few points, leaving an immense circumpolar sea, surrounding an Antarctic continent not suitable for bird life, for, by reason of the elevation of the land, even the long Antarctic summer is insufficient to clear the land of ice."

"Do you suppose," asked the boy, "that there's any special reason for the birds going north?"

"As I told you yesterday," the official answered, "there's always a reason. Just what that reason may be we're not able to say positively. During

Courtesy of Lippincott Co.

WILD DUCKS FLYING LOW.

Migration season over the English marshes. Note the angle of flight presented by the leaders.

the nesting season a bird's heart beats faster. The heat of a bird's body will hatch the eggs, even in the coldest weather, but supposing the weather should suddenly become too hot, what could a bird do to cool the eggs?

"Only in a very few and very rare instances does a bird realize that her eggs may need to be cooled and these are birds who live always in warm climates.

"Wallace has authoritatively reported that Gulls on the Amazon carry drops of water in their beaks to drop on the eggs. The Black-backed Courser, of the Nile, will fly just above the water of the river, dipping her breast-feathers from time to time till they are quite wet, and therewith will dampen the sand above the eggs, the evaporation of the water keeping the eggs cool. But these, as I said, are rare cases.

"The general rule holds true that birds nest in the springtime in the northern part of their range. Some birds are even more extreme than this, and will not only breed in the north, but even do so in winter. Thus the Great Horned Owl will lay her eggs in the coldest latitudes in January and brood them through the most intense blizzards.

"Think, Shan, of a bird which lays her egg

where there is no light, no heat, no twig, no leaf, no moss, nothing but darkness, and cold, and ice. The Emperor Penguin of the Antarctic lays her single large egg in the awful silence and night of a South Polar winter, where the average temperature is 50 degrees below zero and may even reach 80 degrees below. For seven long weeks she broods over that egg, making no nest—for there is nothing with which she can make a nest—choosing a piece of sea-ice as the place whereon to hold her dreadful vigil.

"The appalling task that lies before her is to hatch an egg, by the heat of her own body, on sea ice, in the age-long dark, with a temperature of such fearful cold that it is incredible even how the bird survives. The Emperor Penguin has her own device. Standing upright, she keeps the egg from actually touching the ice by placing it on the top of her large webbed feet, where it is held in place and covered by a heavily feathered fold of skin which hangs from the under side of the body like a curtain and shields the egg from the wind. For seven weeks the Penguin stands thus, patiently waiting until her goggle-eyed, heavily-fluffed chick is hatched. I know of no more terrible test of endurance in the whole bird-world."

"It's endurance," agreed the pot-hunter, "but it's jest foolishness, too. There ain't nothin' to keep her from waitin' till spring, leastways, not so far as I can see."

"Nothing," the expert agreed, "only the Penguin doesn't migrate far."

"You spoke about birds on the other side of the equator and in hot countries that don't migrate," said the boy; "how do they manage?"

"In hot countries," the expert answered, "incubation sometimes plays some very strange tricks. The Ostrich, the Rhea, the Emu, and other birds of that Order allow their eggs to hatch by the heat of the sun, and the male bird sits on them at night only to keep off egg thieves. Meantime, the hen-birds stand around and watch him.

"There are birds which make incubators for themselves. The Australian Brush-Turkeys build heaps of damp vegetable material and lay their eggs in those, depending on the heat produced by the fermentation of the rotting vegetation to hatch the eggs. The Ocellated Megapode does much the same thing, but uses the rotting vegetation merely as a stove and spreads a layer of sand over the heating heap, laying her eggs on this. The Maleo, a bird living in the island of Celebes, lays her eggs

in the neighborhood of hot springs and the natives locate new springs by finding the nests of the birds. But these, again, are rare cases.

"So far as North American birds are concerned, you can say that most of them with a few exceptions like Ruffed Grouse, Bob-White, Cardinal and Carolina Wren, migrate northward for the nesting-season and southward for the winter. It is a part of the life-cycle of birds, as much so as the round of seed, seedling, leaf, flower and seed again, is the life-cycle of plants.

"If you go on with your study of birds, Shan, there is one thing you must remember from the very start—that a large proportion of the birds you see in summer are probably at the north of their range and nesting, that many winter visitors are probably at the south of their range and wintering, while the birds of spring and fall are probably species on their way to or from the great nesting grounds of their kind.

"The Bureau of Biological Survey has made a special study of the migration of North American birds. It is a matter of the greatest importance to the United States government and to the people of the United States. The Biological Survey undertakes to aid in the drawing up of all laws re-

garding birds, not only federally but also for the several states. You can see for yourself that this would not be possible unless it were definitely known what birds were to be found in a certain state and at what season of the year. We have also done a great deal toward the passing of the Migratory Bird Law, which protects our game birds and song-birds. We have also enabled the drawing up of treaties with Canada to the same end.

"For twenty-five years, experts of the Biological Survey have worked on this question of Bird Migration. Our field naturalists have traveled the North American continent, from Panama to the Arctic Circle. They have pursued their studies on the Seven Seas. A number of other government bureaus coöperate with us in the work. For over twenty years regular reports have been received from lighthouses and lightships regarding the passage of migrant birds. We have hundreds of experienced volunteer observers scattered over the country, men who know birds and their habits thoroughly, and these also send in to us complete and careful reports."

He turned to the boy.

"There is not a corner of the United States

where a boy who knows birds cannot be of immense value to the country. We should have an experienced bird observer in every district. There is nothing in the world so valuable to the government as the ready coöperation of thousands of willing eyes. You, here, right in this section, Shan, could be of great service to the Bureau by preparing yourself to be a competent observer and sending in reports.

"Don't make the mistake of supposing that migration information is merely a matter of observation for a couple of days in the spring and fall. Rather it is true that migration reaches its crisis in those times. Even in the depth of winter, there may be migrations of birds driven southwards by severe weather and hence the Snowy Owl is occasionally seen a long way south of his ordinary haunts.

"Every month has its own demand on observing powers. February sends northward the Song Sparrow, Bluebird, Robin, Purple Grackle and Red-Winged Blackbird, which have been with you here, in North Carolina, for the winter. By March the migration becomes more dense; the Wild Ducks depart, the Geese go 'honking' north, and almost every day an observer will note re-

turning birds. In April the migratory movement is rising fast and, during the latter part of the month, one may report arrivals of new species daily. In May, come the birds who keep a calendar, apparently, for they return year after year on precisely the same date. When the weather is fair, this migration may almost be called a wave, and one single observer, on a single day in the middle of May in Ohio, recorded 144 species as having been seen in migration.

"May and June are nesting months, July the month of the young birds, yet facts collected by the Biological Survey show that the returning migration movement has begun by July 10th, and in some years, by July 1st. The Orchard Oriole, the Redstart, and the Summer Warbler are restless and eager to be away by the second week in July, the minute, indeed, that the nestlings are able to fend for themselves. They do not wait for the winter storms to sound the alarm. In August, the birds which went far north to nest are coming back, and towards the end of the month, the southward migration becomes dense, reaching its crest toward the end of the month. By October nearly all the summer visitors are gone and the winter vistors arrive to stay two, three or sometimes

four months. So you see, Shan, the migration of bird-life demands observation practically all the year round."

"But birds must spend a lot of their time migrating," exclaimed Shan.

"A good many of them do," the expert replied, "and others make a quick journey."

At this point the pot-hunter spoke.

"Are you-all sure," he said, "the Wild Duck fly so far north to nest? That's a right smart long way, ain't it?"

The official laughed.

"Do you think that's a long way for a powerful flyer like a Wild Duck?" he asked. "What, then, do you think of the Black-poll Warbler, a tiny bird five and a half inches long from the tip of its bill to the end of its tail-feathers, which nests in Alaska and winters in Brazil? That's a clear seven thousand miles, or fourteen thousand miles there and back."

"Are you-all just guessin' that?" the pot-hunter asked.

"Not a bit of it," the official replied, with assurance; "it is definitely known fact. You'll never find a Black-poll Warbler wintering anywhere in North America, not even in Florida, yet

you'll find them nesting at the northern limit of trees, all the way across from Alaska to Labrador. No matter where they nest though, as soon as the fledgelings are old enough and the molt is complete, every one of those millions of tiny birds takes the same invisible railroad route through the air from Alaska or Labrador to Key West, thence to Cuba and Jamaica and so on to the coast of South America."

"How can yo' tell what way they go?" questioned Bull in a disbelieving voice.

"That's simple enough," came the reply. "On their migration route they are reported by our observers, all along the line, and they are not seen anywhere else. We know they nest in Labrador. We know they winter in Brazil. We know in the fall, at the same date every year, they appear successively in Florida, Cuba and Jamaica. They are never reported from the southwestern states and are unknown in Mexico. How's that for proof?"

"Sounds right enough," said the pot-hunter grudgingly, but it was evident that he was not convinced. "Do any o' the small birds that nest roun' here go travelin' that way?" he queried.

"Lots of 'em," was the answer. "Take the

Bobolink. Have you ever seen one here in winter?''

''No,'' said Bull, after a moment's thought, ''I don't know as I have.''

''No,'' answered the expert, ''and you'd have to cross the equator and go 'way down to Paraguay, if you wanted to find one. Around about the first of May you'll find them nesting a little farther north. I noticed that you've no clutch of eggs in the collection, showing pretty well that they don't nest in these parts, for Shan and you, between you, have got your collection tolerably complete.''

''There's a right smart plenty of 'em here in early spring,'' the old man retorted.

''Yes, and the male Bobolink is always easy to see in his handsome black and buff coat. As I said, he nests in May and June, for, so far as nesting dates go, you're about two weeks earlier here than the latitude of New York and Pennsylvania. But, by June, all over the country, the Bobolinks have made their home, our handsome black-and-buff friend and his plainly dressed sparrow-like wife.

''In three weeks the little Bobolinks will be beginning to get ready to fly. They are dressed like their mother. A week or two later the male Bobo-

link begins to change his coat, and, by the end of July or the beginning of August, he is also dressed like his wife, olive-buff in color, streaked with black. He begins to fly south, then, and when he strikes South Carolina and Georgia, where he is known as the Reed-bird or Rice-bird—"

"You mean," said the pot-hunter, interrupting, "that the Bobolink an' the Rice-bird is one an' the same critter?"

"The very same bird," answered the official.

"But every one shoots Rice-birds!"

"I know it," the other agreed. "I've been down in that section. I've seen the high platforms built in the rice-fields and the negroes standing on them shouting and beating on tin pans to frighten away the flocks of birds and keep them from settling. And I've seen hundreds killed in a day."

"But they'd jest swallow the rice crop whole if no one shot 'em!"

"Yes," assented the expert, "it may work a little hardship on the rice-growers to forbid the shooting, for it's true that tens of thousands of Bobolinks or Rice-birds, settling on a field when the rice is in a milky stage, will seriously damage the crop. On the other hand, we've got to think of the greatest good to the greatest number and

the Bobolink is of decided economic value in the north.

"During August and September," he continued, "the birds fly south in two great routes, one to Florida and the other down the Mississippi Valley to Louisiana. The Mississippi Valley birds fly across to Colombia and follow the coast of Central America down to South America.

"Our Bobolinks, from the eastern states, take the Florida route and go on to Jamaica. They reach there in October and are so fat that they are called Butter-birds. But Jamaica is an English colony and the birds are protected there, though, of course, a good many negroes who own guns break the law and shoot the fat little birds whenever they can. It's nigh as hard to teach a negro with a gun not to shoot, as it is to teach a cat with claws not to scratch.

"After the Bobolinks leave Jamaica, they are safe. They cross the savannahs of Venezuela and Colombia, fly over the great tropical forests that fill the basin of the Amazon, rise to the plateaus of upper Brazil and settle in dense flocks on the marshy uplands of the Paraguay River. The territory they have chosen for their winter home occupies comparatively a small stretch and there

STORK IN THE BATTLE-FIRE.

When her village in Belgium was set aflame, she refused to leave her little ones, who were too young to fly, and perished with them.

they congregate in dense swarms. They have few enemies and plenty of food and can spend the winter undisturbed.

"With the end of February, their memory of the nesting time begins and they prepare for their two thousand mile journey to the United States. Before leaving, the male Bobolink changes his coat again and puts on a thick puffed-out costume of somber yellow, with black spots showing through. In reality, this is his handsome black and buff costume for the spring, but the tip of every feather is fringed with yellow, acting, indeed, exactly like a yellow overcoat.

"Thus dressed, the males start back on their journey alone, a week or ten days ahead of the females. They reach Florida in the middle of April and some of them stay until May. As yet the yellow overcoat has not all worn away, and the people there, not recognizing them as the light-colored Rice-birds of the previous fall, call them May-birds. Thence they spread to the northward, the yellow tips of the migration plumage wear down and the bird is seen in his black and buff and becomes known once more as that songster, the Bobolink. So, you see, the Bobolink of the summer in northern states, the Reed-bird or Rice-bird

of the fall in South Carolina, the Butter-bird of late autumn in Jamaica and the May-bird of Florida in the spring are all different color phases of one and the same bird."

"An' yo' say that nearly all these little birds make long trips like that?"

"Most of them, except some short-winged birds such as the Cardinal and the Carolina Wren. I don't say," the expert explained, "that you may not see a Sparrow or a Bluebird in winter as well as in summer, but you can be almost sure that the Bluebird or the Sparrow you see in winter is not the same individual that you saw in summer. Your summer friend has gone to Florida, your winter friend spent his summer in New England. The migration has gone on, just the same, only in such cases, the breeding ranges and the nesting ranges overlap."

"An' they take all that trouble jest to keep in good weather, eh?"

"No," said the expert, "it isn't altogether a question of weather. Of course that has something to do with it. Even the hardiest little bird will find a reason for southward flight when the berries are frozen on the trees, when the cold winds of autumn ruffle his feathers as he tries to sleep

at night or frost nips the toes with which he grips his perch. But there are very few birds who wait for the threat of autumn, fewer still that linger until the approach of winter. Long before that they are gone, many of them have left us as soon as the nestlings were able to fly and feed themselves.

"One of the great conditions incident to migration is that of food. It is a condition, not a cause. It is not that food attracts, but rather that lack of food prevents. The Wild Ducks do not leave the Arctic and come to North Carolina because of any patriotic love for the state, but because the lakes and the seas are frozen in their summer home. Fish-eating ducks cannot dive for fish and dabblers cannot peck through the ice for the water-weeds on which they feed.

"It is true that at nesting time birds need to eat more than they do at any other time, and, since they have nestlings to feed—the amount a young bird will eat is almost unbelievable—the food must be easy to get at. The average number of visits the smaller birds make to their nests for the purpose of feeding the young varies from about fifteen to twenty-five visits an hour. Reckoning this at twenty visits an hour for the fourteen

hours of daylight in fledgeling time, that means nearly three hundred meals a day for the little ones, not counting the food needed for the two providers. It is safe to say that a bird has got to find a meal in every two minutes during the season of feeding the young.

"So, you see, it is better for the birds to leave civilized haunts and go to wilder regions where man has not intruded and where the forests have not been cut down. When the North American birds go to Ungava, Keewatin and the Mackenzie River Valley or to the tundra that stretches north to the shores of the Arctic Ocean, or when the European birds go to Northern Siberia, they are sure to find a region of incredible fertility and vast stores of food.

"For eight months, it is true, the inhospitable tundra which lies between the northern forests and the frozen ocean is completely buried under a blanket of snow from six to ten feet thick. The expanse is unbroken, save for the occasional track of a caribou or an Arctic fox. For two months in midwinter the sun never rises above the horizon, there is no light save moonshine, starshine and the flickering of the aurora borealis reflected on the ice. There are no birds there, then.

"As that terrible winter draws to its end, the sun begins to rise for a few moments each day, the period of daylight swiftly becoming longer, until, by the middle of May, the sun at midday will raise blisters of sun-burn. Follows the warm south wind and the rain. The ice-bound rivers break and roar down to the Arctic Ocean, the snow melts, earth is revealed and breaks from its ten months' sleep, for its single summer day. That day, however, is two months long, two months without a night. Within forty-eight hours of the great thaw, the tundra is a palpitating shimmer of birds.

"Nowhere in the world is there such a prodigality of food. The perpetual sunshine of the Arctic summer forces the vegetation and brings the stunted berry-bearing shrubs to fruition. The fruit has hardly ripened again, however, before winter sets in, a great mantle of snow is spread over the land, not to melt again for ten months.

"In spite of the enormous quantities of food eaten by the hosts of birds, the bushes are buried in snow or frozen in before all their fruit has been eaten or is fallen, and it remains in this refrigerator of nature all winter long, waiting for the birds to come again. The instant that the snow melts, therefore, there are millions of fresh, succulent

last year's berries waiting for the birds to come and feed, and long before they have finished this supply, the bushes are heavy with a new crop. It is a perpetual and never-emptied larder. It is the Fortunatus' purse of the birds.

"Nor are the insect-eating birds less favored in that clime.

" 'The land would be a veritable paradise,' says Lea, 'but for one fatal drawback—mosquitoes! Nowhere in the world is insect life so prolific. Their numbers beggar description. As soon as the snow begins to thaw, the latent mosquito life begins to stir. Eggs buried in the frozen mud now hatch; in a few days there are mosquitoes, and, thenceforward, generation is heaped upon generation until every blade of grass or stem of moss seems to produce an inexhaustible supply.

" 'No white man can exist among them without a mosquito-proof veil. They cover the gun-barrels, they form clusters on his clothing, they rise in battalions, like a black cloud, to obscure the sight. If a man remain standing, the cloud thickens about him; if he run, it trails behind him like a smoke veil trailing on the wind. The sound of their steady buzzing is like the singing of a tea-kettle. In tropical lands, mosquitoes swarm only by

night; in the tundra, they swarm incessantly for six weeks or more.

"They make the land intolerable to man, and uninhabitable, but the soft-billed, insect-eating birds have only to open their mouths to fill them with mosquitoes. No wonder, then, that they, as well as the fruit-eating birds, descend upon the country in myriads. For them the land is a paradise.'"

"I'll stay away from there," said Shan, emphatically; "there are too many mosquitoes for me, even 'round here."

"Which bird, do yo' reckon, goes the farthest?" queried Bull.

"Cooke, one of our men on the Biological Survey," the expert answered, "calls the Arctic Tern the world's migration champion. It deserves its title of Arctic, for it nests as far north as land has been discovered; that is, as far north as the bird can find anything stable on which to construct its nest. Indeed, so arctic are the conditions under which it breeds that the first nest found by Man in this region, less than eight degrees from the Pole, contained a downy chick surrounded by a wall of newly fallen snow, that had been scooped out of the nest by the parent. When the young are

full grown, the entire family leaves the Arctic and, several months later, it is found skirting the edge of the Antarctic continent.

" 'What its track is, over that eleven thousand miles of intervening space, no one knows. A few scattered individuals have been noted along the United States coast south as far as Long Island, but the great flocks of thousands and thousands of these Terns have not yet told us of their route or time schedule. All we know is that they spend about fourteen weeks in the Arctic and eighteen weeks in the Antarctic, which gives them only ten weeks to fly from Pole to Pole, twice a year.' The Arctic Tern has twenty-four hours of daylight for seven months of the year, and, during the other four months, it will average twice as much daylight as dark."

"Is it a big bird?" asked the pot-hunter.

"Much like the Common Tern," was the reply; "about the only way that you can distinguish it, at a distance, is that the tail is longer."

"Yo' say," the old man continued, evidently interested in this movement of birds, for it bore indirectly on what had been his trade all his life, "that it ain't weather, an' it ain't food which starts birds migratin'. What is it?"

"That's a mighty hard question to answer," the expert replied. "I don't think that I ought to give you the idea that we know, because there's a good deal of discussion about it among ornithologists. Most of us are agreed that the migration of birds is connected with the great changes of climate that have occurred during the millions of years that have elapsed since birds first began their journeys in North America.

"In what were known as the Ages of Horror, or the Great Ice Period, and which lasted at least a quarter of a million years in its four stages, the permanent ice-cap in North America covered all Canada and the United States as far as a line running from New Jersey through Missouri. Undoubtedly, the winter climate was extraordinarily severe over the whole of the rest of the United States, even as far south as Florida.

"Birds which had nested and lived in North America prior to the Ice Age, were gradually pushed southward. There was no food in the north, and the struggle for existence must have become fearful in the limited part of the earth which was free of ice. As the ice retreated, it gave more area in which the birds could spread. As it advanced anew, it restricted the area. The

birds which would survive best would be those who were the most adventurous, daring the borders of the ice in summer and only returning to the struggle-riven section of the equatorial zones during winter. The migratory habit thus became settled in the instinct of birds and they continue to migrate now though the original stimulus is removed and the need is nowhere so great.

"From the earliest times, Man has observed the regularity of the migration of birds. 'The stork in the heavens knoweth her appointed time,' says the Old Book, 'and the turtle (dove) and the crane and the swallow observe the time of their coming.' "

"Do yo' reckon the old birds tell the young when to start?" asked Bull.

"Perhaps, in some cases they do," the expert agreed, "and undoubtedly among some of the migrating species there are signs of teaching, such as the following of a leader and obedience to preconcerted calls, but, at the same time, it is sure that education cannot explain migration, for the young of many birds start in advance of their parents. The Cowbirds—who dodge parental responsibilities, like the European Cuckoo—leave before the young. Quite often they leave in the

Courtesy of American Museum of Natural History.

JAPANESE LONG-TAILED FOWLS.

The development of the tail-feathers is the result of breeding. All domestic fowl have developed from the Asian Jungle Fowl.

middle of the summer or in the very early autumn when weather is at its finest and food is most plentiful. There is no escaping the fact that among several species of birds, the young, born that season, who have never left the vicinity of the nest, not only leave for the distant south on almost the same day as the young of the preceding season, but also that they fly to the same distant point over the same route, without a single adult bird in the company. This cannot be teaching, it must be instinct.''

''But how do yo' suppose the bird finds its way?''

The Biological Survey expert smiled and shook his head.

''This time,'' he said, ''you've asked a question that nobody can answer. Ornithologists have solved a lot of puzzles, but they have not yet learned how a bird finds its way in the uncharted air. Neither have they found out how a species of birds, in migrating, invariably takes a certain route and never any other. Their paths in the sky are as clean-cut and as arbitrary as though the birds themselves were machines moving over steel rails. The commonest route is from north-west Florida and Alabama straight across the Gulf of

Mexico to Colombia, although this means a direct flight over the water of 500 to 700 miles."

"I'd reckon," said Bull, after a moment's thought, "they'd go down by Palm Beach and the keys to West Indies an' south that way."

"That does look like a natural highway, sure enough," answered the official, "but, as a matter of fact, out of all our birds, there are only six species that use it all the way."

"Why is that?" asked Shan.

"Lack of food," was the answer, "which, as I said a little while ago, is a great factor in determining the currents of migration. The area of all the West Indies, east of Porto Rico, is only a little larger than the territory of the small state of Rhode Island. So, if a large number of migrating species used that route, stopping for food as they went along, there wouldn't be enough for all of them to eat.

"Although the route from Florida to Cuba and Jamaica requires single flights which are longer than the highway of the outside islands, it is much more popular. This is the Bobolink route, and, Shan, your friend the Chuck-Will's-Widow goes that way. So does the Kingbird, one of the Vireos, the two New England Cuckoos, the Gray-

Cheeked Thrush from Quebec and the little Blackpoll Warbler from far-off Alaska."

"But if it's food they're lookin' for, why wouldn't a land-bird follow the land an' go down by Mexico?"

"Just because there's no food," came the prompt reply. "A long flight doesn't worry a bird much, as long as he has a good meal before he starts and a good meal when he arrives. Little nibbles along the way don't interest him. On that Mexican route you have suggested, there is hardly anything to eat. Arizona and New Mexico, with arid climates, afford comparatively little food of the kind to which northern birds are accustomed, and the northern states of Mexico are just about as bare.

"The Kentucky and Golden-winged Warblers have a little route of their own and cut across from the coast of Texas to northern Vera Cruz. But one of the strangest things of all our migration routes is that the shortest passage across the Gulf—from Florida to Cuba and thence to Yucatan—is almost deserted, save for a few Swallows and shore birds. Western birds stay on the farther side of the Rockies and only migrate down to the middle of Mexico.

"There remains one route, to my thinking, the most wonderful of all. It runs due north and south from Nova Scotia to the Lesser Antilles and the northern coast of South America. Though more than a thousand miles shorter than the main migration route, it is not employed by any small bird, but thousands of water birds use it for a fall route, as well as the Golden Plover.

"It sounds like exaggeration, but this bird has been known to make a single flight of 2,400 miles—the longest known flight of any land bird—absolutely without food and rest."

The pot-hunter interrupted.

"Yo' say it travels over the sea without eatin' or restin'? Can't it pick up fish, like a Gull?"

"The Golden Plover is not a water bird," the expert answered. "It is a marsh bird. If it fell in the water, it would die. It has no oil-glands for oiling its feathers, like sea-birds. It is a running bird, without webs or lobes on its feet. Once launched in the air over the tossing ocean, it must wing its way despite of storm or distance until it reaches land.

"A few Golden Plover, driven by tempest, from time to time will touch at Cape Cod, a larger number will shape their course for the Bermudas and

rest there for a few days, but, if the weather be fair, the Golden Plover will disdain to stop at all, and will wing his way from Nova Scotia to South America without a single halt.

"The Golden Plover of the Pacific Ocean has no opportunity of choice. There is no land on which he can rest his weary wings, no matter how tempestuous the elements. Once he leaves the Alaskan coast or the Aleutian Islands, there is not a spot of land, not even an isolated rock, until he reaches the small group of islets in midocean, known as the Hawaiian Islands.

"When you consider with how much difficulty the most experienced navigator, possessing chart, compass, chronometer and instruments of the greatest precision finds his way, it is all but incredible how the Golden Plover of the Pacific flies like a celestial arrow on his flight of over two thousand miles. The deviation of a small degree of angle at the start or the misjudgment of the amount of leeway caused by adverse winds, would infallibly cause him to miss so small a point in the vastness of ocean unless some inner aeronautical sense guided him.

"No matter whether the wind be from east or west, no matter what may be the currents of air,

no matter from what point he starts, the Golden Plover is able to allow for drift, for all the variations of the aerial currents and he strikes Hawaii on the same day every year as regularly as though there were a track laid in the sky by which he might travel. Fog, alone, confuses the birds, showing that natural powers play some part in this great instinctive flight. If you ask me how, if you inquire as to the compass in the bird's head, there is nothing to say. Science is no Philosopher's Stone, she cannot turn to the gold of easy understanding all the puzzles which lie before her. Such secrets yield themselves up only to long and patient labor. 'The stork in the heavens knoweth her appointed times,' that is true, but how she knows them is a mystery. Let you, Shan, play some part in solving it!

"Moreover," he continued, after a pause, "the matter is even more difficult than that. It is extraordinary that birds should follow the same routes in the uncharted sky, with such marvelous exactitude that the Purple Martin coming back from his winter in Brazil will fly back to the same box in our garden to which he bade good-by the year before. Yet it is even more extraordinary that the same species of bird should have a differ-

ent route for the spring migration than that which they took in the fall. The Golden Plover, which flies in the fall from Nova Scotia to South America, wintering in Argentina, and the Bobolink, who flies south via Cuba and Jamaica, wintering in Paraguay, will return by the same route, new to both, close to the Andes, through Venezuela and Southern Mexico, cutting straight across the Gulf to Louisiana.

"The Marbled Godwit is another of the migration puzzles of the world, for birds from the same district will follow one of two entirely different routes—either by Nova Scotia and the Atlantic seaboard, or by British Columbia and the Pacific seaboard. Yet, no matter which route is taken, all the Marbled Godwits winter in Guatemala. Two birds may have nested within a mile of each other in the summer and be spending their winters as near neighbors again, but, in order to get to their respective homes, they have taken journeys which lie three thousand miles apart.

"The Connecticut Warbler, going up to nest in Canada in the spring, strikes straight north up the Mississippi Valley after he has crossed the Gulf, but, in the fall, he seeks his summer home by an initial eastward flight of a thousand miles into

New England. The White-winged Scoter, that spends his winter with you here in North Carolina, has reached you at the end of autumn by a roundabout route which took him to the coast of Labrador, but when he leaves you in the spring, he'll shape a course from Long Island Sound straight for his breeding ground on the shores of Hudson Bay."

"Do they all go north and south?" asked the boy. "Don't any birds fly east and west?"

"Plenty, in Europe," the expert answered, "for that would result in changes of climate and food. But not in America. The only bird that I can recall now which seems to start south and then changes his mind and flies to the west is the Ross Snow Goose, which flies from the Arctic across Canada, with the rest of the waterfowl, and then turns south-west, flying over the main range of the Rockies and settling for the winter in southern California.

"The Greenland Wheat-ear is one of the few birds which makes a trans-Atlantic flight, and shows a desire for European travel. It is a bird just about the size of an English Sparrow, and it is sometimes seen in the northeastern sections of the United States. It winters in Northern Africa,

migrating by way of the British Isles and France."

"Birds must learn their way," said the pot-hunter, "'like bees do, by seein' the country. Take homin' pigeons, they won't come back if they ain't trained."

"That idea would be all right in some cases," agreed the expert, "but it doesn't stand investigation. First of all—there isn't much evidence to show that when a bird or animal learns something, that something is handed on to its young. Your father knew how to shoot and to read, but you had to be taught. Man, as a race, has been talking for tens of thousands of years, but every baby has to learn how to speak.

"Another objection to the idea that birds remember their migration routes is, as I said before, that birds right out of the nest will migrate without leaders.

"A third is that no amount of teaching could help a bird in long flights over the sea. What sign-post can the Golden Plover of the Pacific remember in its two-thousand-mile flight from the Aleutian Islands to Hawaii?

"Then, you've got to remember, a large number of migrating birds fly by night, in fact, nearly all

of those that have reason to fear birds of prey. Strong, fast or wily birds fly by day. Fast-flyers, like the Swallows and Swifts, can dodge any Hawk. Grackles and Crows are thoroughly able to look after themselves. The Blue Jay is a bird to be let alone. So, too, the big birds, like Pelicans and Gulls, are free from foes. They migrate by day.

"It is quite another matter for the little birds which haunt the trees and the bushes. Thrushes, Warblers, Vireos and the small Flycatchers are all night flyers. It is they who are attracted by the gleams of lighthouses on dark and stormy nights. Similarly Snipe and Plover, with long pointed wings, birds of strong flight, migrate partly by day, while their cousin the Woodcock, with short round wings, flies by night. The Loon, a strong flyer, migrates by day, while the shy Grebe, who usually depends for safety on his diving, migrates by night.

"Ducks and Geese, many of the shore-birds, and nearly all the sea-birds, migrate both by day and night. You can see the wedge of the Wild Geese as they fly by day and hear their honking call as they fly by night, for then they fly low and call oftener to keep the flock together.

"Can any one count the number of birds that pass over our heads every spring and fall? They are as the sands of the sea for multitude. Uncounted billions of birds pass twice a year over any given spot in the Southern States which is on or near the main migration routes."

"Why don't we see more of them?" asked the boy. "I've never noticed such big flocks of migrants as you talk of!"

"One of the chief reasons is that they fly too high," was the expert's answer. "Astronomers, observing the sun by telescope by day, or the moon by night, have seen birds pass in a steady stream across the face of the sun or moon, flying rapidly at an immense distance overhead, possibly three miles high. Not one of these birds could be seen with the naked eye. This rush of the feathered tide, spreading sometimes for many square miles over the heavens, goes uncounted and unseen."

"Why should they fly so high?" asked Shan.

"Freedom from enemies, for one thing," was the reply, "but even more important, there is far less resistance in the air and a bird can fly faster with less effort. It is because they fly so high that their voices are not heard in clear weather, while on a dark or cloudy night they fly nearer to

the earth and their twitterings and cries come closely to the ear. We know more of the night flyers than of those of the day because of the data provided by the lighthouse keepers. Thus two ornithologists, standing on the narrow balcony surrounding the torch held by the Statue of Liberty in New York Harbor and which used to be lighted with a powerful steady light, on one night in the migrating season saw not less than thirty thousand birds in the small area of the gleams of that light.

"A remarkable opportunity of seeing migrating birds occurred in Philadelphia, on March 27, 1906, when an immense lumberyard caught fire on a cloudy night. Like a searchlight it illumined the bird armies flying overhead. When the fire was at its height, within the glow of the illumination, there were never less than two hundred birds in sight at once, flying north steadily. 'They flew,' writes Stone, who saw the occurrence, 'in a great, scattered, widespread host, never in clusters. Far off in front of me I could see them coming as mere specks, twinkling like stars, and gradually growing larger as they approached until their wings could be distinguished as they passed overhead. Over all the illuminated area and undoubtedly beyond

they seemed about evenly distributed, those immediately over the flames glowing like coals of fire, those farther away appearing silvery white.'

"A similar picture is given by Gatke, the authority on European bird migration, who writes of the conditions at Heligoland lighthouse during a night in the migration season: 'The whole sky is now filled with the babel of hundreds of thousands of voices, and, as we approach the lighthouse, there presents itself to the eye a scene which more than confirms the experience of the ear.

" 'Under the intense glare of the light, swarms of Larks, Starlings and Thrushes career around in ever-varying density, like showers of brilliant sparks or huge snowflakes driven onwards by a gale and continuously replaced as they disappear by freshly arriving multitudes. Mingled with these birds are large numbers of Golden Plovers, Lapwings, Curlews and Sandpipers.

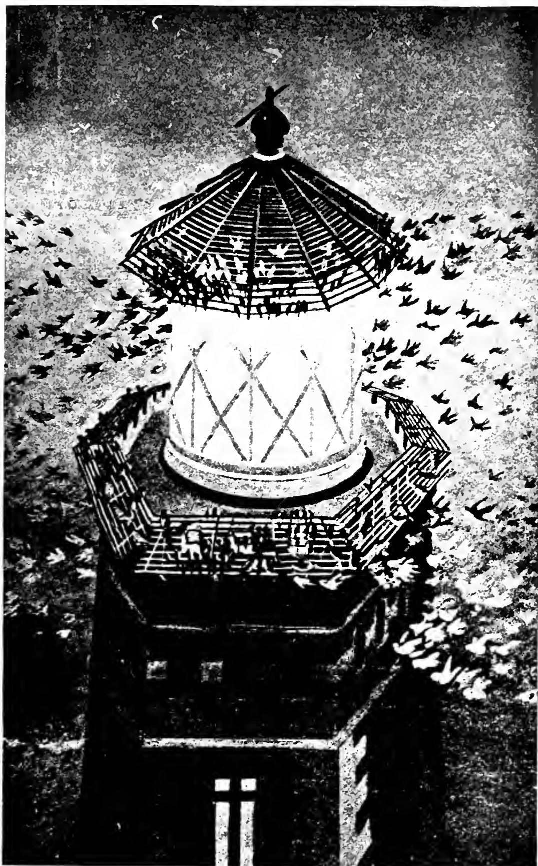
" 'Now and again, too, a Woodcock is seen, or an Owl, with slow beating of its wings, emerges from the darkness into the circle of light, but again speedily vanishes, accompanied by the plaintive cry of an unhappy Thrush that has become its prey.

" 'Such a migration stream lasts through a

whole long autumn night, and, under special favorable conditions, it may be seen for several nights in succession. Nor is it by any means confined to narrow limits, for what took place that night, in which birds might have been counted by millions, was noticed 112 miles farther south.' "

He paused for a moment, and when he continued it was in a sadder tone.

"But there is a dark shadow over the picture. The joyful burst to the nesting site in the far north, or the summer-seeking quest of the fall, is not always a pleasant path. It is full of danger. That aerial highway used in the wake of Summer or the van of Spring is an awful stress and a fearful strain. Migration is the great effort of a bird's life and to many it is their last. The luckless Sparrow or Warbler whose feathers become water-soaked in a rain-squall while crossing lake or ocean finds a watery grave. A sudden 'norther' catching a flock of tired birds crossing the Gulf of Mexico will drown whole flocks containing tens of thousands. In one storm on Lake Michigan, the bodies of half a million birds were seen who had perished in the course of a few hours. In Minnesota, in 1904, in the very height of the migration of Lapland Longspurs, a hardy Arctic bird, there



Courtesy of Mr. E. H. Baynes.

THE LIGHTHOUSE THAT SAVES BIRDS.

Migrating birds, attracted to the bright beams, fly about until exhausted. With these gratings for bird rests, next day they are able to continue their journey.

came a terrific snowstorm, in which several million birds were lost in one night, one of the greatest bird tragedies which has come under the eyes of a competent observer.

"Migration is Nature's great and final test. To-day, as always, the stern task of life weeds out the weak, the dull and foolhardy, as clearly as it did a million years ago. If it is a picture of beauty, it is one of stern beauty, of something like heroic endeavor, a crusade every year which only the chivalry of bird-land survive. Those birds who come to us in the spring of the year have won their spurs in the great test.

" 'Both spring and fall phases of the great movement,' says Gatke, 'unfold a picture of bird life of incomprehensible grandeur, presenting to our wondering sight myriads of these restless wanderers hastening during the long dark nights of Autumn or the starless midnight hours of spring, by many intersecting paths, to the far-off winter quarters or the nesting homes; each species following, at higher or lower regions of the sky, a sure and definite road, not marked out for them along river courses or mountain chains, but one that leads them, independent of every physical configuration of the earth's surface, and at heights

many thousands of feet above it, surely and safely to the distant goal.'

"The birds and the travels of the birds! Shan, have you ever thought that Columbus would never have discovered America but for the migration of the birds? You will remember that, on October 3 of the eventful year 1492, mutiny had broken out in the crew of that little caravel. But, in the log of the following day, Christopher Columbus wrote that they were visited 'by such flocks of birds and the indications of land became so numerous that, from a state of despondency, they passed to one of confident expectation.' And when, three days later, the flocks became even more abundant, heading for the southwest—as we now know, flying from the Bermudas—Columbus changed his course, rightly reasoning that land birds would not migrate thus unless they were heading for a place where they might rest and feed. Hence it was that he landed on the Bahamas and discovered the New World.

"Columbus discovered America, it is true, but the migrant bird was his pilot!"

CHAPTER V

A WINGED CHUM

"No one can be lonely who has a friend, no one need lack a friend so long as the woodland is full of birds eager for Man's understanding."

These words, which were the last that the Biological Survey expert spoke when he bade good-by to Shan, rang steadily in the boy's ears. The idea that birds were personalities was new to him. While, perhaps, he had not thought all birds alike, recognizing that the Blue Jay was mischievous, the Chickadee trustful and the Kingbird pugnacious; yet he had never realized that in a single nest, four or five fledgelings might have characters as different as four or five children in a family.

" 'Individual birds of the same species,' " the official had said to him, quoting from Bolles, " 'have, in proportion to the sum total of their characteristics, as much variation as individual men. Of course, there is not nearly the same chance of individuality in birds as in men, for their methods of life and their mental qualities are simple, while

those of men are complex. Yet a pair of Carrion Crows would provide the most earnest observer with honest work of a by no means light character for a whole year.' "

The camera brought this to the boy's attention with still keener force. He had not anticipated any great difficulty in taking snap-shots of birds with the lens, for he was adept at snap shots with a gun. Shan soon found, however, that all his woods skill and knowledge were far too small for the difficult work of photographing birds. You can shoot a bird with a gun at a hundred yards, but to shoot a bird with a lens you must be within ten feet.

It is a great deal harder to get within ten feet of a wild bird than within a hundred, or even fifty yards!

The lad's constant failures soon disgusted Bull, and he sneered openly at the "sport" of shooting birds with a camera. Shan, however, possessed a distinct streak of stubbornness. His egg collection had been found worthy of praise, the Biological Survey official had asked him to act as a voluntary observer and he was determined to make good in his bird photography. So, every spare moment he could get, he was off in the woods making ob-

servations of the birds he saw and trying to get near enough to them to take their portraits.

Another of Shan's keen disappointments was his failure to find any new species. Like a great many beginners, he expected to discover birds that no one had ever seen before. But when he wrote about this to his friend Baker, in Washington, the Biological Survey man replied in his next letter,

"Don't you worry about not finding any new species. In all probability, you'll never find any. There are a lot of expert ornithologists who spend all their lives observing birds and who have never found a new species. Such a discovery is almost as rare as a great invention.

"Three years have passed since an actually new species of bird was discovered in North America, including Alaska. It is extremely doubtful, therefore, if from our Mexican boundary to the Arctic Ocean there remains a single unknown species of bird. You may be sure that every bird you see has been noted and named.

"Should, by any remote chance, you see a specimen of a bird new to the United States, lose no time, labor or expense in following it. Should it take a month's time, there are dozens of collectors who would willingly pay a high price for the speci-

men. Even should you find a new sub-species, it would be, from the financial point of view, the best month's work that you ever did. Just the same, I want you to remember that the study of birds, like every other study, in order to be well done, cannot be put on the basis of money value alone, but because of the love of the work."

"That's right smart interestin'," said Bull, when Shan read the letter to him, "but, just the same, I reckon there's a right smart few birds in these woods that no one ain't seen afore."

"He says here there's not likely to be," replied Shan, pointing to the letter.

"I reckon he don't know it all," retorted the pot-hunter, "an' what he says about makin' money out o' new birds may be worth thinkin' about. But I don't jest follow him about this 'species an' sub-species' business."

"I can tell you all about that, Bull," said Shan eagerly. "When Baker sent me down that parcel with films and chemicals and stuff, there were one or two books in it. You've seen them. The 'Handbook of Birds' tells about species.[1]

[1] "The Handbook of Birds of Eastern North America," by Frank M. Chapman, is the one indispensable companion for any bird student, from the youngest lad to the most experienced ornithologist.

"The way I make it out, every bird has got five titles of his own.

"His first title belongs to his Order. This seems to be worked out from the bird's skeleton and his inside make-up, so that birds may be related which look quite different. A Woodcock and an Oyster-Catcher don't look much alike, but they're in the same Order. The Northern Raven, bigger than a Hawk and nearly as big as an Eagle, belongs to the same Order as the little Marsh Wren, who, from beak to tail, isn't any longer than the palm of your hand."

"How can a Raven an' a Wren be related!" exclaimed Bull, contemptuously; "that's just nonsense. There ain't a thing similar to 'em."

"Well," said Shan, taking the book and thumbing the pages, "they're both Perching Birds. They've both got four toes, all on a level, three before and one behind, the hind toe being as long as the middle one, with a strong toe-nail. The feet are not webbed. They've got exactly twelve feathers in the tail. Their skeleton is made up in the same way, and their young are born in the same condition. That makes them perching birds."

"All birds perch," said the pot-hunter.

Shan looked puzzled.

"Ducks don't, do they?" he asked. "They can't, 'cause their feet are webbed. A Plover can't perch 'cause he's got only three toes, all sticking out in front. An Ostrich couldn't perch, he's only got two toes. The Whip-Poor-Will can't perch, his feet and legs are too weak."

The pot-hunter looked at the boy meditatively.

"There's somethin' in it," he said, "but Hawks perch, an' yo' ain't goin' to tell me they're related to Wrens."

"No," answered Shan, "it says here that Vultures, Hawks and Owls belong to the same Order, because they've all got curved claws like talons for catching and tearing prey, and they've all got a hooked bill."

"So has a Parrot!"

"N-no," said Shan, "a Parrot has a notched bill, with the lower part scoop-shaped, quite different. He's in an Order of his own."

"Well," said Bull, a little impatiently, "nigh all the small birds perch, anyway."

"About half of all known birds belong to the Order of Passeres or Perchers," the lad agreed, looking up from the book, "but the Humming-birds are left out."

"Why?" asked Bull, "they perch."

"Sure, they perch," the boy agreed, "but they're built quite differently from a Raven, or a Wren or a Sparrow. Their body is something like a Swift, and they're put in the same Order, though their toes and bills are different. The Swift has his toes so arranged that he can hang on to the inside of a chimney or a hollow tree."

"I've wondered, sometimes, how they did it!" said Bull.

"A good deal with their tails, so far as I can make out," Shan answered. "The tips of the tail-feathers of some species, the book says, project into a stout spine, half an inch beyond the end of the feather. With their four claws clenching and the tail acting as a prop behind they can hang on tight and climb up and down."

"That's like a Woodpecker."

"Not a bit," corrected the boy. "Woodpeckers, all except one three-toed genus, have two toes in front and two behind, and though they've got the tail-feathers stiffened to act as a prop, the feathers don't end in spines. Woodpeckers are an Order to themselves, too, like Parrots.

"The Humming-bird is different from both in a way. He's got a tongue that he can stick out,

like a Woodpecker, only a Woodpecker's tongue is like a spear to pull out the grub he's found in the hollow tree that he's been pecking, while the Humming-bird's tongue is made like a double tube so that it can take honey from flowers and also the tiny insects that have been attracted to the honey. That puts the Humming-bird in the same Order as the Swifts, but in a different Family. That's the second group."

"Then every bird has an Order an' a Family, eh?"

"Seems so," the lad replied. "It says here that 'members of a Family agree in minor internal characters.' "

"What do yo' suppose that means?"

Shan plunged into the book anew.

"I don't just know," he said. "I'll take one Order and try to work it out."

He puzzled for a few minutes, then turned to the pot-hunter with a more satisfied air.

"There's an Order called Gallinae," he said, "which the Handbook describes as 'terrestrial, scratching birds of hen-like form; bill stout, short and rounded; wings short and rounded, the primaries stiffened and producing a whirring sound in flight; tail variable; feet strong, hind-toe short and

Courtesy of American Museum of Natural History.

LONG-BILLED HUMMING-BIRDS.

The butterflies of the bird world. Note the value of the long bill for pollinating deep bell-shaped flowers.

elevated,' and it gives three Families in that Order, the Bob-Whites, Grouse, and Turkeys."

"That's sensible enough," said Bull, "I can see that. They're all the same in a way an' they're all different, too."

"After the Order and Family comes the Genus," Shan went on. "The book says again that 'birds in a genus resemble each other in external characters.' "

"O' course they do," continued Bull, "Turkeys is Turkeys."

Shan turned over the pages.

"That's all right," he said, "all Turkeys belong to the same genus, but all Grouse don't. There's Partridges, Ptarmigan, and Prairie Chicken, as well as Ruffed and Sharp-tailed Grouse. Heath Hen seems to be in the same genus as Prairie Chicken."

The pot-hunter turned this over in his mind.

"I don't know much about Prairie Chicken," he said, "never havin' been west o' the Mississippi. I've seen Ruffed Grouse a few times, but I ain't never run across no Partridge or Ptarmigan. I think I saw a Heath Hen once when I was a kid. Sort o' brown an' white streaked bird, it was, as I remember, somethin' like a brown Plymouth

Rock hen only not as big, short-legged an' with a way o' hidin' in the grass. What's come of it? Has it been shot away like the Wild Pigeon that feller was tellin' us about the other day?"

"It says here," Shan answered, following the lines in the book with his forefinger, and reading aloud slowly, "that the Heath Hen used to be common around the wooded parts of the Middle States, but that the last wild one in New Jersey was shot in 1870. The Heath Hen is only to be found now on the island of Martha's Vineyard, off the coast of Massachusetts. In 1890, there were about two hundred Heath Hens on the island. By 1907, even with strict game laws, the number was reduced to seventy-seven. Now, all shooting is forbidden, all stray cats are killed and the number has risen to four hundred on the island at the present time. That's all that keeps the Heath Hen from extinction."

"It ain't right to shoot birds off'n the face o' the earth, like that," the pot-hunter said. "That feller was right, there. Well, go on, differences like that make the Genus, eh? What else is there?"

"Now comes the Species that Baker wrote about in his letter," Shan continued.

"An' what fixes that?"

"Color, and size," Shan replied. "In the color, I suppose it's the difference between the Yellow Warbler, which is the color of a canary, and the Cerulean Warbler, which is nearer to a Blue Jay. In size, I suppose the Raven and the Crows show it best, they're all black, but the Raven is huge, the Crow middle-sized, and the Fish Crow fairly small."

"There's a right smart difference there, too," said Bull, puffing steadily at his pipe, "but, when yo' come to think of it, one does look right like the other. I ain't sure that I can tell the difference between a Raven a long way off an' a Crow closer by."

"That leaves the last of the divisions," said Shan, "the 'Sub-Species' Baker wrote of in the letter, which, he said, it would be worth our while to hunt for if we ever saw one. And a 'sub-species' is only the difference between birds of the same species which breed and live regularly in different parts of the country. These sub-species, the book says, a chap has got to learn, if he wants to do any real observing, because birds of the same species may look quite different. Song Sparrows are Song Sparrows all the country over, but there are

twenty-three sub-species. In Alaska the Song Sparrow is nearly nine inches long; in Mexico, only six. The Song Sparrow of the wettest part of the Pacific slope is a dark-colored bird, called the Sooty Song Sparrow; the same species in the waterless arid wastes of Arizona is a pale, washed-out, yellow-brown color and is known as the Desert Song Sparrow. It says here that one would never take them for the same bird, but it's only a difference of climate and geography."

"Look in yo' book," said Bull, "an' find out if there is any difference between Turkeys here an' in Florida. Seems to me the ones I shot down there were smaller an' looked a little different."

"Yes," said the boy, looking up, "you're right, Bull. It's a different sub-species. They are smaller and the primary feathers of the wings aren't as regularly barred with white."

"Supposin'," said Bull, looking sharply at Shan, "that yo' know all that, an' know all those long names, what good'll it do yo'?"

For a moment this practical question staggered Shan. He had started to learn the names largely because the book told him he should. Now he set his wits to work to find out why.

"I reckon," he said, after a pause, "that it's a

good deal so every one can know the bird by the same name, and any study of it can be done in a proper way. Then the name describes the bird and tells what its relations are. It shows, too, where a bird is different from the rest. So far as I can make out, the names of birds are like tools for a chap who wants to work on them and I've got to know my tools. I'm trying to learn them, now, but it's a hard job. You see there are seventeen Orders and sixty-six Families in the Birds of Eastern North America."

"Do yo' remember any o' them now?"

"I'll try," said Shan. "First of all there are two groups, Water Birds and Land Birds, with nine Orders in the first group and eight in the other. It begins with the Order of Diving Birds, with three families, the Grebes, the Loons and the Puffins. Next come the Long-Winged Swimmers, with three families, the Jaegers, the Gulls and the Skimmers. The Tube-nosed Swimmers have only two families, the Albatrosses and the Petrels. The Four-Webbed-Toed Swimmers have six families, Tropic-birds, Gannets, Darters, Cormorants, Pelicans and Man-o'-War birds. The Three-Webbed-Toed Swimmers have only one family which includes Ducks, Geese and Swans. The

Flamingoes are an Order by themselves. The Wading Birds have four families, Spoonbills, Ibises, Storks and Herons. Then there's an Order of Running Birds, with three families, Cranes, Courlans and Rails, and the last of the Water-Bird group is the Shore-birds with six families, Phalaropes, Stilts, Snipes, Plovers, Turnstones and Oyster-Catchers."

Shan drew a breath of relief.

"Looks to me," said the old man, "as if you'd got 'em down right smart. But in yo' Shore Birds, son, I reckon yo' forgot the Sandpipers, the commonest of 'em all."

"No, I didn't," answered the boy, triumphantly. "Sandpipers go in the family of Snipes."

"They do, eh? Well, they might, too. How about yo' Land Birds, now?"

"I don't know those as well," Shan confessed. "There are the Fowls, with three families, Quail, Grouse and Turkeys. Pigeons have an Order to themselves. Birds of Prey have six families, Vultures, Eagles, Falcons, Fish-Hawks, Barn-Owls and Owls Proper. Parrots have an Order all to themselves. Cuckoos and Kingfishers share one between them. The Woodpeckers are alone. With the Goatsuckers, such as the Whip-Poor-

Wills, are two other families, Swifts and Humming-birds. Then comes the last big Order—the Perching Birds. I remember there are twenty families but I haven't learnt them yet."

He pored over the book.

"Oh, yes," he said, "the twenty families are Flycatchers, Larks, Jays and Crows, Starlings, Blackbirds and Orioles, Finches and Sparrows, Tanagers, Swallows, Waxwings, Shrikes, Vireos, Warblers, Wagtails, Thrashers and Mockingbirds, Wrens, Creepers, Nuthatches, Titmice and, for the last, Thrushes and Bluebirds. You see, Bull," he continued, "if I can get into my head the names of all those families and then the species and remember what birds they fit, the minute I spot a bird, if it's near enough to see at all, I'll be able to tell where it belongs."

"How so?"

"Well, I can tell at once if it's a diving bird, a swimming bird, a wading bird, or a perching bird, by the feet and legs. I can tell a bird of prey by the hooked bill, a seed-eating bird by the stout crushing bill, an insect-eating bird by the sharp bill. If it's a bird that spends most of its time on the ground, like the Black Rail, I can tell it by the short wings; if it's one which stays in the air

nearly all the time, like the Man-o'-War bird, I can tell it by the long wings. Then every kind of bird has his own way of flying, such as the flapping of the Crow, the soaring of the Hawk, the darting of the Swallow, the straight-away flight of the Woodcock or the bounding style of the Finch."

"I'm willin' to say," remarked Bull, when the lad had finished, "that yo've been workin' hard over yo' names, an' if it leads yo' to know the birds when yo' see 'em, it ain't waste time. But, if yo' want my idees, this photygraph stuff looks to me right smart close to foolishness. If yo' want to know about a bird, shoot it, an' skin it an' stuff it. Then yo've got somethin'. But a picture of a bird on a bit of paper—what's the tarnation use o' that?"

Shan defended himself as best he could.

"If I waited till you were dead, Bull," he said, "and then skinned you and stuffed you, I wouldn't know as much about you as I do now, would I?"

Even the stern, set face of the old pot-hunter relaxed into a smile at this.

"Well," the boy continued, trying to make his explanation clear to himself as he went along, "it seems wrong, in a way, just to think of birds as things that must be dead before you start to know

Types of Flight — Terns.

Courtesy of American Museum of Natural History.

Types of Flight — Ducks.

them. They're so everlastingly alive. Somehow, a mass of dead feathers isn't a bird, to me. That's only a dead bird. It's what a bird does and how he does it that I want to know. They work so hard and they play so hard that I like watching 'em."

"Birds don't play," Bull interrupted.

"Oh, yes, they do," the lad insisted. "My books talk a lot about the way that birds play. Owls are as full of fun and frolic as monkeys, Ravens do all sorts of mischievous pranks. Parrots will amuse themselves for hours on end. The Nuthatches do gymnastic tricks for the fun of doing them. Caracara Hawks turn somersaults. Swallows play 'catch.' Woodpeckers are never tired of 'hide and seek,' and any number of birds dance, either in the air or on the ground, just to enjoy themselves."

The pot-hunter looked incredulous.

"Then," continued Shan, stolidly, "I want to find out what the birds are saying to each other when they talk. I suppose," he queried, a little defiantly, "you'll say that you believe birds don't talk?"

The pot-hunter shook his head.

"They talk," he said; "leastwise, their different

calls mean somethin'. Every gunner knows that. Yo' can decoy birds with one cry an' startle 'em away with another.''

''Crows talk, anyway,'' the boy declared.

Bull nodded his head agreeingly.

''There's a fellow who's found out thirty words in the Crow language,'' Shan declared. ''John Burroughs says that birds 'have a language that is very expressive and is easily to be translated into the human tongue.' Fowls have several different notes. The Chickadee is a chatterbox, and the Blue Jay rattles along like a talking machine. Likely enough, birds only say what they feel, 'cause we can't tell if they really think. So, Bull, besides their play, I want to get so that I understand their talk. And,'' he added, ''heaps of the birds use attitudes. A bird talks with his head, his tail and his wings, as much as he does with his throat. On a photograph I can get all those talk movements.

''Of course,'' the boy went on, ''I know I can't learn bird talk, and if I could, I wouldn't be able to talk back. But I can learn a lot about birds if I can watch them close enough.

''Take yourself, Bull. If I had a photograph of everything you do, all summer and winter long,

here in the cabin, out in your boat, or away off in the woods, and I made those photographs every few minutes in the day, I could get a pretty good idea of the way you live. That's what I want to do with the birds.

"If I take a photo of the inside and the outside of the house, I could tell how you live. The same way with a bird's nest. If I could photograph you shooting a duck, cooking it and eating it at table, I'd know what you ate. The same way with a bird pecking at seeds or pulling a worm out of the ground. If I could photograph you, when you were teaching me to read, it would show how you helped me. The same with a mother bird, teaching her young ones to fly. You see what I mean—it's just a question of watching close enough and long enough."

"Yo'd best turn into a bird yo'self, then," said the old man.

"I wouldn't mind," returned Shan. "At least, it would suit me all right if I could be bird part of the time, and myself the rest of the time, like that story you told me about the man who was sometimes a man and sometimes a wolf. I'd know more than any one else in the world about birds, if I could do that."

"Seems to me," remarked the pot-hunter, "that yo're gettin' foolish in the head over birds. But, so far as that goes, as long as yo' work is done, there ain't no reason why yo' shouldn't play 'round with a camera. It won't get yo' in no mischief, I reckon. What-all do yo' reckon to begin on?"

"I thought I'd try with Wood Thrushes, if I could find any," Shan answered. "Baker told me that black-and-white feathers photograph easily and I don't know enough about photography yet to try to do the hard things."

"Have yo' any notion where yo're goin' to find any Wood Thrushes?"

"I saw a pair down by the big fallen cedar," the boy answered, "and they looked to me as if they were nest-building. That was a week ago, though, and I haven't been able to find the nest."

From time to time Bull was wont to surprise the lad with his woods lore.

"Look for 'em among the yaupon bushes," he said, "an' most like, it'll be near a bunch o' straight saplings, somewhere about six feet up. I ain't never seen a Thrush's nest in sprangly growth, nor high up, nor yet close to the ground."

"I'll look just there," replied Shan heartily, and

that afternoon he set off to the old fallen cedar, in hopes of seeing the Thrush.

Soon, sure enough, he heard the Wood Thrush's call:

"Come to me!" followed by another group of three notes and ending high up with a rippling clink like the ring of blacksmith's hammer on an anvil, far, far away.

So much, at least, Shan had achieved. He was in the neighborhood of the Thrush. Now, it was necessary to find him. He remembered a saying made by the Biological Survey expert:

"The Kingdom of Nature is not closed by a strait gate nor reached by a narrow way. On the contrary, wide is the gate and broad is the way that leads to it, only—you must go slowly and in silence. You can walk through a wood a dozen times, and never see more than a few of the commoner birds, but it is practically impossible to sit in a wood, motionless, for half an hour, without seeing a dozen different kinds of birds, many of them rare to the casual observer."

So selecting a background on which he would be as inconspicuous as possible, the lad threw himself down on the ground and became still. From time to time he whistled the call "Come to me!"

feeling sure that bird curiosity would bring the Thrush, sooner or later, to find out which of his cousins was calling.

The wood was rich in birds. Two or three kinds of Warblers came and looked at him, chirping to one another. A Brown Thrasher, who is devoured with inquisitiveness, flew from bush to bush in his vicinity, settling on the lower branches and peering at him from every angle. A friendly Bobolink passed by and paused for a look, then went on calmly about her business. A rollicking Chat, clown of birds, barked like a puppy, then mewed like a cat, close to his ear. A Chickadee perched within six feet of the boy, and, chummy little fellow that he is, made overtures of friendship, entertaining his visitor meanwhile by running along a twig upside down, twisting over, swinging over and under a leaf and performing feats of which a professional gymnast might be proud. A Carolina Wren became almost hysterical with excitement, gesticulating madly with his tail. A White-eyed Vireo became most indignant, asking, "Who are you, eh?" over and over again. A Fish-Crow "crak'ed" over his head. And presently, in response to the lad's whistling imitation of his call, the Wood Thrush came.

If Shan had been still before, he became rigid now, hardly daring to turn his head sufficiently to watch the bird.

He was of good size, as large as a Starling, cinnamon-brown on the head and shading gradually to rufous-brown on the tail, his under parts of white, marked with large round black spots. He cocked his head on one side, regarded the boy intently, and, deciding he was harmless, flew away.

Shan repeated the call and received two more visits from the Wood Thrush. Noting that each time the bird flew away in the same direction, the boy felt himself justified in assuming that the nest must lie that way. He advanced fifty yards and lay down again.

The Thrush was watching him, for no sooner had Shan lain down on the leaves than he heard, from the same bird, an entirely different note, a sharp—

''Pit-pit!'' sounding as though two stones had been struck together.

Shan did not move. Only, after about ten minutes of absolute movelessness, he whistled the ''Come to me!'' call again.

The Thrush, however, was suspicious, and continued to ''Pit-pit!'' at intervals. Little by little,

however, the bird began to calm down and presently changed his alarm note to a third cry, a liquid—

"Quirt!" which signified discomfort, rather than danger.

Shan got no nearer to the nest that day.

Early next morning, his uncle having gone down river in the boat, Shan set himself anew to the search for the Thrush's nest. Returning to the spot he had left the evening before, the boy spent all morning shifting his post of observation from point to point, but without any sign of a second Thrush, though he felt sure the nest was near.

Noon came, and with it, lunch-time, the lunch consisting of the invariable hog-meat and corn-bread, the former rancid and greasy and the latter cold and stodgy. But good appetite and youth can manage even a lunch of this description and there were only a few crumbs left to throw on the ground when the boy had done. The friendly Chickadee, however, fearless like all his tribe, came down to peck at the crumbs.

Lunch over, Shan set himself to reconnoiter anew. He had worked round in a circle, from several points of which he had noted the Thrush flying inward. The nest, therefore, must be some-

where within the radius of that circle. He decided to go round and round in a spiral, drawing nearer to the center each time, and by that means not a foot of the scrub would escape careful search.

He knew just what to seek, a nest of twigs, probably in the yaupon bushes, about six feet up. This aided the search, for he did not need to look on the ground, as if for a Warbler's nest; nor in the hole of a tree, as if he wished to intrude on the family affairs of his friend the Chickadee; nor in the branches above his head, as though he sought an Oriole.

Every clump of bush, then, he searched with painstaking care, hearing more and more frequently the "Pit-pit!" of alarm overhead. Then, as it was drawing toward evening, and Shan had begun to think he would have to go home and give up the quest for that day, Shan suddenly saw before him what he sought. There, in a little group of saplings, just on a level with his eyes and therefore a little lower than he had been looking, was the nest of the Wood Thrush, with the hen-bird sitting on the nest.

Shan froze still.

So did the Mother Thrush.

Often, as a means of escaping observation, a bird will remain absolutely motionless, the eyes not even blinking. Even birds which are not protectively colored are difficult to see, as long as they stay still. Of course, birds which are in sharp disharmony with their surroundings like a Black Skimmer on its nest in the sand, do not risk the test of staying motionless but fly away as soon as danger approaches.

In this case, however, unlike the Chuck-Will's-Widow, the Mother Thrush was easily seen even though her white breast with black spots was entirely hidden by the nest. Her russet back made a spot of color, which, once seen, could not be lost sight of. Still though she was, her black bill and glistening, beady eyes betrayed her.

There is but one way to win a bird's confidence and that is by gentle, but not stealthy movements. Shan meant to photograph that bird on her nest, even if he spent all his spare time in the next two weeks trying to do it. On that his will was set. So, sliding softly to the ground, about twelve feet from the nest, the boy lay quiet, not fixing his eyes steadily on the bird but allowing his glance to rove.

Only trained bird-observers are aware how

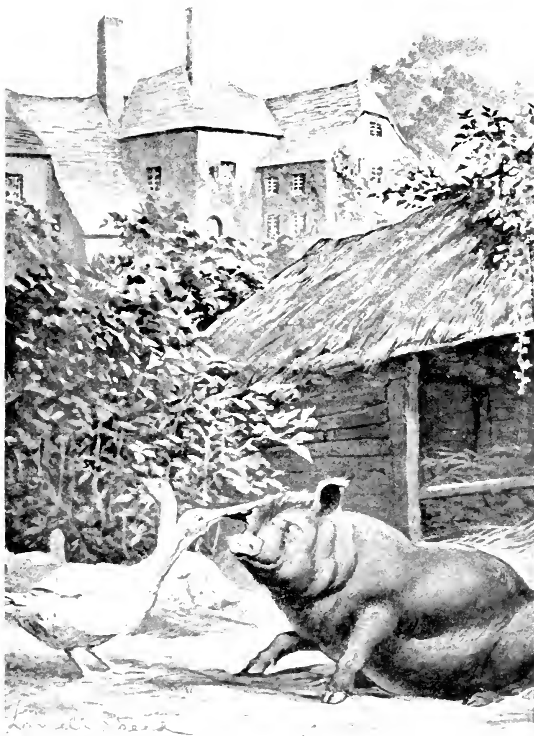
closely a bird watches a person's eyes. In approaching a bird, one may get quite close by looking in another direction. An observer can walk straight to the place where a bird is perched, so long as the head be turned away, and the bird will show no fear. The instant the glance is shifted, the bird is flown. One of the most remarkable things in bird-life is the manner in which the birds will carry on their ordinary business of feeding or nest-making, of courting or singing, with utter indifference to the presence of other people in the neighborhood, as long as these latter are absorbed in their own affairs. Yet, if but one person present turns a cautious and observing eye on his feathered neighbors, with a whirr of wings they are gone.

Shan stayed motionless for half an hour, which was all the time he could spare, but, moveless as he tried to be, the Hen-Thrush was far his superior. She did not move at all. The quick breathing could be seen heaving the feathers, but Shan's acutest attention could not discern the quiver of a muscle. Even when he slowly edged away, she remained quiet and the bird must have been hungry, too, for the male Thrush had been too alarmed to bring her any food.

After supper, when it was quite dark, Shan returned to the spot with an ax and some old sacks and set to work to make a brushwood shelter or blind, from which he could watch the birds and from behind which he could operate his camera. It took about three hours' work, during all of which time it was so dark that he could not see if the Thrush were still on her nest.

Following out the ideas in the Handbook, which gives the details for making an umbrella blind for bird observers, Shan lined the inside of his shelter with old sacks. He knew that no shelter of brushwood could be made so opaque that a bird's sharp eyes could not see a movement within. Moreover, it is these half-seen movements which frighten birds away, for they suggest a beast of prey creeping upon them.

For a bird observer, a blind is almost a necessity. It is made with a big umbrella having a hole in the center for air, the handle being attached to a four-foot stick with a spike which may be stuck deeply in the ground. Denim is sewed together in strips to make a piece ten feet wide by six feet high. The two ends have tapes on them. When these tapes are tied, the denim makes a bag without top or bottom. Through the top a draw-



Courtesy of Lippincott Co.

THE VALOROUS GANDER.

While the goose was sitting, the fiercest pig, seeking eggs, would be pulled away by the ear.

string is run. On the side opposite to the tapes, holes are cut for observation and for photography. The umbrella should be green, the denim dyed leaf-green at the top, gradually fading into earth color at the bottom.

When putting it up, the umbrella is fastened or spliced to the stick—it is handier if there is a socket arrangement—and the stick is driven solidly into the ground. The uppermost two tapes of the denim are fastened and the draw-string pulled until the mouth of the top of the bag is smaller than the outer circumference of the umbrella. The bag is then dropped over the umbrella and the blind is made. In windy weather, or in an exposed place, a few tent pegs will hold the edges of the bag down to the ground, and four strings radiating from the tip of the umbrella and fastened to bushes or stones will help to keep it steady.

Lacking an umbrella, however, Shan succeeded admirably with his brushwood shelter and sacking lining. He knew that, early next morning, the birds would inspect it, and when they found that it did not move and seemed harmless, they would lose their fear of it. He had figured that, according to the light, about three o'clock in the after-

noon would be the best time to photograph, for the light would filter through the trees near the nest at about that time.

One of his books told him that if the sun did not shine directly into the nest, it was a good thing to arrange a mirror so that the sun would be reflected on the point to be photographed. But the only mirror in the cabin was one which was nailed up behind the door, by which Bull shaved himself every morning, and Shan knew well that his uncle would not allow that to be moved for something for which he had as little regard as the boy's attempts at bird photography.

So, right after lunch, Shan started for his blind, planning to be there at least an hour ahead of time, lest, should he disturb the bird in entering his blind, she should be away for half-an-hour or more and he might thus lose the light he wanted for his photograph. He reached the blind quietly, crept softly up and wormed his way in. The place was already full of long-legged harvest spiders but the boy disregarded them, and, full of hope and expectancy, put his eye to the hole which gave upon the nest.

It was empty!

No, it was not altogether empty. There were

four eggs in it, pale greenish-blue, almost exactly like those of a Robin. For a brief second Shan had a sudden fear that these might be Robin's eggs, and not those of the Thrush at all.

He remembered immediately, however, that the Robin is an honest bird, and does not lay her eggs in another bird's nest. That villainy is reserved, in America, for the Cowbird, a contemptible tramp, the hobo of bird-land, who never makes a nest at all. At breeding-time the hen-bird may be seen sneaking through the woods in quest of a nest from which the mother may be temporarily absent, in which to lay her gray, speckled egg. The Cowbird is an outcast and a pariah. No self-respecting American bird will be seen in his company. He is friendless save for the low-class English Sparrow, who is not much better than he.

Unquestionably these must be the eggs of the Wood Thrush. Shan had to struggle with himself not to step out and take one of the eggs, at least, for his collection, but he determined to leave the lesser gain for the greater, and to watch the life of the family instead of destroying it.

He re-read in the streaked light that filtered through the brushwood blind the last letter he had received from his friend in the Biological Survey,

giving him advice as to the use of the camera. At last, having quite made up his mind that he had the right distance, the right aperture, and the right exposure, and that the tripod was level, he clicked the shutter. If all went well, his first photograph of birds' eggs was made.

Was the Mother Bird watching and listening? Shan could not tell. At all events, he thought, she would not know what the sound meant. He turned his roll of film so as to be ready for another picture. Then he sat down on a crotch of branch he had arranged in the blind for a seat, and waited.

Presently he heard the liquid little questioning, "Quirt?"

The Mother Thrush was returning.

Again he heard the cry, close to him and right over his head. The bird was perched on the brushwood near by, evidently not at ease in her mind about the blind. Shan resisted the temptation of twisting round for a look at her, knowing that the keenness of a bird's hearing is only a little less marvelous than that of its sight.

Woodpeckers, he knew, locate grubs under the bark of a tree by hearing them gnaw, Robins on a lawn seem to listen for the crawling of worms underground and the hearing of Owls is so ex-

traordinary as scarcely to be believed. An Owl will send his "hoot-hoot" ringing through the moon-lit woods, and if a little mouse so much as shivers in terror, the Owl hears that tiny rustle and the mouse never shivers again. So Shan sat still, hardly daring to breathe.

Though it was a warm day for Spring, and the sun was filtering goldenly through the leaves, it was not shining on the eggs. A nest cannot be left too long or the eggs will get cold. So, in a minute or two, with another dubious cry, the mother Thrush flew to a branch close to the nest and chirked her head from side to side to make sure that there was no intruder near.

Shan, watching through the hole, saw in every movement of the bird that she was suspicious of the brushwood blind. It had not been there when she had built her nest. Her steadiest and keenest watching, however, had revealed nothing definitely wrong, and, meantime, the eggs were getting cold. Greatly daring, she flew on to the nest.

For a quarter of an hour or more Shan did not move, not until the glint of the sun through the branches reached the point at which he had decided to try and take the portrait of the Thrush. Then, stepping carefully and softly, watching to

see that there was not a dry twig to snap beneath his foot nor a faded leaf to rustle, he bent over the finder of the camera. Yes, it was still in place, pointing directly at the little brown bird.

"Click!" went the shutter.

At the sound the bird flew, so instantly that the boy had a terrible moment of doubt as to whether she had flown before the exposure or after. It seemed sure, however, that it was the sound of the shutter which had frightened the bird, and since the stop had been put for an instantaneous picture, the picture must have been taken before the bird flew. So, throwing a piece of oilskin over the camera in case it should rain, Shan went back to the cabin.

Every day, after that, Shan returned to the blind at the same hour. Little by little the Wood Thrush became accustomed to the brushwood screen, though never once, in all the times that Shan photographed her, did he see her with her glance directed away from the suspicious spot.

How long it would take the eggs to hatch, Shan did not know. He knew that a Robin's eggs took two weeks, and since the Wood Thrush belonged to the same Order and Family as the Robin, the boy thought it probable that the hatching time

would be about the same. Of course he could not know how many days had already passed when he first saw the nest.

There is a wide variance in the length of time during which different species of birds sit on their eggs. Some of the Sparrows and Finches incubate only for ten or twelve days, the Hummingbird takes two weeks, birds like the Fowl and Grouse take three weeks, the Fish-Hawk requires four, Swans need five weeks, and the Condor of the Andes spends two long months on the nest before the little ones come out of the eggs.

The Wood Thrush which Shan was watching so patiently, however, had only eight days' more of brooding. On the eighth day, Shan, peering from his observation blind, saw the naked big-headed body of one of the chicks. He snapped a film. He would have liked to spend some more time there, hoping to get a photo of a chick as it actually emerged from the egg, but he had work to do at the cabin, and had only a moment to spare. As a matter of fact, he had run all the way and would have to run all the way back. But he was full of satisfaction, for the little chick photo, he felt sure, would be good.

Next day, the other three eggs had hatched and

by the day after, the first-born was beginning to be quite a respectable-looking little chick.

That evening the boy fixed up a corner of the cabin for a dark room, tying red paper round the old lantern, and got out all his chemicals, amid a grumbling accompaniment from Bull. The old man had given him permission and he never went back on his word.

"Wastin' yo' time on foolin' an' fillin' the place with a smell like rotten fish!" he exclaimed. "An' all for nothin'! Yo'd better be loadin' shells an' gettin birds in a man's way."

There was little humor and a good deal of obstinacy in Shan's disposition. He chewed on a piece of celluloid from a film and answered nothing. He knew that Bull would accept no answer but success. The boy's jaw was set firm. He was not merely wishing that the photos would come out right, he was aching with the desire. His eagerness was so keen as to be almost a pain.

The films went into the developer. Immediately, in the ruby light, the pictures began to appear. He could have shouted for delight, but Shan was not made that way. Time enough to speak when all was done. Bull went to bed before the lad had finished washing the negatives.

Early riser though the pot-hunter was, he was not up before Shan next day. The lad had hardly slept, so eager was he to see his films when they were dry. The sun was not above the horizon when the first negative was in the printing frame. By breakfast, they were all done.

After breakfast, Bull lighted his pipe.

"Did yo' get finished with that flummery o' yours?" he asked.

"Yes," replied Shan.

"Nothin' come out, eh?"

His uncle's tone would have discouraged Shan, but for one fact—he had already seen the prints.

"I got some pictures," he said.

"How many different birds can yo' tell on 'em?"

"I've just been taking one bird," replied Shan, and he explained in detail what he had been doing, and all about his observation blind.

The old pot-hunter looked at him disgustedly.

"You-all spendin' all yo' time on one bird!" he said. "With a gun, in one afternoon, I could have got yo' a batch o' birds, I reckon nigh every bird 'round these parts, an' yo' waste a week tryin' to take a picture o' one bird!"

There was a world of contempt in his tone.

Shan halted, half-way to the table, his prints in his hand.

"Don't you want to see them?" he asked.

"Ain't no use my botherin' about 'em," the old man answered; "I don't hold with no such foolishness."

Shan was prepared for a criticism but not for this rebuff. He was so proud of his prints, and now—

Just as he was turning away, Bull looked up. Shan's features, as usual, were expressionless, but there was a dejection in his attitude that struck the old man, who was fond of the boy.

"Ain't pinin' over it, are yo'?"

"N-no!" answered Shan, with an attempt to appear indifferent.

But—his first photographs, his very first!

"Well," said his uncle, carelessly, "bring 'em here if yo' want to. I'll look at 'em, just to please yo'."

Shan turned leadenly. He had been bursting with eagerness and happiness all through breakfast. Now, his pleasure was all gone.

"Here it is," he said, and laid one of the prints beside the table.

Tilting his chair back and leaning on one side so

that he could spit comfortably out of the half-open door, Bull Adam took the photograph in his big mahogany-colored hand.

Shan waited for the grunt of assent or disapproval, but the old pot-hunter looked at the print steadily for some time.

"Yo' don't say!" he commented at last. "Right smart little bird, ain't she?"

Shan was quick to recognize that Bull's interest lay in the subject of the picture itself rather than in it as a photograph, and with a faint hope returning, he handed another to his uncle.

"Here's the nest," he said.

The pot-hunter regarded it with equal intentness.

"Four eggs, too! An' right in a yaupon bush, same as I told yo'. I reckon the mother was off feedin', when yo' took that, eh?"

There was no doubt, now, of Bull's interest.

"This I took the next day," said Shan, handing him another of the prints.

"Right peart," said the old man; "I declare yo' can see the spots on her breast like she was there alive."

He held out his hand for the next, actually exclaiming with pleasure at the first little nestling.

"It's right smart like a story written in pictures," he said; "when did yo' take this last one?"

"Yesterday," said Shan.

"An' the rest o' the little shavers, do yo' reckon their eyes'll be open to-day?"

"I don't know," said Shan; "I'm going to see this afternoon."

There was a pause, a very definite pause, and then to the boy's utter amazement the old man said,

"I ain't never seen little birds, not little like them. Makes yo' think of—" he broke off and was silent. "Do yo' reckon," he asked a minute later, almost diffidently, "that I could see 'em from that blind o' yours?"

And Shan knew that Bull Adam was won.

CHAPTER VI

THE MURDEROUS CAT

From that day on, Bull Adam was even more interested in Shan's bird photography than the boy himself. Though it was now late in the nesting season, the old pot-hunter succeeded in finding the nests of three birds, a Goldfinch, a Crested Flycatcher, and a Kentucky Warbler.

Not one of these, however, had nested in a place suitable for photography. The Goldfinch, whose nest was made mainly of moss, lined with thistledown, was in a tangle of bushes. As for the Crested Flycatcher, the nest was, like most of its kind, built in a hollow tree with a cast-off snake's skin for luck, and could not be photographed without flashlight, which Shan did not possess. As soon as the nestlings were hatched, however, and able to perch—though unable to fly—Shan took them out and perched them on a nearby twig to have their portraits taken. The Kentucky Warbler nestlings were nearly full grown and though the boy took a few photos, they were not especially satisfactory.

The Wood Thrush family, however, more than repaid Shan for his other failures. Watching them and photographing them once or twice a day from the blind, the boy had a splendid opportunity to see how much they ate and how extraordinarily fast they grew.

The growth of young birds is like magic. On the first day, the baby birds doubled in weight, they more than trebled on the second day and almost quadrupled on the third. On the ninth day, the first-born fledgeling was nine times as big as on the day he was born. If a human baby grew at that rate, when three weeks old it would weigh as much as a good-sized man.

The Wood Thrush feeds its little ones with small insects, direct, returning to the nest and dropping the morsel directly into the gaping beak of the hungry infant. The baby Thrush, therefore, is able to digest real food almost as soon as it is hatched. Not all birds are so fortunate.

Young Pigeons, or squabs, have to be fed, at first, on a regular infant food prepared by the mother and called "Pigeon's milk." This is not true milk, but a whitish substance produced in the Pigeon's crop. Later this is mixed with food, and when the baby Pigeons are a week old they are

weaned from the "milk." Parrots feed their helpless chicks in much the same way.

Some birds escape the preparation of this food, by finding soft food for the chicks. A Sparrow, when he is grown to maturity, has a hard stout bill powerful enough to crush seeds, but the baby Sparrow has a very soft bill. His baby food, then, consists of soft grubs and worms. Other seed-eating birds swallow the seeds, and, when they are half-digested, bring them up again for the nestlings.

Swifts gather together a large number of small flies and, in order to save the time and trouble of returning to the nest with each mouthful, as Chickadees do, they stick these flies together in their mouths with a glue-like substance until they have a pellet almost as big as a small marble. This they carry back to the nest. Swallow nestlings, when they are beginning to fly but are not yet quick enough to catch their prey, are fed by their parents on the wing.

The Whip-Poor-Will lets the young nestling put its head down the mother's throat and pull out the food. The Brown Pelican and other birds of the same Order, let the young birds do the same thing, but, in order to reach the food the little one has

to put his whole head and neck down the parent's throat in a way which looks exactly as if the mother were swallowing the chick.

The Gannets and other sea birds make a fish soup in their stomachs and feed the young on this until they are able to catch fish for themselves.

It was on the ninth day, when the Thrush nestlings were beginning to look quite respectable, with a full coat of feathers, that tragedy came to the nest.

Shan had gone to his brushwood blind at the usual hour and was preparing to take his daily picture, for he wanted the series complete, when he noticed that the nestlings, instead of being comfortably snuggled together, as he usually saw them when they were alone, or stretching up their necks for food, as was their custom when the parents were near, were cowering down in the bottom of the nest.

Listening, the boy could hear the sharp "Pit-pit!" or alarm cry of the parents, and his ear, now well accustomed to the call of the birds, at once told him that there was danger abroad.

His first thought was of a Hawk, then he remembered that a Hawk will rarely attack a

Courtesy of American Museum of Natural History.

Brown Pelicans in Florida.

Note the young birds feeding on the partly digested fish brought home by the mother pelican. From a museum group.

nest, not because of any lack of desire, but because a Hawk hunts by sight and a nest is always hidden. Next he thought of a raccoon, or perhaps a possum, but both those creatures hunt at night and it was now in the full glare of an afternoon sun. The boy decided, at last, that it must be either a red squirrel or a snake, for the parent birds were too panic-stricken for their cries to denote any of the robber birds, such as Grackle, Jay or Crow.

Shan felt himself to be the patron and protector of that Thrush's nest. Moreover, he had a distinct personal affection for the little birds, each of whom he had named and in each of whom individual characteristics had begun to appear. The Thrushes were his folks.

Determined, therefore, to save his feathered chums from harm, Shan stepped out from the blind, grabbing the heavy stick he generally carried when he went through the woods. If the foe were a red squirrel, he could, at least, frighten him away. If it were a snake, he could break the marauder's back.

At the risk of alarming the parent birds and thereby spoiling his picture chances for the day, Shan searched diligently, moving as little as possi-

ble, so that he should not give the alarm to the foe. But he searched in vain. There was no sign of a squirrel in the trees nor of a snake on bough or on the ground. Yet there was no doubt of the danger, for the parent birds were crying their fear-call sharply and continuously.

Then, round the corner of a bush, came the miscreant, with green eyes full of cruelty and greed, its sharp claws half-extended, stealing upon the Thrush's nest and the four young birds.

It was a big tom-cat.

Shan remembered that he had read of the terrible destruction of birds by cats. Dr. Fisher, an expert of the Biological Survey, estimated that, in New York State alone, stray house cats kill three and a half million birds yearly; the cats of Illinois kill over two and a half million, the cats of Massachusetts, at least a million.

None the less, Shan doubted this. Like many people, he had a vague idea that cats lived principally on rats and mice. He did not know what investigation has proved to be true, namely, that not one cat in a hundred will catch rats and not more than one cat out of ten is a mouser, unless, of course, in a state of actual starvation.

So Shan watched the cat.

Suddenly, so suddenly, indeed, that the boy, though watching, did not see the spring, the cat launched himself at the nest and seized one of the nestlings in his teeth. A quick crunch and all was over.

But it was also all over for the cat.

Shan was but a second behind the spring, and, as the beast drew back his head from the nest to finish eating the pump but tiny morsel he had seized, the heavy stick came down like a thunderbolt of vengeance and broke the animal's neck. The cat quivered and fell heavily to the ground, the nestling still tightly held in his stiffening jaws.

The boy looked down, breathing hard with anger and resentment. Something about the victim looked familiar.

It was Bull Adam's cat!

It says a great deal for Shan's blunt and crude training, and, for that matter, for the character of his only tutor—the rugged old pot-hunter—that the thought of quietly burying the cat and saying nothing about it never occurred to him. As was his habit when confused, or trying to think, he sat down on the stump of a tree, pulled a persimmon leaf and began to chew it.

"Bull was right smart fond of that cat," he

muttered, a heavy cloud of trouble faintly showing itself on his expressionless face.

Presently the lad was stirred from his gloomy thoughts by a question in the branches overhead.

"Quirt?"

Even in his trouble, the boy could not help noticing that the alarm cries had ceased. He did not know, no one knows, how birds reach their conclusions, or if their actions are guided only by instinct, but it was evident that the cessation of the alarm cries showed that the Thrushes felt more confidence in the presence of the boy than in the presence of the cat.

Ten long minutes passed, during which the lad tried to determine what should be done. He had killed the cat, there was no doubt of that.

Then, with a little chirp, the mother Thrush flitted to the nest and placed a juicy Daddy-Long-Legs in the beak of one of the fledgelings, though the boy was sitting not a dozen paces away. She did not seem to notice that there were but three fledgelings where there had been four before. Perhaps, Shan thought, birds cannot count.

His cogitations found voice at last.

"I don't care," he said, aloud; "I'd do it again, even if I knew."

Grimly the boy picked up the dead cat, with the nestling still in its teeth, and put it on the branch close beside the nest. Then, slightly adjusting the focus of his camera, he took a picture of the murdering cat, with its victim in its jaws. If he were going to be beaten for killing the beast, at least he would try to excuse himself by showing the justice of the action.

"Bull's fair, anyhow," he said, in an effort to console himself.

For a couple of days, Shan said nothing about the occurrence, but, from the books and pamphlets which had been sent him, he gathered every scrap of information he could find which showed the cat to be an enemy of birds. No student, cramming for honors at an examination, ever read more intently than Shan during those two days.

At last, desiring to get the issue over and done with, the boy snapped another couple of pictures, in order to fill up his roll of film, developed and printed them. That evening, after supper, he took the photo of the slain cat, and laid it on the table in front of his uncle without a word.

The pot-hunter looked at it closely. He was as quick an observer as he was slow of speech. At first glance he recognized the cat, but he waited

before giving voice to his thoughts. Presently he laid down the photo and turned his stern face to the boy.

"That looks right smart like Bob," he said.

"It is Bob," said Shan.

"Where did yo' find him?"

The struggle of temptation in the boy's mind was sharp, but short. He set the possible excusing answer aside and said,

"I killed him."

The black eyebrows lowered, but for a minute or two, the pot-hunter said nothing. Then—

"Because o' that?" he asked, pointing with his broad thumb to the bird.

"Yes."

"Do yo' reckon that gives yo' a right to kill my cat?"

"I think it does," said Shan.

His heart was beating fast, but he wanted to stand firm. He knew that it was more than possible that the stern old moonshiner might beat him half to death, but he would not weaken.

On his part, the old pot-hunter, though angry, wished to be fair, and he had a soft spot in his heart for the little Thrushes and their nest.

"It's his nature," said Bull.

"So it's a snake's," replied the boy, "but that doesn't keep us from breaking the back of every snake we see."

This crude judgment appealed to the woodsman. It was a part of his iron creed that those who were guilty of misdeeds should suffer.

"Well," he asked, at last, "what have yo' got to say for yo'self?"

This was the invariable question which preceded the drastic punishment that Bull Adam gave, when he thought it necessary. Only in his most violent tempers had he ever beaten Shan without giving him a chance to be heard. Shan knew well that his answer was his only chance.

"I killed Bob," he said, "because he'd killed the bird. I didn't know it was Bob, when I struck. If I had—" he paused, "I'd have done it just the same. It isn't the life of one cat against one bird, but one cat against at least fifty birds a year. The hunting cat is classed as a beast of prey and is legally liable to be shot when destroying bird life anywhere far from a house.

"The cat," the boy went on, "isn't a domesticated animal. A judge, the other day, ruling on a question as to the shooting of a cat, called it 'the wildest animal in Christendom.' The cat tribe,

such as tiger, leopard, jaguar, lynx and the rest of them are the most blood-thirsty animals on earth. They're built only for killing, with strong jaws, sharp tearing teeth and bodies which are just a bunch of muscles. They can't be trusted. As for being affectionate, or pets, it says in one of my books that Man hasn't domesticated the cat, the cat has domesticated Man. He doesn't do anything for his master, like a dog; he just lies around, waiting to be fed."

He paused, to see what the reply might be.

"Go on," said Bull, evidently unconvinced.

"Cats," the boy continued, wishing to touch the pot-hunter on a tender point, "kill twice as much game as all the sportsmen in a region put together. One cat near the haunts of Bob-White, Ruffed Grouse, or Pheasant, will clean up the neighborhood. The principal work of the keeper of a game preserve is the killing of feral or stray hunting cats. Feral cats which breed in the woods raise families of cats even more savage than themselves, which hunt mainly in the dark, having become beasts of prey and nothing else.

"There are lots of cases where cats have wiped out entire colonies of birds. Three cats, on Wooden Ball Island, killed every single bird of a

huge colony of Petrels. A protected colony of Least Terns on Cape Cod has been broken up, and the game warden in charge reported that he could not kill enough cats every night to keep the ravages down. From the Atlantic to the Pacific, one of my books says, the most death-dealing scourge of bird-life is the feral cat, which, in most cases, is the stray cat that has resumed wild life. He fears no law and knows no master. You cannot train his claws not to rend, nor his teeth not to tear. He is a beast of prey wearing the disguise of a fireside pet. He is protected cruelty, purring by the fire."

Bull Adam smiled inwardly at these phrases, evidently learned by heart for the occasion, but not a line of his face relaxed its sternness.

"Go on," was all he said.

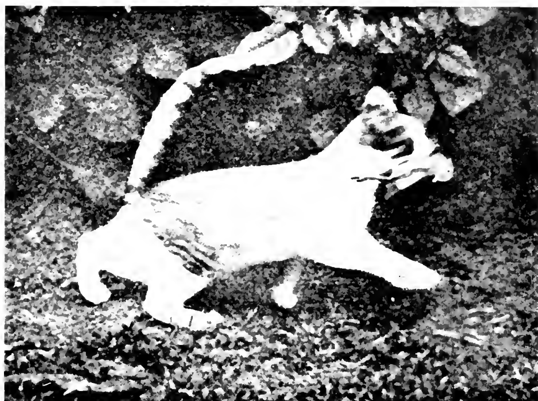
"Nobody has any idea," the boy went on, "how many bird-hunting cats there are in the United States. Most animals are kept down by their natural enemies. The cat hasn't any, though, perhaps, once in a long while, a Great Horned Owl may pick one up. Besides, cats are protected by Man. Farms and country towns are full of cats which prey in the neighboring woods. The cities are full of masterless ash-barrel cats. These

breed fast, the kittens grow to cats in the same wild way and drift out of the city to the country, where they take to the woods. The authorities of New York City are compelled to kill a hundred thousand stray cats every year, and still the cat population of the city is growing.

"Chapman reckons there are at least 25,000,000 cats in the United States and there may be twice as many. Nine out of every ten cats will catch birds, and, counting feral as well as domestic cats, it's sure that each one catches at least a dozen birds a year. Forbush, who has studied the subject thoroughly, reckons that a feral cat will average fifty birds a year. Even at a dozen a year, that would make 270,000,000 birds eaten by cats every year. Killing stray cats is a part of every bird-lover's job."

Shan passed his hand across his forehead. He was making himself warm with his energetic attack upon the cat. The old pot-hunter, nowise displeased with the lad's enthusiasm, answered, less coldly,

"Supposin' all that's true. Yo're talkin' on the side o' the birds. How about the cat? Ain't a cat got as much right to live as a bird? Yo' like to hear a bird sing. I may like to hear a cat



Pet Cat bringing in a Robin.

Courtesy of Massachusetts Board of Agriculture.

Belled Cat with Oriole in its Mouth.

purr. Why should yo' kill my cat to save yo' bird?"

This was a poser. Shan turned a troubled look on his uncle.

"I reckon," he admitted slowly, "I don't know how to answer that—unless," he added, a bright idea striking him—"unless it's because my bird is helping the community and your cat is injuring it."

"Go on," said Bull.

"Well," said Shan slowly, groping for ideas as he went along, "supposing your cat does kill on an average a dozen birds a year and lives ten years. That means he has killed at least a hundred and twenty birds, doesn't it?"

"Go on," came the recurring reply.

"All right," said Shan, feeling himself on firmer ground. "Half those birds, anyway, would be the kind of birds useful to farmers. A bird eats eight thousand million insects a season, and lives about five years, so that every insect-eating bird gets rid of forty billion insects in his lifetime. If your cat has eaten fifty insect-eating birds, it's just the same as if you'd given a permit to two trillions of injurious bugs and beetles.

"Now some insects have huge families. The

Colorado Potato Beetle, if all the young should live, would have sixty million little ones in a single season. If each pair of your two trillion insects should have sixty million children, you'd have 60,000,000,000,000,000,000 more insects left alive in the world every season, as a result of allowing that one cat to hunt. Then, if you figure all the destructive cats which would be raised from kittens in those ten years of the cat's life and all the helpful birds that would be hatched in the same time, the figures would be a lot bigger, I reckon bigger than I could figure. There's the difference between my bird and your cat.''

He stopped, short of breath and a little dizzy with his own calculation.

Bull refilled his pipe, and gave judgment.

''Yo've made a good excuse for yo'self in killin' Bob,'' he said, ''an' I reckon, as yo' caught him in the act, I'll have to let yo' go. But that ain't a-goin' to save yo' birds. There's a right smart bunch o' kittens other cats must have had, runnin' around in the woods. How are you-all goin' to keep them away?''

''I've thought of that,'' said Shan, eagerly, thankful to have escaped so easily. ''You know that old rusty wire behind the cabin?''

"Well?"

"I'm going to cut that up into bits about six inches long, file the ends to a sharp point and lash them round the tree with the pointed ends down. Those big fish-hooks you don't use any more would be just the thing. It's easier, the book says, to nail a flat piece of zinc or tin to the tree, but I haven't any."

"What good does that do?" asked Bull.

"Cats' claws won't stick in the metal and so they can't climb up," Shan answered. "That'll fool them every time. Since I haven't any sheet metal, though, I'll use the wire and the fish-hooks."

Shan lost no time in putting his plan into operation, and two or three days later, visiting the nest of the Flycatchers again, in the hope of securing some more photographs of the young birds, he was startled to find some white hairs stuck to the wires. There was blood on some of the hairs.

Evidently some animal had tried to climb the tree and failed. The hair was not like that of raccoon or possum. In addition to being white, it was like cat's hair, and, what was more, like the hair of an Angora cat.

In all that neighborhood, there was but one

white Angora cat, belonging to a man living some distance away, a queer hermit-like character, who was known simply as "The Feather Man." Shan knew hardly anything about him, but he had heard of the big white Angora. So, as he looked on the blood-tipped white hairs stuck to the wire protection that he had lashed to the tree, Shan said to himself,

"It's the Feather Man's cat!"

He looked around but saw no sign of the cat. The trail of the claws, however, was perfectly clear in the soft ground, and seeing that the slight flecks of blood on the white hairs were not yet dry, the boy decided to follow up the trail.

He had not far to go, fortunately, for the tracks were light and difficult to follow. After ten minutes' walking, he saw a glint of white in the bushes to his left.

There are few white things in nature to be found in summer and in the daytime. The white stripe on a skunk's back, the white tip of a rabbit's tail, the white patch on a deer's rump, or the flash of white as a King-bird or a Cuckoo flies constitute the chief possibilities. Even the rare cases of albinism, which give a white Blackbird, a white Crow, and even a white Turkey Buzzard are suffi-

ciently rare to make important pictures, so, silently and eagerly, Shan unslung his camera from his shoulder.

Closer and closer Shan stalked the white glint, and, peering through the bushes, saw the Angora cat. In its claws, fluttering, but unable to escape because of a broken wing, was a Painted Bunting. The cat would let it go, allow it to flutter a foot or two and then would spring upon the bird again, as though playing with a mouse. Had Shan a gun with him, he would have shot without an instant's hesitation, remembering his legal right to kill the cat, inasmuch as it was far from any dwelling, was not on private property, was engaged in destruction and was classed as a dangerous beast of prey unprotected by game laws.

Every stray cat, found in the woods more than a quarter of a mile away from the boundary of an incorporated town or village and the same distance from a house is not regarded as engaged in its legitimate occupation of ratter or mouser. Not being indigenous to America, it cannot be considered as a native animal. If discovered killing birds, it is destroying the property of the United States.

Shan, as a resident, and therefore not need-

ing a license, would have been justified in killing the cat, providing that he made sure the cat was really killed, else, if it were only wounded, he might come under the provisions of the code for the infliction of cruelty to animals.

The boy, however, had already learned the value of exchanging the gun for the camera, and, stalking the cat as carefully as though he were going to take a long shot at a big game animal, he snapped the pose just as the big Angora cat leapt upon the Bunting. The cat heard the click of the shutter, as, no doubt, she had heard the approach of the boy, but, being a domestic cat, and not afraid of people, she went on playing with the bird. The white cat against the dark background made an ideal subject for photography, and Shan took two more pictures. Then, content with his "bag," he returned to the cabin.

He developed the pictures at once and, having got his prints, handed one of them to Bull Adam with the question,

"Isn't this the Feather Man's big Angora cat I've heard you talking about, Bull?"

"Sure's yo' know!" answered the old man. "An' him such a crank on birds! Did yo' kill it, too, Shan?"

"No," the boy answered; "I didn't like to. I was afraid I'd get into trouble."

"Yo' would have," declared the other, emphatically.

"Bull," the boy asked, after a few minutes' silence, "who is the Feather Man?"

The old moonshiner, however, was not to be drawn into conversation. It was one of his silent nights. Shan, realizing this, let the matter drop. He knew his uncle well enough to be sure that the question would not remain unanswered.

Three evenings later, after supper, not a word having been spoken since he entered, Bull Adam suddenly began, as if the boy's question had just been put to him,

"I couldn't jest rightly tell yo' who the Feather Man is. I don't know. I reckon no one 'round here knows. He's a Westerner, sure, by his shootin'."

This sounded interesting.

"Do you mind telling?" the boy asked.

"There ain't such a lot to tell," the old pot-hunter replied, "leastways, nothin' but one thing. About ten year ago, when old Jed Hornblow got hit on the head by a fallin' tree, this stranger came down an' bought his land from the

widow. He must have given her a fat price on it, for the widow let it go quick an' she wouldn't have let go of anythin' what had a profit on it.

"What caught the eye o' the stranger, I reckon, was the birds on the place. Old Hornblow had the idee that the more birds he had around, the better crops he'd get. The rest o' them used to laugh at him, but I always took notice that his crops were the best in the district.

"There was a right smart plenty o' Bob-Whites on the place, for they'd been let alone ever since Jed Hornblow had been there, forty year an' more. I reckon the crowd down at the village weren't afraid of Hornblow's gun. It was his wife's tongue they misliked. It was like an ant's bite—left the acid behind.

"I reckon it was about a week after the widow had gone, that the village crowd reckoned on havin' a little shootin' on Hornblow's land, seein' that the old lady was gone an' the funeral was nicely over. So six of 'em, Ned Thompson among 'em, spite of his bein' game warden, landed on the Hornblow place an' started in. They said, afterwards, it was a shame to shoot the birds, for they were so tame that yo' could have picked 'em up like chickens an' wrung their necks. Anyhow,

they banged on every side, an', in half-an-hour, there was thirty birds bagged.

"Then suddenly, heated like he'd been hurryin', came the stranger. He looked at the six men an' at the birds on the ground.

"They waited for him to say somethin', but he never peeped. He just looked 'em over, an' movin' so quickly that no one saw it, he pulled an automatic pistol from his pocket.

"The shots went off, nigh as quick as yo' could count, scarin' the gunners so they didn't have nothin' to say. But there wasn't none o' them hit. They laughed.

" 'Tryin' to scare us,'' said Ned Thompson, lurching forward.

" 'I think you will be scared, as you call it,' said the stranger; 'look at your trouser legs'!

"Every one of 'em looked down.

"There, in the loose flappin' trouser, near the left shin, was a bullet hole. Not one was exactly in the same place, dependin' on the way the wind had flapped the cloth, but there wasn't none of 'em barked and there wasn't a left trouser leg missed.

"No one said a word. There ain't much yo' can say against such shootin'.

" 'The next man that I find shooting birds or

shooting anything else, on my land,' said the stranger, so I'm told, 'I'm going to shoot out his teeth, one by one, without killin' him. If there is any one here who is inclined to disbelieve that I can do it, he may step up right now and I'll accommodate him.'

" 'But, see here, you'—' Ned Thompson began, but the stranger interrupted.

" 'And if any one disputes the question,' he said, 'I'll take the tooth out of his head whether he wants it or not. You may observe,' he went on, 'that every one of you is trespassing now.'

"I reckon that kept 'em silent.

" 'Remember,' he went on, so I was told, 'the Old Book says, an eye for an eye and a tooth for a tooth. I'm goin' to change that a bit. I'm going to make it an eye for a nest an' a tooth for a feather. Every feather I find from a bird that's been shot on my land is going to cost somebody a tooth.'

"I reckon there's been no shootin' there since then, leastways, I never heard of none."

"Haven't you ever shot on that land, Bull?" the lad asked.

"Once," the old pot-hunter replied, "unknownst. I didn't intend to be on the land. A

man has a right to say what he wants an' what he doesn't want, on his own land. I took the birds I'd shot right up to his cabin.

" 'There's yo' feather,' I said, 'now take yo' tooth'!"

"And what did the Feather Man say?" asked Shan.

"He just laughed an' said a mistake was likely to happen to any man an' two good shots hadn't ought to quarrel. That's where I saw his cat, though I've seen her in the woods, too, a right smart o' times."

"What do you reckon he'll do when I show him these prints?" asked the boy. "Shoot me?"

"Reckon not," said Bull, after reflecting; "but it's more'n likely he'll shoot the cat."

"Well," said Shan, "I'll take a chance and go up there, anyway. But, Bull, was he called the Feather Man, because of that?"

"I reckon that begun it," was the reply. "They used to call him 'Tooth for a Feather' behind his back. Then, one cold winter day, he came down to the village with a big coat lined inside with birds' feathers instead of fur, I reckon feathers which have come from his tame pheasants, for he'd never kill a bird. So, bit by bit, folks took to

callin' him the 'Feather Man.' He ain't never seemed to mind, so the name's stuck."

"Where is his place?"

"Right through the laurels on the north end of the mangrove swamp by Bullfrog Pond."

"I know that part," said Shan; "I've been there birds'-nesting more than once."

"Yo' have?" Bull looked at his nephew. "Yo're lucky to have yo' two eyes then. 'An eye for a nest,' he said. Don't yo' tell him yo've been robbin' nests on his land or yo'll come back with only one eye, an' then I'll have to pick up my gun to square the deal."

"I'm not afraid," said Shan; "he was all right to you. Tell me, after I leave the laurel, which is the way, then?"

"Follow the ridge till yo' come to the marsh," came the reply. "Turn north a ways over soft ground and yo'll see a patch o' chestnut. The house is right in there. It's painted a smudgy yellow, leastways, it was when I went."

"How long ago?"

Bull pondered.

"Three years, I reckon," he said.

"I'll go there to-morrow," said Shan with determination; "I'm not going to have cats around my

Thrushes or Flycatchers if I can help it, no matter whose cat it is."

"Maybe yo' can imagine what would happen to a Duck that offered to pull a fish-bone out'n a Fox's throat, can't yo'?"

"Yes," retorted Shan, "but it would depend on the Fox. There's one species of Duck living near the shores of the North Sea that regularly lives in a Fox's hole. So I'll chance it."

In spite of his bold assurance, it was with a distinct sense of doubt that Shan, next day, pushed his way through the massed and tangled growth of interlocking laurel bushes, and, following his uncle's instructions, came to the yellow house in the midst of the chestnut trees. Sitting outside the house, writing at a table made of a flattened log resting on two crotched branches driven into the ground, sat a tall man with a shock of black hair, turning gray.

"Good morning, my boy," he said, in clear, precise English, quite unlike the drawling speech of North Carolina.

"Morning," said Shan.

"Say 'sir' when you speak to some one older than yourself," the stranger corrected sharply; "and don't slouch!"

Shan was taken absolutely by surprise. This prompt correction was unaccustomed. His uncle had never taught him to say "sir," nor had his posture ever been criticized. But, remembering the nature of his errand, the boy did not wish to offend his host at once, so he straightened up and corrected himself,

"Morning, sir."

"That's better," said the Feather Man, "but the correct phrase is 'Good Morning.' Moreover, always look the man you're speaking to, straight in the face."

Shan felt he was losing ground in these preliminaries. He had intended to come as an avenger of the birds, and here he was, being taken to task like a schoolboy.

"I'm Shan—" he began, but the other interrupted him.

"I know all about you," he said. "You live at Bull Adam's cabin and you've been stealing birds' nests on my land."

Shan's jaw dropped. He remembered Bull's warning. This was turning the tables on him with a vengeance. How was he to appear as the Avenger of Birds now?

The Feather Man smiled at his consternation.

"I'm not going to eat you alive," he said; "I'm not even going to carry out my threat. I happen to know why you took the eggs. And I'll tell you something more about that collection of yours, and that is that if you'd put naphthaline crystals in your cabinet as well as ordinary insect powder, your nests would keep better. I'll give you some before you go."

Shan stared at the Feather Man as though he were a wizard.

"Who—who told you that I collected eggs?" he stammered.

" 'Sir'!" the Feather Man prompted.

"—that I collected eggs, sir."

"What else would you have been doing on my land? And I'll tell you something more. The two birds' nests you robbed were those of a Boat-Tailed Grackle and a Gray Kingbird. Am I not right?"

"Ye—yes," said Shan. He caught himself, "Yes, sir. But how did you know it?"

"I know what happens to every bird on my place," the Feather Man replied confidently.

This was Shan's chance.

"Do you know how many of them your cat eats?" he blurted out.

"My cat?" repeated the Feather Man in surprise. "Nero used to eat birds, years ago, but I cured him with a garden hose."

"Much he's cured!" declared the boy, feeling more sure of his ground now, and, stepping forward, he laid on the log the three photographs of the Angora cat playing with the wounded Painted Bunting.

The Feather Man grew very still as he looked at them.

"Did you take these yourself?" he asked.

For answer, Shan turned one of the prints over and showed the back, on which he had written the date, hour and place where the photograph had been taken.

"And Bull said, sir," the boy continued, "that he'd seen your white cat after birds a dozen times."

The other shook his head.

"I thought I possessed one of the few bird-trained cats in captivity," he said, "and now you see!"

"Can't a cat be trained?" asked the boy.

"Yes," was the reply, "I suppose it can. If a man were to give his whole time to it, like a circus performer training trick-animals, a cat might be

taught not to hunt. But few people can have either the time or the patience for that.

"When I first got Nero, I thought the birds would be fairly safe; because it would be more difficult for him to hunt, since the birds could see a big white cat quite easily. And, of course, I always lock him up as soon as it gets dark. Most people let their cats run at night. But it seems that it's as useless to keep a white cat as it is to put bells on a cat. Such plans may save the old birds, but not the nests or nestlings. I'm sorry, for I liked Nero. I was quite fond of him, in fact."

Shan had a sudden compunction.

"Please, Mr. Feather Man," he said, "it wasn't because I didn't like your cat that I came up to you about it, but because he was after my birds."

"You'll never get into trouble with me by protecting birds," the Feather Man answered, not looking at the boy, but staring into the woodland close by. Shan, following his glance, saw a glint of white in the bushes.

A shot rang out.

The white spot moved a few inches and was still.

"There's only one thing to do with a bird-eating cat," the Feather Man said, as he put back his revolver, "and that is—kill the cat!"

CHAPTER VII

THE FEATHER MAN

The sudden execution of the cat stunned Shan. Having lived all his life with the slow-moving Bull Adam, he found such sudden action startling and not a little alarming. He was casting about in his mind for some excuse for leaving, when the Feather Man said abruptly,

"What bird is that?"

He held up a water-color sketch.

"Golden-crowned Kinglet," answered the boy promptly, and then, as he realized the beauty and truth of the painting, he exclaimed, "that's fine—sir!" he added, remembering.

The limner smiled.

"And this one?"

"Wood Pewee."

The Feather Man nodded his head approvingly.

"You know something about birds, I see," he said; "but you're wrong this time. If you'll

notice carefully, the whole of this bird's bill is black. A Pewee has the lower mandible yellow. This is a Phoebe."

"So it is," Shan admitted. "I've got Phoebe eggs, too. Have you, sir?"

"No," the Feather Man replied; "I'll leave the egg-collecting of this neighborhood to you. Every ornithologist has his own side of the work. My specialty is feathers."

"Feathers!" exclaimed the boy in surprise; "aren't all feathers just about the same?"

The other frowned at him.

"Don't begin our acquaintance by making me think you a fool," he said, abruptly. "You know better than that. Think of tail feathers, for a minute. What are the tail feathers of Chimney Swifts like?"

"They've got spikes on the end," said Shan.

"And the Woodpecker's?"

"Stiff, but without a spine; more like those of the Brown Creeper."

"I'm glad to find you can use your eyes a little," came a more satisfied reply. "Your first remark about feathers didn't suggest it. What do most birds use their tails for?"

"To fly with," said Shan.

"How? Did you ever see a bird flap its tail?"

"Yes," the boy answered, unexpectedly; "the Pipit and the Palm Warbler do. So does the Teeter."

"The Pipit and the Yellow Palm Warbler," came the correction, "wag their tails, they do not flap them. The Teeter or Spotted Sandpiper teeters his whole body, not only his tail. No, boy, you're wrong. A bird doesn't use his tail for flight, but for steering.

"Think for a minute of the way birds fly. Birds which make a straight, fast flight, like Ducks or Bob-Whites, have short tails. Birds that find their food in the air, and which, consequently, dart from side to side or wheel this way and that, need a large steering apparatus. Hence you find that the Swallows and Flycatchers have long tails. The Arctic Tern, the world's champion long-distance flyer, which needs every aid to flight, has an especially long tail. Birds which drop from a height on half-closed wings and have to stop themselves suddenly, like Eagles, Hawks and Whip-Poor-Wills, have large broad tails which they can spread out, thus forming an effective brake. Why, Shan, you could spend years in studying the adaptation of birds' tails alone.

"Wings are even more wonderful," he continued. "How far can a Penguin fly?"

The boy started. Penguin was not in his Encyclopædia of Birds, its name not being within the letters DRA to GYR.

"I—I didn't think it could fly at all," he said.

"Has it any wings?"

"I don't think so, sir."

"Yes, it has, and very efficient ones. But they move only at the shoulder and are used as paddles. How far can the Frigate Bird fly?"

"Forever," the boy replied.

"Or as long as it lives," the Feather Man corrected. "Now, Shan, if you'll notice the proportion between the weight of the body and the size of the wing, you'll get a clear idea as to why the Frigate Bird can fly long distances and the Penguin cannot. A Tree Swallow has a tiny foot and a large wing, eight times as long as the foot; the Little Black Rail, a partly terrestrial bird, has a foot almost as long as the wing; the Ostrich, a purely terrestrial bird, has a foot three times as long as the wing.[1] Have you ever noticed the way a bird's wing is set into its body?"

[1] It is to be remembered that a bird's foot extends to its heel joint, which is usually apparently half-way up the leg, like a knee bending the wrong way.

"Not especially, sir," answered the boy.

"Well, you should. If you look at the skeleton of a bird, you'll see that it is built like a boat's hull, but with a very deep keel, like the keel of a yacht, the curves tapering forward to the neck and back to the tail. And, just as a yacht has smooth sides and is painted so that there is not a single projection to catch the water, so a bird's body is fitted with close-fitting feathers all pointing backwards towards the tail. The muscles which work the wings lie on either side of this great keel or breastbone.

"Each wing is made of three parts, arranged like the letter 'Z,' the top of which corresponds to the upper arm, the downward stroke to the fore-arm and the lower horizontal stroke to the hand. Birds have only three fingers, and of these the thumb is very small and the other two fingers are bound together to form a rigid rod. So much for the machinery of the wing, Shan.

"On each of these three parts of the 'Z' there are feathers. Those on the hand we call 'primaries,' and those on the fore-arm we call 'secondaries.' These do most of the work. The feathers on the upper arm are called 'tertiaries,' and though they are not of much value in flight for

small birds, they serve to close the gap which would otherwise be left between the body and the main part of the wing. In long-armed, or long-winged birds, such as the Albatross, the tertiaries play an important part. Now," he continued, "have you ever looked closely at a feather?"

Shan thought for a moment.

"Yes," he said, doubtfully; "when I was quite a little chap, Bull gave me some Wild Turkey feathers to stick in my hair, like the Indians did, and though I tried to be careful with them, they soon got ragged. I was afraid Bull would be angry and I tried to stick them together so that the feathers would look smooth again, but they wouldn't stick."

The Feather Man held out to the boy a feather that lay on the leveled log.

"Feel that carefully and see if you can notice any glue?"

"No," said Shan, first feeling it between his fingers, and then, following his invariable custom, putting it in his mouth.

"But, if you take the side of the feather—not the quill—and pull it a little, what happens?"

"It breaks away," said the boy, suiting the action to the word.

"Can you stick the barbs together again?"

"No," said Shan; "that's what I tried to do before."

"Why not?"

"I don't know, sir," came the reply.

"If you'll wait here just a moment," said the Feather Man, "I'll show you why."

He went into the house, returning a moment later with a large double magnifying glass, which he handed to the boy.

"This is better than a microscope for you," he said, "and will show you all that you can learn to-day. Now, look at this feather. It's from an ordinary domestic turkey, one of the contour feathers. Look at the edge of the quill first. Pens used to be made from goose quills."

Shan peered through the glass.

"Jutting out from the quill," he said, "I can see what looks like a lot of small feathers growing out on the sides."

"That is right," said the Feather Man. "Every feather is divided, first of all, into the 'quill' and the 'vane.' The vane looks as if it were made up of smaller feathers, only, in these smaller offshoots of feather, what would correspond to the quill is called a 'barb,' and what

would correspond to the vane is called the 'barbules.'

"Now, let me slide this other lens in, which doubles the magnifying power. If you look closely, Shan, you'll see that barbules are not the same on both sides of the barb. Those pointing towards the tip of the feather are ribbon-shaped for half their length and then form a series of little tiny hooks; those pointing away from the tip are also ribbon-shaped half-way but then they form a series of little troughs or catches. If you look very carefully, you can see that the hooks of the outer barbules link into the catches of the inner barbules next to them, much in the fashion of a hook-and-eye. Can you see that?"

"Yes," said Shan, after several attempts, "I think I see it now."

"Well," continued his instructor, "when you pull the vane of a feather, you pull all those little hooks out of their catches. It isn't a question of their being glued together. And, if you'll notice, the feather will resist a considerable strain before it pulls apart. That's due to the amount of play in the barbules, and it is that interlocking system which gives a bird's feather its elasticity and air resistance.

"They're pretty small, too. Gadow once counted the barbules of one of the primary feathers of a Crane, and found that each barb on the inner side of the vane bore six hundred pairs of barbules and that there were a thousand barbs, or more than a million barbules for each feather. So you see, my boy, when a feather may have as much as half a million little hooks and eyes to keep it in place, it is no wonder that the bird's feather coat fastens around to keep him snug and warm and that the feathers do not ruffle up in the wind. It is the absence of these hooklets on the barbules of certain feathers—such as the Ostrich plumes—which gives them their fluffy and floating character.

"Feathers, like all other things, need to be kept in order, and you've watched birds enough, Shan, to have noticed how carefully they preen their feathers. Nor is this vanity, alone, for the life of most birds depends on their power of flight and this, in turn, depends on the effectiveness of the feathers. Thus water-birds not only preen their feathers very carefully, but, from glands near the tail, they press out oil with their bills and they oil their feathers with this.

"Most birds are able to comb their feathers

with their bills, and some, such as the Night-jar and Heron, have a toothed or serrated structure on the third claw. If a feather is very badly torn, as sometimes happens after a fight, it becomes beyond the power of the bird to repair it, and the bird is thereby handicapped until the next molt gives it a set of new feathers again.

"Many of the bright-plumed birds, such as the Birds-of-Paradise, show a conscious interest in their toilet, devoting more time to such feathers as serve the purposes of adornment than they do to the contour feathers. But, perhaps, the most curious habit among such birds is that of the Mot-mot, a Mexican bird, which deliberately amputates a section of vane on both sides of the quills of its two tail-feathers, in order to give the tail an artificial racket-shape. This done, the Mot-mot seems proud of his disfigurement and will sit for as long as an hour at rest on a branch, swinging his tail from side to side like the pendulum of a clock.

"You've heard the whistling of a Woodcock's wings, I suppose, when he's flying?" came the next query.

"No, sir," the boy answered, "but I've heard Bull speak of it."

"Well, you've heard the noise that a Duck's wings make?"

"Often."

"Have you ever heard an Owl?"

"Never."

"And you never will," the Feather Man rejoined, "for the simple reason that the Owl flies absolutely noiselessly. The whirr of wings makes no difference to a Woodcock, for he only flies when he is escaping from an enemy, but noise would be destructive to an Owl, since he hunts his prey by night, and the slightest indication of his presence would serve as a warning for every mouse to hide. A Snowy Owl can flit through the woods like a ghost, passing so close as to strike at your head. yet you will never hear a sound.

"I remember once," the Feather Man leaned back in his home-made chair, "when a Horned Owl nearly drove a lumber camp frantic. The men were old lumber-jacks, too, frontiersmen who knew the woods. Do you want to hear the story?

"I right would, sir!" replied Shan, eagerly.

"It was in the Canadian woods," the Feather Man began. "I had been up that way doing some special field work on the birds nesting in the north, and, one evening, finding myself a long way from

Courtesy of Mr. William Beebe.

THE MOTMOT AND HIS TAIL.

Mexican self-mutilating bird in Mr. Beebe's camp. Tail is long and greenish-blue in color, while the two central feathers, still longer than the others, are bitten bare of barbs for an inch of length, each feather being trimmed by the bird's beak into a full-veined racket. Lower picture shows feathers after bird has commenced the mutilation and after it has been completed.

my own camp, I followed a new-made lumber road to have supper with the lumber-jacks at their head-quarters. After supper I made ready to go, but the cook stopped me.

" 'Don't ye go,' he said, 'the woods round here ain't safe at night.'

" 'Lynx?' I asked, for that's about the only kind of beast I prefer to leave alone.

" 'A haunt!' the cook answered. 'There ain't a man as'll go outside the light o' the fire here, nights.'

"Now, Shan, a lumber-jack is usually the kind of man who doesn't care for any danger, and a ghost which could scare an entire lumber camp would be worth meeting.

" 'Tell me what's happened,' I asked the cook.

"He went into a long rambling story, from which I gathered that men coming back through the woods at night had been attacked, generally in the face and head. One man had been knocked down, another had his head cut open and a third declared that the ghost of an Indian had come and tried to scalp him.

"Then an idea occurred to me.

" 'Were all those men wearing fur caps?' I asked, though deeming the question needless, for

while lumber-jacks in winter always wear woolen caps while working, generally they put on fur caps after dark.

"'Likely enough,' the cook answered; 'why?'

"I did not wish to say why I asked the question just then, I wanted to make sure. So, that night, I wandered for a while in the woods, from time to time hooting the 'whoo, hoo-hoo-hoo, whoo' of the Great Horned Owl, and, after a while, receiving a reply. It was settled, at least, that there was a Horned Owl in the neighborhood of the camp.

"The next question was to find him.

"Now, Shan, if you want to find a big Owl, it is fairly easy to do so in the twilight, provided you know his habits. Before it gets dark, an Owl, as a rule, will fly up to his favorite perch—he rarely has more than two or three chosen spots—and wait for the coming of night. I knew that such a perch was almost sure to be the broken-off stem of a tall dead tree, if there were such in the vicinity of the camp. There were several.

"I scanned the top of each tree carefully with my big field-glasses, but could see no signs of an Owl, save that the top of one tree did not look quite natural. I could not be sure, however, and

I did not want to run the risk of making an error which might make me the laughing-stock of the camp. So, in the half-light, I made a rough pencil sketch of the shape of the top of that dead tree as I saw it that night.

"Next morning, I looked at the tree. Clearly to be seen was a long splinter sticking up on one side of it which had not been visible the night before. The evidence was clear. The old Owl had been perched on the tree the night before, so immovable, and looking so exactly like a part of the dead trunk that, even with my powerful glasses, I could not distinguish his form.

"Late that next afternoon I watched carefully, but suddenly, he was there. I was regarding intently, yet I never saw the flying figure. All of a sudden, the upstanding sliver disappeared and I knew that the changed outline of the top of the dead tree, silhouetted against the evening sky, was the immovable figure of the Great Horned Owl.

" 'Come on out,' I said to the lumbermen; 'come and see the ghost laid!'

"They trooped out of the chuck-house.

"I had fastened a fur cap to a long piece of string, leaving the cap in the shadow of the bushes, and running the string to the camp. Now I com-

menced to pull the string in little jerks, which made the fur cap hop along the ground, just as if it were a rabbit. A flash as of brown lightning streaked through the air and the Horned Owl struck both claws into the cap.

"A roar of relieved laughter went the rounds of the camp. The lumbermen nailed the Owl's skin on the chuck-house door next evening, and the ghost was laid.

"So you see," the Feather Man concluded, "some birds can fly almost without sound, though other birds go to the opposite extreme and use their wings for the purpose of making a noise. You've seen a rooster flap his wings against his sides, just before crowing, eh?"

"Of course," agreed Shan.

"But you've probably never heard a Ruffed Grouse 'drum.' That's one of the most curious wing noises in bird land. The drumming of the Ruffed Grouse begins, as Seton very well describes it, like the measured thump of a big drum, dying away into the rumble of a deep-toned little drum. At a distance, it sounds like far-off thunder. It goes—Bump—Bump — Bump — Umpr-rump-rup-rp-r-r-r-r. The male stands on a stump or log and makes the sound by beating the air violently with

his wings. It's a courting call, to tell the birds whom he has chosen for his mates that he is waiting for them. Feathers need to be strongly braced to resist such beating against the air."

The Feather Man turned back to his writing, as though to close the subject, but Shan was full of questions, and did not notice the dismissing action.

"How about the inside feathers, sir?" he asked. "Have they got hooks, too, or are they soft and fluffy because they haven't?"

"Getting interested, are you?" smiled the Feather Man. "Well, Shan, I have no objection to explaining these things to you, so long as you try to remember them. You ask about down-feathers. They are quite different in their structure from contour feathers, because they have no quill. The barbs are long and slender and all come from one central point. The barbules do not possess hooks, as in the contour feathers, but they have knobs which help to felt the feathers together, while the barbs of one down feather interlock with the next, instead of the barbules doing it.

"This interlocking is finer than the finest weaving. It is so incredibly fine that no cold wind can penetrate. That is why the Eskimos make shirts

of bird-skins, finding them warmer than any fur. We use feathers for beds and pillows, because they are so warm and soft.

"Eider down, famous all over the world for its warmth and lightness, and which is used chiefly for the coverlets of beds, comes from the nest of the Northern Eider Duck, the mother duck pulling the down from her breast with her beak in order to make a soft bed for the eggs and nestlings. The birds nest chiefly in Greenland, Iceland, and the Arctic islands of Europe, and the trade is almost entirely in Danish hands.

"The nests of the Eider Duck are made on the ground, between large stones. All the available nesting territory has been divided up among Danish owners. The breeding colonies are gradually growing in size, as ground otherwise unsuitable is being arranged by local owners who seek to induce the Eider Ducks to settle there. The birds are protected absolutely. Not only is it forbidden to shoot them, but heavy punishment is given to any one who fires a gun within sound of their nesting haunts.

"The down is taken away from the nests every few days, and the eggs likewise. The poor robbed mother lays more eggs and pulls more down from

her breast, until, after she has been despoiled four times, her breast is entirely naked of feathers. They grow, of course, at the next molt. When the mother bird has given all the down-feathers she can spare, the father becomes a willing victim. His feathers are not as springy as his mate's, however, and command a lower price. Towards the end of the nesting season, the parent birds are left alone and allowed to rear their young. The value of the eider down lies in the fact that, being a northern species where warmth is necessary, the inner feathers are particularly elastic and soft."

"What color, sir?" asked the boy.

"The down feathers, you mean? From the mother a yellowish color, almost like a very light khaki. From the father, white. The Eider Duck is curiously colored, being faint above and somber below, in contrast to the general coloring of birds which is dark above and light below."

"Is there any reason why birds are colored that way, I mean, what is called 'concealing coloration.' Is all that true, sir?"

The Feather Man leaned back in his chair and swung one leg over the other.

"That's quite a problem," he said, "and it

hasn't all been worked out, yet. There isn't any doubt that some birds are protectively colored. Take the Chuck-Will's-Widow, for example."

Shan nodded, he knew all about that bird.

"Then," the Feather Man continued, "there's no doubt that some chicks seem to be born protectively colored, quite different in appearance from their parents. There's no denying the truth of Thayer's rule that if a bird is dark-colored above and light-colored below he will be harder to see than if he were uniformly colored. There's no denying that the birds which are very conspicuously colored, like the Crow and the Kingfisher, generally are birds well able to look after themselves. As a general rule, female birds are highly protective in coloration. Nevertheless, I cannot agree with those naturalists who endeavor to explain all the colors of birds on this one simple idea.

"If the theory held true in all cases, then little birds like Warblers should be protectively colored, and foe-free birds like Eagles, should be gay. If it were true in all cases, birds would be less brightly colored during the breeding season, when their labors are more greatly needed for feeding the nestlings, and when danger would be tenfold

graver. Whence, under the law of protective coloration, would the Kinglet get his ruby crown or the Woodpecker his red head? What is the protective value of the Peacock's train or the bridal plumage of the Egret?

"As it seems to me, Shan, every bird must be of some color, and certain species of birds are biologically capable of generating a certain number of fundamental colors, not more than two or three at most, the color pigment being a chemical composition thrown off as waste and lodged in the tegumentary system of the bird. As the vitality of the bird is higher during the mating season, there is more of this waste and hence more of the color. In the hen-birds the vitality is expended in laying and brooding, in the male birds, in color and song."[1]

"But I thought," said Shan, "that male birds were supposed to be brightly colored so that the hen-birds could choose the handsomest."

"That form of selection undoubtedly exists to a certain extent, my boy," the Feather Man re-

[1] In justice to the U. S. Biological Survey, the author wishes to state that the theory contained in this paragraph is not endorsed by all ornithologists. To the author, this theory, enunciated by Keeler, seems the best fitted to explain many problems of bird coloration.

joined; "but few ornithologists to-day believe that this choice by the bird was the original cause of coloration in birds. It would not explain the beginning of coloration. If this question of choosing the handsomest mate were the rule, then it should also be the rule that in all species the males should be more brilliantly colored than the females. But this is not so. Even in the same family, coloration questions vary widely. The Nashville and the Orange-Crowned Warblers have the same coloration in both sexes, while in the Cerulean Warbler, the sexes are widely different in appearance. Families of birds like the Wrens and the Creepers show little difference between the sexes while the Blackbirds and Orioles vary greatly. Sparrows, as a rule, are similar, while their close cousins, the Finches, often vary. Jays and Crows show no variance in sex plumage. Females of the Carolina Paroquet, one of the most gaily colored birds in the United States, are as brightly hued as the males. Hawks and Eagles rarely vary, Owls still less.

"Even in those birds where the male bird possesses a coat of many colors for his courtship and marriage, it does not follow that the hen always chooses the most brightly colored bird. Ex-

periment has shown that this is not the case. In species such as the Redstart and the Orchard Oriole, where the male's plumage in his first mating season is duller than in after years, the young birds have no difficulty in finding mates.

"Beware," said the Feather Man, shaking his finger warningly at the boy, "in questions of bird-study, beware of any answer which looks easy and pleasing. Ten to one such a theory will prove to be wrong. To say that the male puts on his gayest coat to please the hen-bird, and to say that she chooses him because of his fine feathers, is to give birds an appreciation of art somewhat similar to human beings. We are not justified in assuming this.

"There's not the slightest doubt in the world that male birds with gay feathers like to show them off. But, since there is often a battle for the mate, it is more than possible that the victory of the most brightly colored bird, is not a question of æstheticism, but that the gay suitor is the strongest bird, the healthiest bird and the one which will take the mate for himself.

"Many birds have a nuptial plumage. The Bobolink puts on his black and buff, the Scarlet Tanager dons his red and black, the Indigo Bunt-

ing strikes into a riot of blue. Yet, when the mating season is over, the Bobolink has become the plain-suited Rice-Bird, the Scarlet Tanager is a dull olive green and the Indigo Bunting looks like a Sparrow.

"What seems to me the greatest mistake in the whole matter is to assume, first of all, that the hen chooses her mate, when all the evidence goes to show that it is the male who does the choosing; and, secondly, to assume that some species of birds have æsthetic ideas with regard to color, while other species have not. This is not reasonable. Yet the colors of birds' feathers can be extraordinarily beautiful. Some day, if you like, I'll show you my collection."

Understanding that this was a hint to go, Shan got up.

"I'd like to see it, right much, sir," he said.

"And I'd like to see your egg collection some day, too," was the pleasant reply; "Baker told me about it."

"Do you know Mr. Baker?"

The Feather Man smiled.

"Baker was a student under me when I was professor of ornithology at a western university," he replied. "He had made birds his hobby, but I

first started him on systematic work. I don't know whether he ever told you or not, but he began life as a very poor boy, in the Rocky Mountains and had tried to make collections of birds' eggs several times, but had never been able."

"Why not?" asked Shan.

"Because, my boy," the Feather Man answered, "his father was a prospector, one of those men who go through the mountains afoot, their scanty provisions on the back of a burro, hunting for pockets of gold, or cradling gold dust in the sands of some unnamed creek. Baker used to travel with his father. Several times he started a little collection of birds' eggs, when the prospector settled down for a few months in some favorable location, but the wandering spirit was in his father's blood and he would soon pull up stakes and go off again."

The Feather Man smiled.

"It's a little difficult," he said, "to rope a batch of blown birds' eggs on a burro's back with a diamond hitch!

"So you see, Shan," he continued, "when he found you, a few weeks ago, doing the same thing that he had tried to do when he was a boy, it touched a soft spot. That was why he gave you

his camera that first day. He's anxious to do all he can to help you, I know that, and, so far as I am concerned, if you get into any difficulty in your bird work, come and ask me about it. I shall be willing to help you, so far as I can, even if you did make me put a bullet into Nero!"

"I'm sorry, sir," said the boy, "but there wasn't anything else I could do, was there?"

"Under the circumstances," the Feather Man answered, " I think you did perfectly right. Good luck to you, my boy, and come to see me again some time."

Shan thanked him and started back to the cabin, revolving in his mind all that he had learned about birds, their coloration and their feathers.

As the boy approached the cabin, however, he became conscious of a hum of voices, a sound strange and menacing near his home, for he knew that Bull Adam resented the presence of strangers. Fearing that something was wrong, the lad broke into a run.

Turning the corner of the path and reaching the point at which the cabin first was visible, he saw two men standing near the door and one, a complete stranger to him, entering the house.

Shan's first feeling was that of anger. He was

convinced that this was some trick of Ned Thompson's, who had come with other men to search the house while the old pot-hunter was away. The boy knew that his uncle had intended to go down the river that day. As he came up, his face flushing angrily, he called to the man who was entering the cabin,

"Here, you can't go in there! Bull Adam isn't home!"

No one answered, but as the boy ran up to the door, one of the men put out his hand, gently enough, and stopped him.

"Yo' wait jest a second, son," he said. "Bull's there, all right. He's been askin' for yo'."

"For me?"

Shan pushed past and into the cabin.

Bull Adam was lying on the bed. The stern face was white, but not a muscle had weakened.

"Hurt, Bull?"

There was a keen anxiety in the boy's cry.

The old pot-hunter never answered a question immediately, and the seconds seemed ages long to Shan before his uncle answered, slowly,

"Right bad, I reckon."

The words were forced out of weakness but they were given with an enforced sturdiness which

showed that Bull Adam, even in straits, would not show weakness in the presence of others.

"Oh, Bull, not—not—"

The man fought for breath, but when he spoke, there was no quaver in his tones,

"I reckon so."

Shan cast a bewildered glance around the room and caught the gaze of a grizzled fisherman standing near the head of the rough bunk.

"He's in a bad way," said the fisherman, in answer to the boy's unspoken question. "There's a bullet through his lung."

"He's been murdered!" the boy cried.

The word rang shrilly through the little cabin. No one had used the word and the men present looked at each other uncomfortably. It was the fisherman who answered.

"As to that," he said, "there ain't no sayin'. I found him, lyin' in his boat, driftin' down the river. He was all shot up. It ain't no accident o' his makin'," the fisherman halted, as though he did not like to continue, " 'cause—he was shot in the back. The bullet's still in the wound, so we reckon it must have been a long shot."

"Where was Ned Thompson?" demanded the boy, hotly.

Once, again, the lad's bluntness took the slow-thinking men aback.

"Yo' can be right sure," the fisherman answered, "that we're goin' to find out. But it might have been accidental-like."

"Ned Thompson shoot a man by accident!" exclaimed Shan, with a sneer.

There came a slow distinct voice from the bed, and every one turned to listen.

"Easy yo', Shan," said Bull; "don't never accuse no man without'n proof. I don't know who did it, an'—" he paused to get breath, "an', if I did, I wouldn't say. I ain't goin'—to ask—no help—o' the law, now."

"We'll take care o' that end of it, Bull," the fisherman declared.

Another man, with the best intentions, stepped to the side of the bed.

"Take a drink, Bull," he said, taking a small bottle out of his pocket.

The old moonshiner stirred.

"Put that outside!" he said in what was an approach to his former stern tone; "there ain't never been no whisky in this cabin, an' there ain't goin' to be, not so long as I'm alive."

The men looked with surprise at one another,

but the bottle was put on the ground outside the door.

Several minutes passed in silence, broken only by the shuffling of feet on the floor.

"There's one thing I want to say," Bull resumed, with painful pauses between the words. "Ever since I was a shaver smaller'n yo', Shan, I've been killin' birds, night an' day, summer an' winter, in season an' out o' season. It doesn't matter who knows it, now, I'm payin' the price."

There was silence in the cabin, for every one felt that the sufferer had not finished.

"I ain't sorry," he went on, painfully, "for that was my job. Right or wrong—it was my job. I raised yo' on it, Shan, jest on that—

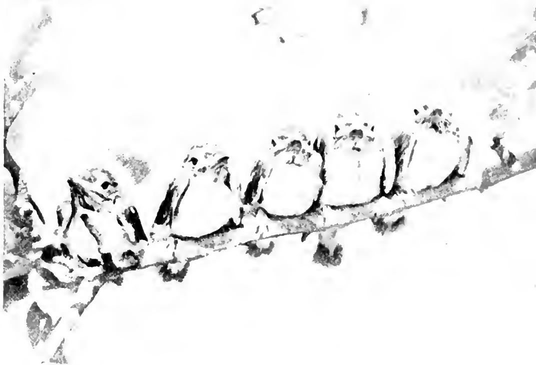
"Yo' understand, Shan, yo' food, yo' clothin', yo' keep, yo' learnin' to read—all that yo've got—comes from shootin' birds—

"I've been a-thinkin' it over.

"Yo've got to pay that back, Shan, got to pay it back— Yo' understand—I spent my life killin' birds, yo've got to spend yours—savin' 'em.

"An'—" he ended feebly, "that's my last will an' testament."

"I'll do it, Bull," said Shan, a dry choke in his throat.



Courtesy of Mr. A. Radclyffe Dugmore.

NESTLING BROOD OF FLYCATCHERS.

Young birds taken from the nest. Upper picture shows brood before they have seen the mother bird; the lower picture after the mother has been sighted. In the nest. their tiny beaks would have been open wider.

The old pot-hunter smiled, just a mere ghost of a smile, and his face resumed its wonted sternness.

After a few moments, he moved again, his fingers weakly trying to get something from his coat.

"What is it, Bull?" asked the boy, leaning over the bed so as to hear the voice, now fallen to a husky whisper.

"The—picture," said Bull feebly.

Shan wondered. What could this picture be? He had never known anything about his parents. Was he going to learn about them now?

Gently, as gently as he could, the boy put his hand into the breast pocket of the old coat and brought out a photograph which he put into the old man's hand.

It was Shan's photo of the little new-hatched Thrushes on their nest.

"Ain't they peart?" he said tenderly, and so, holding it, died.

CHAPTER VIII

SANCTUARY

Shan sat with his elbows on the leveled log which served the Feather Man for a table, staring out vaguely at the chestnut trees. The boy had been looking at a portfolio of water-color paintings of birds, but for at least ten minutes, he had not turned a page. The Feather Man, watching him, said nothing, waiting for the boy to speak.

They had become good friends. In his first distress, and knowing that his uncle disliked the people of the village and respected the Feather Man, Shan had hurried back to the yellow house among the chestnuts on that same day of Bull Adam's death, and the former professor had taken full charge of all the things necessary to be done.

"Mr. Feather Man," said the boy at last, "I can't make out just what I ought to do."

The other had been expecting and waiting for some such remark. He laid down his paint-brush and leaned back in his chair.

"Tell me," he said kindly, "exactly what's troubling you."

"Oh, everything," the boy replied. "I'm all mixed up. I'd always thought I'd worked right hard, looking after the place for Bull, hauling water, cutting wood, fishing every once in a while, shooting rabbits and catching turtles and so on. But now, when that's all over, it doesn't seem to me that I've learned anything more than just to shoot, and fish and trap."

"Well," said the Feather Man, "perhaps you haven't learned much more. What then?"

"I can't go on living that way, not the way Bull did!"

"The cabin and the ground around it belong to you," his adviser rejoined; "at least, no one round here is likely to dispute the claim. Your uncle left you a substantial sum of money, which I've put in the bank for you—it isn't your fault that he made it out of moonshine whisky—and you can go on as he did. He made a living out of it, didn't he?"

The Feather Man watched Shan carefully as he made this suggestion of an aimless life just to test him.

"I can't!" flashed Shan. "You know that, sir,

as well as I do. I told you what Bull said he wanted me to do."

"To spend your life saving birds in order to make up for the time he spent in killing them. Yes, you told me. It's a curious way of squaring up accounts, having some one else pay your debts, but he meant it well."

"The question is, Mr. Feather Man, how am I going to do that and make a living out of it at the same time?"

"How about selling cage-birds?" queried the other, watching the boy narrowly. "There's a good market for native birds which have been taught to sing, Mocking-Birds, Bobolinks and so forth. You'd be saving them from all the dangers of wild life and you could make a living out of it at the same time."

Shan thought for a moment and then shook his head.

"No," he said; "Bull wouldn't have liked that. He was always strong for liberty, and I've got an idea that he would have thought caging a bird worse than killing it. What do you think?"

"I am of the same opinion," was the reply. "I have little to say against the keeping of canaries in a cage, especially those which have been bred

in captivity. Undoubtedly, American species of birds can be raised in cages, and, if they had never known anything of wild life, after a few generations they might become domesticated and unconsciously content therewith.

"Still, the life of a caged bird is generally a torture, because it is a very easy matter to inflict pain on a bird. Of all the pets of Man, birds are the most sensitive to slights, and, in their wild state being always on the alert, they find causes of unhappiness where other pets would notice nothing.

"'Think what suffering,' says Miller," the Feather Man continued, "'must be endured by creatures so delicate as birds in our ordinary careless way of treating them—teased by children, fed and attended by servants (when they happen to think of it); sometimes not spoken to for days and regarded, almost, as a piece of the furniture; cramped into cages so small that they can hardly move about; hung in the burning sun with no shade for their poor little brains, when in a state of nature they are always in the shade of woods and bushes; placed by an open window in a draught by a mistress afraid to let the breezes touch herself; fed on dry, often musty seed, with no variety, which to birds, no less than men, is the spice of

life and necessary to their health and happiness. The wrongs and sufferings endured by caged birds, nearly always from want of thought, are enough to drive a bird-lover mad.'

"As I said, Shan, there is little doubt that you could make a living out of training wild birds for cage birds, and, perhaps, you could argue that you might be doing a good work by raising song-birds, for it is certainly true that the more people there are who keep a bird for a pet and become bird-lovers, the easier it will be to get protection for the birds. But," and he sighed, "I cannot help agreeing with that passage I have just quoted to you. There are very few people who are competent to take care of a bird, very few people who realize that a bird is far more sensitive than a child. It is undoubtedly a thousand times kinder that a bird should be dead than that it should be caged in the keeping of a careless owner."

"That plan doesn't do," the boy said, decidedly. "I wouldn't feel that it was right. After all, I have got to square Bull's account with the birds. The thing that's puzzling me is—how?"

The Feather Man looked kindly at the boy.

"It occurred to me as probable," he said, "that you might find yourself in a quandary as to the

way of carrying out your uncle's last request. I don't want to hide from you, Shan, that it's a difficult thing to do. In order to save birds, all that is really necessary is to give them a fair chance. Protect them against being shot. Kill all the stray cats and English Sparrows. Get rid of Sharp-Shinned and Cooper's Hawks. Put up nest-boxes wherever you can. Plant the bushes, trees and vines which provide food for the birds. If these things are done, there'll be no lack of bird life."

"But I can't make a living out of doing that!"

"No," the Feather Man agreed, "you cannot. I really don't know how you can make a living in saving birds unless you get an official position like a game warden or some post like that in the general work of bird protection."

"Could I get a job like that?" Shan asked hopefully.

"At your age, my boy? Never."

"But I've got to make a living," the lad insisted.

"Of course. Remember, Shan, people can only make a living by doing something that they know how to do. No matter what your work in life may be, you've got to be trained for it. A farmer must know how to manage his farm, a carpenter

must understand his tools. They had to learn. Luckily, you're young enough and the little money your uncle left you will keep you for the time being."

"You mean—I ought to go to school?"

"No," said the Feather Man, "I don't. To speak frankly, Shan, you're too far behind and too old to catch up with the boys of your age. You do understand the life of the woods. You can handle a gun, and a boat and a net. You know a good deal about birds and you want to learn more. Develop the talents that you have and you might become a fair field naturalist. I'll help you, meanwhile, with such schooling as is necessary for that work."

"But I want to be earning something—" Shan interrupted.

"So you should. I haven't finished. I was about to say that you have a place to live in and you have land. Some of that land is marsh, with running water. You could undertake the breeding of duck, domestic ducks, if you liked, and, later, some of the breeds of Wild Duck which can be domesticated. You could sell the eggs. Perhaps, if you were successful in raising some of the rarer breeds, you could find a good market for them.

You would have to clip their wing-feathers, but that doesn't hurt the Ducks. They would live happily enough in a marsh, as happily as Geese do in farm yards or Swans on artificial lakes."

"You mean ducks like the Canvasback?" Shan asked eagerly.

The Feather Man shook his head.

"No," he said; "I shouldn't advise the Canvasback. Remember that though he's a good deal like the River Ducks and is a dabbler, sometimes, he's a sea duck as well and wouldn't thrive in domestication. At least, not as well as Mallards or Black Duck. The Mallard, you know, was the wild breed from which nearly all our domestic ducks have come. It's a ground-breeder. It's easy to feed, because it will eat grain. In the wild state, about four-fifths of the food of a Mallard is vegetable, and the rest consists of water-beetles and the larvæ of big insects, such as dragon-flies. Pond-weed, water-lily and wild rice are its favorite foods, and wild celery is greatly relished. All these will grow readily in the marshy ground below your cabin. You ought to grow some barley and rye and perhaps some rice. Begin in a small way and build up. How does that idea appeal to you?"

Shan made a wry face.

"It—it doesn't sound very exciting, sir," he said; "that just means a duck farm."

"My boy," said the Feather Man, "the excitement and interest in life comes from how you do a thing, not from what you do. I'm pointing out to you, now, what seems to me the best way for you to turn your capital and your land to the best advantage, at your age."

"But where am I going to get Mallards now?" the boy queried. "All the ducks have gone north, long ago."

"You'll have to start with domestic ducks," his friend advised. "Remember, you're not ready for them yet, Shan. You've got to get an enclosure ready, fenced with wire. You will have to build a shelter to which the ducks can go during winter storms. You will have to learn all about ducks and duck-raising, what to do when they get ill, how to make them lay, how to look after the ducklings, breeding questions—you will find there's enough to learn. Like everything else in this world, Shan, there is no success in anything that is half done.

"Any one can run a duck farm and lose money on it; a good many people can manage one and

keep about even; but to make money out of a duck-farm, or out of any other business, needs a great deal of work and intelligent work at that. There's no short and easy road to making a living that I've ever heard of, at least, none that was honest."

"Then I wouldn't earn anything for a year!" exclaimed Shan, with a boy's viewpoint that a year is a terribly long time to wait.

"Possibly not for two or three years," answered the Feather Man; "but that is one of the things necessary to be considered in starting a business. Naturally, a year seems a long time to wait before earning any money and so I have an offer to make you.

"I don't think I've said anything about it to you so far, but I am interested in the domestication of foreign birds in the United States, the introduction of which cannot do any harm to our native bird population, as the importation of the English Sparrow has done. The Ostrich, for instance, is a good example of a bird which can be raised in the United States under domestication. The profits of an Ostrich farm are enormous. One acre of alfalfa will raise food enough for four birds, each bird yielding $30 worth of feathers and from thirty-six to ninety eggs, while grown

birds are worth $800 a pair. Healthy birds will live fifty or sixty years. Such a farm, Shan, is impossible here. Successful ostrich-raising is only possible in a warm, dry country. It would be useless to try and raise Ostriches in the swampy lands of eastern North Carolina. Southern California and Arizona are the preferred states.

"Pheasants have been domesticated here with some success. The English Pheasant, crossed with the Chinese Ring-necked Pheasant and later with a Japanese breed, was brought over here some years ago and has become locally established in Massachusetts, Ohio, Indiana, Illinois, New Jersey, Vermont, Pennsylvania and Kansas, a wide range, as you see. The Ring-necked Pheasant has become acclimatized in Oregon and Washington. The Hungarian Partridge has been imported, but has not taken a firm hold. I am carrying out some experiments in breeding rare species, such as the Argus and the Golden Pheasant and they take up more of my time than I wish to spend away from my books. If I teach you what I want done, you might be able to take a part of that work off my hands. I can pay you fifteen dollars a month and you can have dinner and supper here. Do you wish to do it?"

Courtesy of Barillard Ostrich Farms, San Diego, Cal.

Racing Ostriches in Harness.

"I right would," said Shan, eagerly. "I could stay here altogether, sir, if you liked."

"No," said the Feather Man, "I don't wish you to stay here. I am suggesting this plan chiefly so that, if you get up early enough in the morning, you can do half a day's work on your own place. There is no reason why you should not sleep in your own cabin and make your breakfast there, but it is not a good thing for a lad to be alone all day and every day.

"If you are willing to assist me, Shan, as I suggest, next time that I go into the city I will arrange about your title to the land which belonged to your uncle and order the material for your duck fence. If your work is to be any good it must be solidly done from the beginning. You like the plan?"

"Yes, sir; oh, yes; sir!" cried Shan.

"Good. Now one more thing. I have not yet spoken as to what you can do to carry out your uncle's wishes. In every way that you possibly can, it is laid upon you to try and save the birds. You will agree with me that this is necessary, not because it was a dying wish, alone, but because Bull trusted to your honor."

There was no need for Shan to answer. His

earnest attention revealed his deep-felt agreement.

"I have told you," continued the Feather Man, "that the saving of the birds requires only the providing of means to give them a fair chance and to protect them from unnecessary enemies. There is one way in which you can do that. It is in your power to give such freedom and protection to every bird that flies over the lands where Bull Adam used to roam with his gun that their little lives shall be enriched and made peaceful because Bull Adam has lived. Is not that what he would wish?"

"Yes, sir; oh, yes." Shan's tone was very deep and quiet.

"And that way, sir?"

"That way, my boy, is to enclose all the land which belonged to your uncle, and to use some of the money which he left to buy more land around it—it is not worth more than a dollar an acre—so that you will be the owner of a large piece of land, agriculturally worthless, perhaps, yet useful for the purpose designed. Turn that land into a Bird Sanctuary, a spot of shelter and protection for every bird that flies. You can call it 'Bull's Sanctuary,' if you choose."

"'Bull's Sanctuary'!" the boy repeated. "He'd have liked that, sir, I'm sure he'd have liked that."

"Very good," rejoined the Feather Man, "we will consider the matter arranged. In the morning you shall work at your own place, preparing to establish the duck-farm which will give you a living and, meantime, turning the land into a true Bird Sanctuary. In the afternoon you will come here to help me with my pheasant breeding plans. In the evenings, I will give you some necessary schooling.

"If you really want to learn and work hard, there's a chance that Baker may be able to find you a place in connection with the Biological Survey, that is, when you're old enough and have prepared yourself thoroughly for such a position."

Thus began a very happy summer for Shan. Although it was already late in the spring, the Feather Man advised the boy as to the trees, shrubs and vines he should plant or transplant to "Bull's Sanctuary," for, as he said, "there is nothing that attracts birds so much as having plenty to eat."

"Remember, Shan," he continued, "in order to attract and to keep birds around the place, you

must give them the food which they like. There's a pine ridge running through your land, isn't there?"

"Yes, sir," the boy answered; "it's not very big, though."

"Big enough to shelter thousands of birds," was the reply, "if they can find nesting places and food. Now, as you know, it would be a waste of labor to plant on a pine ridge the species of trees and shrubs which need a moist soil. Moreover, if you think for a moment, you will realize that birds eat most readily the food which grows freely in the kind of neighborhood where they are accustomed to make their nests. So, to attract those birds who make their nests in pine-woods, you will have to plant the trees and shrubs which belong to pine lands.

"Other birds, accustomed to dense deciduous woods, require other foods. You must study their habits and plant foodstuffs desirable to them. Yet others, who nest in marshy country, need plants that flourish best in the marshes. The same thing is true of insect-eating birds, and a wise choice of neighborhood will enable you to meet the tastes of nearly every kind of bird. In your egg collecting work you will have gained some idea in what kind

of surroundings the nests of the different birds are to be found.

"Now the Biological Survey, in order to protect the fruit-growers from depredation by birds, has made an elaborate investigation of the favorite foods of birds. The United States government can give you detailed information on this point.[1] Thus McAtee found that, in a majority of instances, birds prefer the wild fruit—which has no commercial value—to cultivated fruit, which demands a high price. Take cherries, for example. If a large number of birds begin to feed in a cherry orchard, they cause a great deal of loss to the grower. What can he do to protect himself? He can't poison the cherries, for then they would be useless for the market. It would cost a great deal of money to keep some one in the orchard, frightening the birds away. It is forbidden to shoot the birds. What is he going to do?

"Now, let us look at it for a moment from the bird's point of view. He eats the cherries because he is hungry. Would he eat them if he could find something better to eat, something, moreover,

[1] Bulletin: "How to attract birds in different sections of the United States." U. S. Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. Sent free on request.

easier to find? Assuredly not. Now there are no less than three kinds of wild cherry which grow freely almost anywhere that they are planted, the bird cherry, the black cherry and the choke cherry. If there are plenty of wild cherries, the birds will let the cultivated cherries alone. Mulberries are even better. The same thing is true of wild grapes. If there are plenty of mulberries or of fox and frost grapes in the neighborhood of a vineyard, the big cultivated grapes are much less likely to be damaged by birds.

"You've seen birds feeding their young, Shan, so you know how hard the parents have to work in order to fill those hungry little mouths."

"Right hard," Shan agreed.

"So 'Bull's Sanctuary,' if it is to be a Sanctuary in fact as well as in name, should try and provide food for the birds all the year round. Sooner or later you should plant widely the following trees and shrubs: Among deciduous trees, begin with the flowering dog-wood, white thorn, cockspur thorn, holly, mulberry, wild cherry and crab-apple; be sure that among your evergreens you have plenty of red cedar or common juniper. Among the shrubs, you will find most useful the shad-bush, all the cornels, huckleberry, ink-berry, black

alder, bayberry, prickly gooseberry, swamp black currants, wild rose, blackberry, thimbleberry, snowberry, the viburnums and the sumachs. Birds will eat poison sumach readily, in spite of its poisonous properties, but it is just as well not to plant any, for it spreads too fast already. Among the vines, wild grapes, Virginia creeper and false bittersweet will be among the best. Of course you ought to plant the larger trees, though it will be a long time before they are big enough to be of use, and especially, gray birch, European ash and spruce. Among herbaceous plants, hemp, millet, and sunflowers are good, they keep their seed through the winter, quite often, and seed themselves year after year.

"Now, you may think this is rather a large order, Shan, though it is only a small fraction of the valuable list prepared by Kennard, an authority on this subject. Suppose you start with twelve plants, three which will give food to the birds in spring, three in summer, three in fall, three in winter. I want you to learn these and remember them. Repeat them after me:

"For spring food: Washington thorn, dwarf sumach, and false bittersweet."

Shan repeated the trio.

"For summer food, white mulberry, blue cornel and red-berried elder. For autumn, flowering dog-wood, bird cherry and viburnum. For winter, black alder, black haw and Virginia creeper.

"Any one who plants any of these anywhere is a benefactor to the birds. Just think, Shan, of the difference it would make to our little feathered chums, who have to work so hard to get enough to eat, if the boys of America would plant these shrubs and vines in gardens, in wood-lots, in the hedges or anywhere in the open country. If boys would do that, even for ten years, there would never be a famine in American bird-land as long as they lived."

"I'll plant 'Bull's Sanctuary' full of them," said Shan.

With this definite ambition before him, such as the planting of all these trees, shrubs and vines for the Sanctuary, the planting of pond-weed, wild rice and wild celery for his duck ponds, to say nothing of the building of the duck fence, Shan's summer was fully occupied. He proved a conscientious and careful attendant in the pheasant pens and learned a great deal in the evenings.

One day, as the hottest part of the summer approached, the Feather Man said to the boy,

"Shan, do you like bathing?"

The boy stared at his questioner with surprise.

"Right much," he answered; "I take a swim every morning, sir; you know that."

"Did you ever stop to think that your birds might like to take a bath?"

"A bath, sir?"

"Yes. Birds need good water to drink as well as good food to eat, and, if there is any place where they can have a bath, they will come from miles around to it. You ought to have at least half a dozen bath tubs in the Sanctuary."

"What's a bird's bath-tub, sir?" asked Shan.

"Any hollow space, clean, with a rough bottom, not more than two and a half inches deep at the deepest point and shading off to nothing at the shallows, filled with clean, fresh water," came the categoric reply. "That doesn't seem a great deal to ask. But you'd be surprised, Shan, if you tried to find a place like that in the woods, to see how few there are. Any little puddle which is only two and a half inches deep is dried up by one day's sun. If it is a regular marshy place, the edge probably is soft mud into which a bird dare not step because his little feet would sink right into it.

"You often see birds taking a bath in muddy

puddles in a road—it is not that they like muddy water, but because such spots are the only places where there is water shallow enough for them to bathe. Just as every garden and park in America should be planted with the bushes which provide food for birds, so there should be a bird-bath. A park without a bird-bath is a disgrace to the community in which it is found, a private estate without one shows that the owner is thoughtless."

"Will you show me how to make one, sir?"

The Feather Man looked at the lad kindly.

"We will make one together, Shan," he said, "somewhere where there is running water, if such a place can be found in this flat land. Then, I may feel that I have a share in 'Bull's Sanctuary,' also."

But, easy though it is to make a bird-bath in a city, where running water may always be had; or in a hilly country, where springs may be found; in that marshy North Carolina coast, no running water was to be found, no stream with a current swift enough for canalization.

"We shall have to build a wind-mill, Shan," said the Feather Man.

It was truly a miniature windmill, when done, not much more than a toy affair with sails a couple

Courtesy of Nat. Asso. of Audubon Societies.

BOYS PUTTING UP BIRD-HOMES.

The American youngster has become one of the most forceful and valuable assistants to the agriculturists of the United States.

of inches across, but it sufficed to turn a little endless chain of tiny cups which poured out a slender trickle of water which it raised from a well only a few feet below the surface. The windmill being on the weather-cock principle, turning on a pivot, it was arranged to revolve, no matter from what direction the wind blew. A couple of planks soaked in creosote, nailed together at an angle and propped up a few feet above ground led the water some twenty feet away from the clattering little windmill to the bird-bath. This consisted of a big flat saucer made of concrete, which Shan and the Feather Man made by mixing Portland cement, beach sand and gravel. This saucer was fixed on the top of a stump about six feet high. Around the stump was nailed a piece of sheet zinc, so that cats and squirrels could not climb up it to take the little birds at a disadvantage while their feathers were wet. A little groove at one side allowed the overflow water to pour out, thus keeping the bath fresh.

All this took time and trouble, but when it was finished, the Feather Man turned approvingly to the lad.

"There," he said, "as long as the wind blows and the little windmill turns, the birds for miles

around will have fresh water and their bath in 'Bull's Sanctuary.' "

But Shan was not content with this alone. Realizing that almost any little hollow place with a firm bottom—a shallow hole in the ground, with a flooring of shells, for example, which would hold rain water, would serve as a bird-bath, he built them all over the place, remembering always to put them in the open, far removed from bushes, when they chanced to be made on the ground.

With the approach of winter, Shan became so busy that he had scarcely time to attend to his duties at the pheasant pens. His hands were full.

"I wonder," the Feather Man had said to him, when summer was over and the leaves were beginning to color with the autumn tints, "I wonder, Shan, if you've ever thought what a terribly difficult thing it is for a bird to find the right place to put a nest?"

The boy stared at his friend with surprise.

"Why, Mr. Feather Man," he asked, "how's that? The woods are full of them!"

"Are you so sure?" came the answering query. "Have you never watched birds in the early days of the nesting season? Have you never noticed how they search here and there, almost desper-

ately, and when, at last, they do settle on the place for a nest, frequently the site proves to have been ill chosen? There's a reason for that, my boy. It is not because the birds have poor judgment, but because that there are few good nesting sites to be found.

"The birds which suffer the most are those who make their nests in holes in trees. As you know well, Shan, it takes a big tree and an old tree and a dead tree to be suitable for chipping out holes or to have holes which have resulted from decay. When lumber companies exploit a forest, they cut down all the big trees for timber. Smaller trees are cut for telegraph poles or for fence posts. Trees that have become decayed soon fall, which leaves the forest without big trees gradually to come to death and decay. Only spindling second growth timber remains. Little by little the possible nesting sites dwindle down until they are all gone and the birds have to take unsuitable and precarious places. When you remember that all the eastern part of the United States has been cut over, Shan, you can realize that hollow tree nesting sites must be rare.

"The Biological Survey has given a good deal of attention to this problem, for the forests

and the farms would suffer if these birds were driven away. It has found that many birds will accept substitute nesting sites, some even of the simplest character. Flower-pots lying on their sides or old tin cans nailed endwise to a tree have been used by House Wrens, Tree Swallows and Bluebirds. But to secure the best results you should get the practically perfect Berlepsch boxes[1] or follow the plans which the United States Government has prepared for its feathered tenants—the birds.[2] But, in general, any box 14 inches high at the back, 12 inches at the front, 6 inches wide and 6 inches deep, with a hinged sloping top 11 x 7½ to keep off the rain and a perfect round hole in the front 1½ inches in diameter will make a good home for a Bluebird; or if the hole is 1¼ inches, it will do for a Chickadee, Nuthatch or House Wren."

"And do you just nail them up anywhere?"

"Not a bit of it," was the reply. "You've got to consult birds' ways. Bluebirds like their nests

[1] The author detests "free advertising," but for the sake of the birds is willing to mention that reliable boxes are made by the Audubon Bird House Co., Meriden, N. H. The market is flooded with imitations.

[2] Farmers' Bulletin No. 609, "Bird Houses and how to build them." U. S. Biological Survey, U. S. Dept. of Agriculture, Washington, D. C. Sent free on request.

from eight to twelve feet high, on trees near clearings, apple trees, even on houses and barns. Chickadees prefer swampy woodland, five or six feet up. Nuthatches choose dense wood at the edge of clearings, probably fifteen feet high. Every bird has his own ideas, and, if you want to content the birds in 'Bull's Sanctuary,' you must see to it that every different species of bird shall be able to find not only what he wants to eat, not only an opportunity for a drink and a bath, but also a place to make a home.

"Of course, Shan," the Feather Man continued, "I'm telling you all this for your big sanctuary plan, but if you should ever leave here and go to live in a city, or a small town, you can do just the same. No matter where you go, in any part of this country, birds need food, birds need water and birds need nests. Anywhere that a boy happens to live, he can be a patron of the birds.

"A boy who plants shrubs, vines or trees which give food to the birds, who builds a safe bird-bath, or who makes a proper bird box and fastens it in a proper place in the proper way, is like one of the patriarchs in olden times, who dug a well in the desert. The boy's name may not be handed down from generation to generation by the birds, for

they do not know it, but he may be assured that a flood of gratitude would be his, if his feathered chums knew how to show it. Any boy who knows what the birds need, who knows how easy it is to give it to them, and who does not help to make his little friends happy, is scarcely worthy the name of an American boy.

"No one, who has not tried it, has any idea how easy it is to surround one's home with wild songsters. There are only four things to do. Give them food. Give them water. Give them protection. Give them places to build their nests. It will repay you—if you are of that mean spirit which deems that nothing should be done without pay. The birds will keep your garden free of insects, they will snap up any uneasy mosquito that dares to buzz around before bedtime and they will reward you with their sunny presence and song without further labor on your part. There is not a living creature which responds to kindness so quickly as a bird.

"It is a mistake to suppose that birds are wild. They are naturally tame and friendly with Man. They learned, and not without reason, to be afraid of him; they can learn, just as easily, to be quite at home with him. What's more, they will chum

up with a boy even more quickly than a grown person.

"My friend Baynes, who knows nearly all there is to know about attracting bird guests around him, thinks as I do about boys. 'Somehow,' he says, 'I can never become very much worried over the question of the small boy with his air gun and sling shot. I know he does a lot of harm, but, as a rule, he isn't pigheaded, and as soon as some one he believes in takes the trouble to explain the situation to him, he'll turn round and become a bird protector of a very useful kind.

" 'The harm he does is usually the fault of the people who have brought him up. He may or he may not have been told not to kill birds. It's altogether too easy to tell boys not to do things; that's why so many people do it. It's much harder to give them good, convincing reasons, and then offer a satisfactory substitute for the thing forbidden.' "

The Feather Man broke off.

"That," he remarked quietly, "was why Baker gave you the camera. You have left off robbing nests of their eggs not because you were advised against it, but because you found bird photography was better. Isn't that so?"

"That's how it worked out with me," the boy agreed.

The other nodded and continued,

" 'A healthy, normal boy,' Baynes goes on to say, 'is active in mind and body and he must have an outlet for both kinds of activity. He'd much sooner have a live bird perched on his hand than a dead one in his pocket, but unless his parents or guardians teach him how to get the live one, he'll probably take a gun and come back with a dead one.

" 'Get him an interesting bird book or two and let him learn something about birds. Take him to an illustrated lecture on birds occasionally. Arrange, if you can, to have him meet the man who wrote the book or gave the lecture. Both the writer and the lecturer may be far too busy to talk to a man, but if they're of the right kind, they'll seldom be too busy to encourage a boy or answer his questions.'

"Probably you know better, Shan, but there are a great many people who imagine that birds need no protection, that there were birds in the world before the human race and that they will continue indefinitely. Because they flit brightly from place to place, because their songs are cheerful to our

ears, poets have described a bird's life as a happy and an easy one.

"It is nonsense to talk about happiness or misery, as we know the words, in a bird's life, for we have no means of judging it. To ascribe human characteristics or human ways of reasoning to birds, Shan, is to do something that has a very ugly name. It is 'nature-faking.' But it is equally nonsense to declare that a bird has an easy life. Often the little twitterings and cries which please us in the woods are cries of alarm and fear.

" 'Put yourself,' says Thompson, 'in the oriole's place. It is May. The leaves are coming out on the maples and the tassels adorn the oaks. It is early morning of a cloudless day.

" 'The Oriole spreads his bright wings and starts in search of breakfast. From twig to twig, from spray to spray, he flits, finding here a little larva, there a little grub, just enough to keep him hungry.

" 'A Blue Jay attacks and drubs him, a house cat makes a lunge at him as he flies by a garden wall. Frightened almost to death, he seeks the depths of a thick grove, where a Cooper's Hawk tries to catch him, and, escaping from it, he flies

almost into the claws of a Blue-Tailed Darter. And so, all day long, he flits from place to place, all the time in deadly fear—' which we haven't any right to say," the Feather Man remarked, "but certainly all the time in deadly danger—'till night comes and hangs its shadows in the woods.

" 'Thus, from dawn till dark, he sits on a bough and hears owls hoot and foxes patter about and the raccoons clamber among the neighboring tree-tops. What a day of watchfulness and terror, what a night of fear!' "

"Hard on the birds!" interjected Shan.

"It is somewhat overdrawn, but it cannot be denied that birds are beset on all sides by foes, continually pressed by hunger, roaming continually by day and exposed to perils at night. Let a good, clean-cut American boy once understand that birds are in need of his help against bullies, let him once get started on active work, and there'll be no lack of enthusiasm.

"You'll find that out for yourself, Shan. When, next winter, amid all the bitter hardships brought about by frost and snow, you see the birds pecking berries from the shrubs and vines that you've planted and you realize that your forethought has

Courtesy of Mr. E. H. Baynes.

WEATHERCOCK BIRD-FEEDING STATION.

The long projections, like handles, catch the wind and turn the box (which is on a swivel) so that the birds and the food are always protected.

kept them from starvation, you'll say to yourself,

"'Those are my birds!'

"And it wouldn't be healthy for any one you saw approaching with a gun.

"When you see little birds, in the heat of a scorching day in summer, cooling their parched throats and laving their dusty feathers in a bird-bath that you've built, you'll say to yourself,

"'Those are my birds, too!'

"When, some spring day, you hear the faint 'peep' of a newly hatched Chickadee or Bluebird from a nesting-box that you've made with your own hands and put up yourself, you'll feel pretty much as if they belong to you, as if they were your own home folks, and woe betide the cat which would come near that nesting-box, eh?

"Every boy hasn't the same chance as you, Shan, to build up a big Bird Sanctuary in the forest, but every boy, if he wants to, can find some green corner that he can make his own; can do some one of these three things to bring the proud words to his lips, over and over again, winter as well as summer,

"'Those are my birds! Mine!'"

CHAPTER IX

A FAR ADVENTURE

"The question is," said Shan, as he stood thoughtfully over the prostrate body, "where do all these cats come from?"

He turned the body of his victim over with his foot, noting with pleasure, as he did so, that the bullet had drilled clean through the head. Death must have been instantaneous.

"I've killed more than a hundred cats in this Sanctuary during the last three years," he pondered, "and every one of them has been full-grown. Where do they come from and how do they get in? And I never heard of a sandy-colored cat being seen around here before!"

There was ample reason for Shan's bewilderment. "Bull's Sanctuary" was now surrounded with a cat-proof fence, impossible as that phrase may sound to one who has seen cats climbing up fence-posts or scaling tightly stretched wire.

The fence which Shan had put round the place,

was, so far as every precaution could make it, really cat-proof. It consisted of a strong fence of woven netting five feet high. This, of course, would not have kept out cats, but Shan had nailed a light thin upright pole to every fence-post and stretched fish-nets loosely from pole to pole.

For miles around, from every cabin or shack where a fisherman lived, Shan had gone to ask for a contribution of any old, ragged netting which had been thrown away and was rotting in a shed or on the ground. North Carolina fishermen are wasteful, and buy new nets rather than give themselves the trouble to mend old ones. Shan's requests had necessitated an explanation of the purpose for which the old nets were to be used, with the result that "Bull's Sanctuary" was becoming well known, up and down the coast and the Sound waters.

Moreover, the people of the neighborhood felt a strong sympathy with Shan, largely because of the stand he had taken with regard to Ned Thompson, after the death of Bull.

One of the men, a Justice of the Peace, had come to the cabin, the day after the funeral, to signify his willingness to give Shan a warrant for the arrest of Ned Thompson, if the boy wanted to swear

one out. Shan knew that the Feather Man also wanted him to do so, and affairs would have looked black for the game warden, even though it would have been difficult to prove the shooting to have been a murder, for there was no way of determining at what time the mortal shot had been fired.

The boy, however, was obstinate about this.

"Bull said," he replied, in answer to the persistent advice of the local justice, "that he had been against the law all his life and didn't want to call on its help now. There were lots of people heard him say that."

"I know," the magistrate said, "but, even if he did, that's no reason why a murderer—if he is a murderer—should go scot free! Can't you see that?"

"Yes, sir," Shan answered—he was catching the knack of politeness, now—"I can see all that, only I've got to do what Bull said."

And, from that position, nothing could move him.

As soon as the story went abroad, it put every man in the neighborhood on Shan's side. Few of them had any respect for the law. It was as much as a revenue man's life was worth to enter that country, and wild and desolate as was that part

of the world, a moonshine still could be found at every twenty miles.[1] As for the rest, those who did not make moonshine corn whisky or "monkey rum," drank it.

Shooting a revenue officer, however, and murdering a resident against whom there was no declared feud, were two different things. Shan had refused to deliver Thompson up to the law, he was too young to be urged to undertake a feud, so the community decided to take care of the case for itself.

A few nights after Shan had refused to take the judge's suggestion, half a dozen men broke into Ned Thompson's house, took his clothes from him, smeared him liberally with tar and emptied a pillow-full of feathers over him, plastering them on until he was fully covered. Then they tore down a fence-rail, set him astride of it, with his ankles tied, and escorted him ten miles out of town. They left him there with a large piece of corn-bread and no clothes. Which was the last that section of the country ever saw of its game warden.

It was not to be expected that such a man would

[1] While this book was in press, two revenue men were killed and one seriously wounded by moonshiners in North Carolina. In one county, moreover, two hundred moonshiners were arrested during the first six months of 1918.

be content without revenge. Shan was a little afraid that Ned Thompson might shoot him from behind a tree, some dark night, when he was returning from the Feather Man's cabin to his own. He was partly assured, however, by the thought that while that country is easy to hide in, it is difficult to escape from, and Thompson would not deliberately come down to be shot.

These cats, however—that would be a revenge. "He's just mean enough to do it," said Shan, and continued on his way to the yellow house among the chestnuts. He was sure that the animals must have been thrown into the enclosure, for no feline could climb the upper part of that fence, too swaying and pliable for a cat's weight or his claws.

In the three years that had passed since Bull's death, Shan had grown into a sturdy young fellow. He had studied hard under the Feather Man and had worked hard, besides. The duck farm had proved a success, though, as his adviser had warned him, he was only just beginning to see a sign of his profits. Living with him in his cabin, now, also, was an old fisherman too crippled with malaria and rheumatism to be able to look after a boat or draw nets, but who, none the less, was

well satisfied to potter about the pens of ducks, cook the meals—Shan ate entirely at home, now—and be a companion to the boy. Old and bent as he was, Job Midgett could do an immense amount of work, without seeming to be occupied.

"I think your suspicions about the cats are so far right," the Feather Man answered, that evening, when Shan related his trouble anew, "that I feel sure the epidemic of cats would stop if you went away."

"Went away?" repeated the boy in surprise; "where?"

"You don't want to raise ducks all your life, I suppose, do you?" the Feather Man asked, with a smile. He had been the recipient of many an impatient speech on this subject.

"No," said Shan, emphatically, "I don't!"

"Well," rejoined his friend, "I don't think you need to. Perhaps it would be the wisest thing for you to do, though, there'll be a steady profit in it from now on, and—"

Shan interrupted him.

"Mr. Feather Man!" he said imploringly, "you've got something else to propose or you wouldn't have said anything about my going away."

"Yes," the other agreed, "I have. It's nothing very attractive so far as wages are concerned, but I think it will appeal to your adventurous sense."

"Adventure! Oh, sir!"

"Yes," his old friend answered, "real adventure, may be."

Shan pulled off a leaf of a neighboring tree and commenced to chew it, as he had done since childhood. He could not disguise his eagerness.

"A week or two ago," the Feather Man continued, "I received an offer from one of our state universities to accompany a scientific expedition to the bird rookeries in the Laysan archipelago. I have been anxious for some time to make some studies on the flight and plumage of the Black-Footed Albatross and the other birds of that reservation."

"Yes, sir," said the boy, impatiently.

"Well," the Feather Man continued, speaking with provoking slowness, "I dropped a note to Baker, suggesting that since the expedition was to be accompanied by one or two Biological Survey men, you might be permitted to go as assistant photographer. I've got his answer here."

"And he says—yes?" Shan asked.

Courtesy of American Museum of Natural History.

TOUCANS, PARROTS, AND MOTMOTS IN MEXICO.

Habitat group in the museum, showing birds frequently found in forested Central America.

"He says," the Feather Man rejoined, "that there is no reason for the Biological Survey to send a photographer, as the state university which is equipping the expedition will send its own man."

Shan's face fell.

"But," the Feather Man continued, holding up one finger, "he says, also, that if you care to pay your expenses as far as Honolulu and back, you would be under no expense while at Laysan, either on the revenue cutter which will take you there or with the expedition's camp on the island. Do you want to go?"

"It'll cost a lot, won't it?" asked the lad, after one of his characteristic long pauses.

"Yes," the Feather Man replied, "it will cost you all your duck farm profits for the next three or four years."

Shan looked troubled, chewing hard on the leaf, meanwhile.

"Do you think I ought to go, sir?"

The Feather Man leaned back in his chair and looked thoughtfully at the boy.

"That's just the question I've been puzzling over during the last few days," he said. "You're very apt to do as I advise, and, in a matter like this, you ought to be guided. But I don't quite

know what to say. You don't necessarily gain anything by going, you have no official position and it will be a tremendous expense, more, far more, than you've any right to spend on a trip, or a holiday. All that is true.

"On the other hand," he continued, balancing the two issues upon his forefingers, "upon the other hand, it's an exceedingly good opportunity for you to see the world under very pleasant auspices, it puts you in touch with men who are really doing the big bird work of the country, and it gives you a chance to show what you can do in bird photography. It would be a feather in your cap, Shan, if a North Carolina boy could go out there and do better than the photographer provided by the western university expedition, wouldn't it?"

"Oh, if I could!" cried Shan.

"Considering all those reasons," the Feather Man continued, "I've come to the conclusion that I should advise you to go. Opportunity doesn't knock at doors too often, especially in an out of the way place like eastern North Carolina, and if, when opportunity comes, it means a sacrifice, well, that's no harm. Suppose you do spend all your spare cash, you can come back to your little cabin

and to your duck farm. Don't forget, Shan, that's a growing business and though, in your three years' hard work you haven't made much money out of it, you've insured for yourself a living should this trip lead to nothing."

"But, sir—" began Shan, and stopped.

"Well, my boy?"

"My camera isn't good enough for such work as that, not even my new one. You remember, you advised me not to buy that big one we saw advertised, last fall."

"I know I did, my boy," the Feather Man replied, "and I was just coming to that point."

He referred again to the letter.

" 'I have no objection to your telling Shan,' the letter reads," he said, " ' if, after consulting with him you feel that he would be wise to go, that I shall be very glad to lend him such of my photographic outfit as he may need. I should only stipulate, in such a case, that the plates remain the property of the Biological Survey.'

"You see, Shan, there is no difficulty about the camera question, because Baker's got one of the best outfits in the United States. Still, as you know, the lens is not enough. It's the hand behind the lens that does the trick."

Shan pulled another leaf which he bit with redoubled vigor.

"With a good camera," he said slowly, "I wouldn't be afraid to try anything. Of course I haven't had much experience—"

The Feather Man interrupted him.

"How many bird photos have you taken during the last three years?" he asked.

"Over five hundred," Shan replied.

"There are very few bird photographers in the business who have taken more than that," the other replied. "I'm aware that you know very little about photography in general, but so far as bird work is concerned, you've had a pretty solid training, and, what is important, you've learned patience. With a good camera and equipment, with an opportunity to work on a scientific expedition, and with good backing, you ought to be able to get results.

"To tell you the simple truth, Shan," he continued, "I rather think Baker would be disappointed if you didn't go. And," he added with a smile, "perhaps I would be a little disappointed myself."

A considerable wait ensued. Shan's mind revolved slowly and he did not answer promptly.

"I'll go," he said, at last, "if it takes every cent I've got and can raise."

"Good," said the Feather Man. "We will leave next week."

"Next week!"

"Why not? There isn't anything that you can't leave to Midgett, is there?"

"N-no," said the boy, dubiously.

"Then," came the brisk reply, "do everything you have to do and be ready to start away by Monday."

The time of preparation passed like a breath, and the long railroad journey across the continent was like a dream to the lad who had no memory of any place save the woods and marshes near the pot-hunter's cabin. It was not until he found himself aboard the steamer bound for Honolulu, had met several of the members of the expedition and the long slow days of the ocean passage had come that Shan fully realized the change that had come into his life.

The Feather Man, at whose suggestion Shan had been given this opportunity, was anxious that his pupil should distinguish himself, and, on the long railroad journey, as well as on the boat, he had spent nearly all the time instructing the lad with

regard to such phases of bird study as had been left untouched.

It was about the third day out that, in course of the conversation, Shan turned to his friend and asked him,

"Mr. Feather Man,"—he never called him anything else when they were alone—"just where did birds come from?"

"That's rather a vague question," the other replied; "suppose you put it a little more clearly."

"What I want to find out, sir," said the boy, "is, where and when the whole bird group first appeared on the earth. There was a time, wasn't there, when there were no birds?"

"Certainly."

"And then there was a time when there were birds?"

"Yes."

"If every form of life has developed from some other form, then birds must have evolved from something that lived on the earth before them."

"Undoubtedly."

"What was that something?"

"Birds, as a class, developed from the class of reptiles," the Feather Man answered. "That doesn't mean that a Sparrow is descended from an

alligator, you understand, but that in the long ago, before there was any kind of mammal on the earth, the first birds began."

"What were they like, sir?"

"Like lizards, as much as you can say they were like anything else," was the reply. "The most primitive bird that we know was called the Archæopteryx, and his fossil remains have been found in a slate deposit in Bavaria. He was a true bird, having feathers, for imprint of the feathers is still to be seen on the stone, and you know that feathers are the distinguishing signs of birds. There are no birds without feathers, and there are no feathers to be found in Nature except on birds.

"Yet, though the Archæopteryx had feathers, in other respects it was unlike any bird now existing. It had no beak, but, instead, possessed strong jaws, armed with sharp teeth set in sockets closely resembling those of an alligator. Furthermore, it possessed three distinct and separate fingers on each wing, which it was able to use for climbing purposes, whereas, in all birds now living the parts of the fingers which remain are bound together."

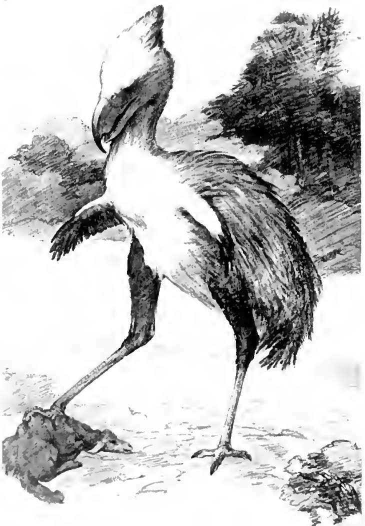
"Then it was not a bit like any bird of to-day!"

"It was very different," the Feather Man an-

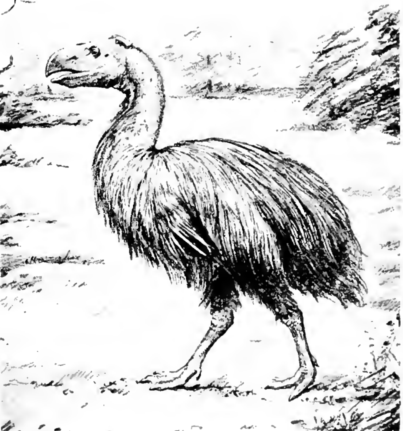
swered cautiously; "but you cannot justly say that 'it was not a bit' like any modern bird. Take these two questions of teeth and fingers. As I have told you once, there lived until recently on the island of Samoa, a bird with teeth, certainly not possessing a reptile jaw like the Archæopteryx, but still, a toothed bird. It was called the Tooth-Billed Pigeon, or Manu-Mea, and, most unfortunately, the introduction of cats into the island has practically made the race extinct. Still, you see, Shan, birds with reptile-like teeth existed until comparatively recently.

"Then take the question of fingers. As you know, a bird has the bones only of one small thumb and two other fingers which are bound together. These are used as part of the framework of the organ of flight. Yet there is one primitively organized bird, still living, called the Hoactzin, with fingers that are reminiscent of this fossil ancestor. Young Hoactzins climb all over the trees by the use of a clawed thumb, which projects from the bird's wrist.

"Next," he continued, "there is the question of the tail to be considered, not only the feathers of the tail but the bony structure. I've taught you enough anatomy to show you thoroughly the im-



Courtesy of American Museum of Natural History.



GIANT BIRDS NOW EXTINCT.

Phororhacos, a carnivorous ground-bird, allied to modern secretary-bird of Africa. The animal under his claw is a small horse the size of a timber-wolf.

Diatryma, the huge horse-headed toothed bird, formerly a resident of the United States. This was probably the most powerful bird that ever lived.

portance of small differences in a bird's skeleton.''

''Yes, indeed, sir,'' the boy answered; ''that's what all the classification of Orders practically is based on.''

''Exactly. Now, if you remember, in that tiny chick you examined under the microscope, one time, that chick we took before it was half hatched, you could see that the tail was made up of six or seven bones, one behind another like a lizard's tail. In the chick we examined that was almost ready to come out of the shell, these six or seven bones had become fused together into a bony plate, on which the feathers would afterwards he supported in the form of a fan.

''In the Archæopteryx, when it was full grown, the tail was similar in formation to that which is now to be seen in the unhatched chick, the bones lay one behind each other, they were not compressed into a single bone. As a matter of fact, the tail was very long, in proportion as long as a lizard's tail and much of the same structure. Each bone carried a pair of feathers, one on each side.

''Now, Shan,'' the Feather Man continued, ''take the question of scales and feathers. A feather, as you know, is only a modified scale, and such a thing as a completely feathered bird does

not exist. Every bird has some scales, especially on the legs. A Fowl's leg is scaled like the body of a snake. Sometimes scales may even be found in the wings. A Penguin's wing is totally devoid of quills and at first sight it appears as though there were no feathers at all on it. Careful examination, however, reveals that it is covered with little scaly looking feathers, not unlike the scales on the legs. They are feathers, however, and show very curiously the close relation between a feather and a scale. In a few other birds, the quills form a complete covering. The Ostrich, Emu and Cassowary chick may be regarded as covered with scales, when hatched, though these scales are quills. As such they must not be confounded with porcupine quills, for example, which are modifications of hair.

"But the Archæopteryx was not the only primitive toothed bird. There were a great many others, among them Hesperornis the Great Toothed Diver, also primitive in form. Such forms as the Phororhacos and the Diatryma represent early types of birds which show dimly their relationship to early reptilian ancestors."

"You were speaking a little while ago," the boy said, "of the Tooth-Billed Pigeon of Samoa, and

you said he was a relative of the Dodo. Most of those queer birds seemed to have lived on islands. Are there any of them where we're going?"

"Yes," the Feather Man replied; "there is one, a flightless Rail, much like the Sora, only smaller, which is called wingless. Where it came from is a mystery. It may have flown from Hawaii, thousands of years ago, for there is a related species there which is fairly common. As time passed on, this little Rail, finding no use for its wings, allowed them to pass into disuse and they atrophied, which condition, being repeated down through numbers of generations, made the descendants flightless birds.

"It is not the land birds, Shan, which have been the reason for the government's setting aside these Hawaiian islands as a bird reservation, but rather because it is a notable refuge for sea birds. The reefs and waters about Laysan and the other islands fairly teem with fish, crustaceans, squids, and other forms of sea life, thus affording food in abundance for sea fowl as well as solitude and protection for them and their young. For ages past these ocean wanderers have found the islands an ideal home, and at certain seasons swarmed there, covering every bit of available territory,

and, in all, forming perhaps the most remarkable bird rookery in the world."

"And that's where we're going!" Shan cried, in delight.

"Yes," the Feather Man agreed; "I've never been there myself, but it must be a wonderful sight. On Laysan Island, alone, several millions of birds breed every year. Naturally, because the island is small, it would be impossible for all the birds which resort to the island to nest on it at the same time, and as the result of ages of experience, each species comes in its regular turn and thus secures room.

"Even so, nesting place is scarce, and the birds live like flat-dwellers in a town. The Petrels and Shearwaters nest in underground burrows, Terns nest on the ground, in the bushes may be found the nests of the Laysan Finch and the Miller Warbler, while the uppermost accommodations are taken by the Boobies and the Man-o'-war birds."

"Well," declared the boy, "if I don't make some great photos there, it won't be my fault!"

"On the contrary," the Feather Man answered, "if you don't, it will be your fault. The birds are quite tame and they have a curious nuptial dance, called the 'cakewalk.' "

"That's to please the hen-bird or to call her, I suppose," said Shan, "like the drumming of the Ruffed Grouse?"

"Perhaps," was the reply, "or it resembles the showing off of the Peacock and Turkey. It is more like the extraordinary antics of Reinhardt's Partridge, a Greenland and Labrador species, which runs around the female bird in swift circles, his tail spread and his wings trailing. As he becomes more and more excited, he ruffles every feather of his body and, with outstretched neck and breast pressed against the ground, he thrusts himself along, growling like a beast."

"And how does the Laysan Albatross do its cake-walk?"

"That," the Feather Man answered, "I expect to be able to study in detail from your photographs. You see," he continued, "I don't think the expedition's photographer is likely to do more than take the ordinary views of birds nesting, birds flying and so on. If you can select a single nest, or group, and make a continuous study of it, following every move of the birds, as you did with the Thrush family, it would make a very valuable record. A really first-class series of photographs is a gift to science, as deathless as a book. Only—

they must be genuine, they must be clear, they must not be retouched and, above all, they must be complete. That requires care, skill and patience."

"I haven't been able to do much with sea-birds flying round the ship," said the boy; "I had been hoping to get some good photos, but nothing worth taking has come along."

The Feather Man nodded approvingly.

"I'm glad to hear you say so," he rejoined; "there is no surer sign of a poor photographer than his taking photos which are worth little in themselves. It's a thousand times better to spend a week getting one good photo, than to fritter away time on a couple of dozen ordinary views."

"I'm not going to waste anything," the boy assured him; "Mr. Baker said he wanted to see every plate, whether spoiled or not, and I want to make good."

"You will, my boy, I'm sure," the Feather Man said heartily; "and, as you know, I'll do all I can to help you."

It was when they finally reached the Hawaiian Island Reservation, however, that Shan realized how much the Feather Man's support and endorsement was worth. The chief of the expedi-

tion, an ornithologist of wide repute, consulted the older scientist on every point and with the greatest respect, and Shan found nothing but friendliness and cordiality among the other members of the expedition. The photographer, an aggressive young Scotchman, was much more interested in chemistry and principles of photography than in the habits of birds, though he was an excellent photographer. On the passage he willingly taught Shan the fundamentals of chemistry so far as they related to photography. He liked to show off his knowledge and Shan wanted to learn, so they became fast friends.

The Hawaiian Island Bird Reservation, one of Uncle Sam's little-known possessions, consists of a dozen or more islands, reefs and shoals, stretching westward from Hawaii for the distance of a thousand miles toward Japan. A few of the islands possess a scanty soil, but most of them are mere masses of volcanic rock. Laysan, itself, is a raised coral atoll, about two miles long and a little less broad, in shape like a shallow oval dish. It is at no point higher than thirty feet above the sea. The central lagoon, characteristic of coral atolls, and which is about a hundred acres in extent, is now unconnected with the ocean. The

sandy soil gives rise to a flourishing growth of shrubs, vines and grasses, but the trees which the first explorer found there, a hundred years ago, have all disappeared.

When the low shores of Laysan appeared before them, Shan, though expressionless as ever, was in a state of the most lively anticipation. Lacking any leaf to chew, he had found a piece of tarred string, the flavor of which reminded him of the North Carolina pines. At last the Revenue Cutter dropped anchor and the first boat went ashore, with the members of the expedition.

There, tragedy awaited.

Far and wide, to right and left, lay great heaps of dead birds. Half-bleached skeletons lay in piles all over the island. The whole place reeked of destruction and slaughter.

The Feather Man stepped out of the boat and looked around.

"Plume pirates!" he said.

The devastation was appalling. Shan, wandering over the shore, came to one of the old work buildings used formerly by a guano company which had taken all the guano from the island. This had been used as a storehouse by the poachers. Although its side had been torn out and the building

Albatross Attacking a Drowning Sailor.

Incident officially recorded in log of a British naval vessel, though the story is so unlikely as scarcely to be credible.

was not proof against the weather, it was still filled with thousands of pairs of albatross wings to serve for next season's plunder.

An old cistern back of the buildings told a story of brutality unrivaled in any of the sanguinary records of the cruelty of plume-hunters. In this dry cistern, during the months that the plume-hunters had been in the island the year before, the living birds had been kept by the hundred in order that they should slowly starve to death. In this way, the fatty tissue next to the skin was slowly used up, leaving the skin almost free from grease, so that when the skins should be prepared for the market, little or no cleaning would be necessary.

"Is cleaning so difficult?" asked Shan, when this was explained to him.

"No," said the Feather Man; "it saves a little money, that's all."

The wings found in the outbuilding had evidently been cut from living birds and the birds had been allowed to stagger, bleeding, about the island until they fell exhausted and died. Strewn about the nesting sites were the bodies and skeletons of nestlings, starved to death by the killing of their mothers. Many young birds, whose plumage was useless for the market, had had their legs broken,

in wanton cruelty. Not less than 300,000 birds had been killed on this island alone.[1]

"And was all this done to sell the feathers?" asked Shan.

"All done in order that women might wear birds' wings in their hats!" said the Feather Man, in disgust.

Nets, killing-clubs, and other implements were lying in every direction. Hundreds of boxes to be used in shipping the skins were packed in an old building. It was evident that the plume-hunters intended to return and carry on the slaughter until not a bird remained. And, while Albatrosses were the chief objects of pursuit, the plume pirates did not neglect other birds, and the list of slain included: Sooty Tern, Gray-backed Tern, Noddy Tern, Hawaiian Tern, White Tern, Bonin Island Petrel, Wedge-tailed Shearwater, Christmas Island Shearwater, Red-tailed Tropic Bird, Blue-Faced Booby, Red-footed Booby, Man-o'-war Bird and the Bristle-thighed Curlew. Any bird whose plumage might "adorn" a shop-girl's head was readily sacrificed.

Of the millions of birds which used to nest on the island, less than one-sixth was left.

[1] This massacre by plume-hunters occurred in 1909.

The disappointment to the members of the expedition was heartbreaking, but to none more than Shan. He had anticipated the opportunity of photographing one of the finest and most complete bird rookeries of the world—now, it was a devastated ruin.

"I'd like to have those plume-hunters in that cistern," he said. "I'd starve 'em just long enough so that they'd feel it the worst possible and then skin them alive."

The Feather Man made no reply, but his hand wandered in the direction of his hip pocket.

A day's investigation of the island showed the extent of the ravages. So thorough had been the devastation that the western university men were disinclined to stay. A few photographs were taken, a few specimens shot for their museum and then the expedition was ready to go.

Shan took his old friend aside.

"Mr. Feather Man," he said, "we've come an awful long way, and I've spent almost every cent I've got on the voyage. If I go back now, I've got nothing to show for the trip. Mr. Baker would understand all right, but, after all, failure is failure. I'm here, now, I've got the cameras, I have plenty of plates, and the expedition brought food for a

stay for a month. There's water on the island to drink, and these old buildings to live in. Couldn't I buy enough supplies from the expedition stock and stay here a couple of months? You could arrange for a boat to come and take me off later. Couldn't it be done?"

The Feather Man looked thoughtfully but doubtfully at Shan.

"This is my one chance," the boy persisted. "You said, yourself, that 'way down in North Carolina, I mightn't get another opportunity for a long time, perhaps never. It's not my fault that the plume-hunters were here, last year. Don't you think I could stay?"

"All alone?"

"I'm not afraid of being alone," the boy persisted. "And I wouldn't need such a lot to eat."

"And if you got ill?"

"I've never been ill a day in my life," declared Shan. "Why should I get ill here?

"And there's another thing," he continued, seeing that the Feather Man was in no wise persuaded, "look at all these rabbits on Laysan. You said this morning, that importing rabbits on this island was the worst thing that could have happened and that they all ought to be killed off."

"I did," the Feather Man agreed, "because they're multiplying so fast that they are eating up all the vegetation and that will put an end to the land birds."

"Well," said Shan, "let me have a gun and enough ammunition, and in two months' time there won't be a rabbit left on the island. I'll see to that. You know," he added, with a touch of conceit, "I won't have to shoot twice at one."

The Feather Man shook his head.

"I'm afraid I can't approve the plan, Shan," he said; "there's too much risk about it. You came out here, to a certain extent, under government protection; if we left you here and anything happened, the government, in a way, would be responsible."

"What's the odds?" urged Shan. "I'm all alone. I haven't got any father or mother, any brothers or sisters to support. Couldn't I sign some sort of paper, saying that I was left here by the expedition of my own free will?"

His voice took on a pleading tone, and, in his energy, the Feather Man hardly recognized the slow-speaking North Carolina lad.

"See, Mr. Feather Man," he begged. "Bull gave me all the chance he had, Mr. Baker gave me

my first camera, you've helped me in a way I can't ever repay and I can't ever thank you enough; I've sunk every cent I have in the world to get out here and now, now—if I have to leave without doing anything, all my first big chance is gone! It's the one big chance of my life, Mr. Feather Man, my one chance! Don't make me go back!"

He turned to the sea, so that his friend should not see the working of his face and swallowed hard a few times.

There was a long pause, broken only by the slow plash of the calm sea on the beach and the cries of the birds wheeling over head. At last the Feather Man spoke.

"Wait here!" he said.

How long Shan waited, he never knew.

If he looked at the sea with eyes that were somewhat blurred, well—he might be forgiven. The disappointment was intense and he was still just a boy.

After a time, after a long time, indeed, during which he had not moved from the place, he heard a step on the beach behind him. He was afraid to turn.

"Shan, my boy," said the well-known kindly voice behind him.

"Yes, Mr. Feather Man?"

"Have you plenty of plates?"

The boy turned with a cry.

"Why, Mr. Feather Man, why?"

"Because," said the other smiling, "we're going to stay here a couple of months longer."

"*We?*"

"Yes," said the kindly voice; "there was no other way. You will stay here to assist me."

The boy put out his hand.

"You've done this—for me?" he asked, chokingly.

The old naturalist nodded.

"And all your work?"

"That," said the Feather Man, "can wait. There's no better work that an old man can do than build the life and the career of a younger one. But you must do me justice, Shan."

There was too much choke in Shan's voice to answer. He gripped the Feather Man's hand and turned away.

CHAPTER X

THE PLUME PIRATES

WITH the departure of the rest of the expedition, Shan and the Feather Man were thrown together again, as they had been in the old days in North Carolina. Determined to justify to the full his mentor's trust in him, Shan was up at daybreak and worked unceasingly into the night, and, under the Feather Man's teaching, he gained a deeper and deeper insight into the secrets of bird life.

"Note, even on this desolate island," the Feather Man said to him, one evening, as they sat over their little camp fire, "how the birds divide their work. See how some birds sweep the sea of fish, while others clean the beaches. There are not many seeds to eat on Laysan Island, yet, even here, there is the Finch. There are not many insects on Laysan, yet here also are the little Miller Bird and the Red Honey Eater, which eats insects that are trapped in the nectar of flowers. Everywhere, all the world over, you will find that

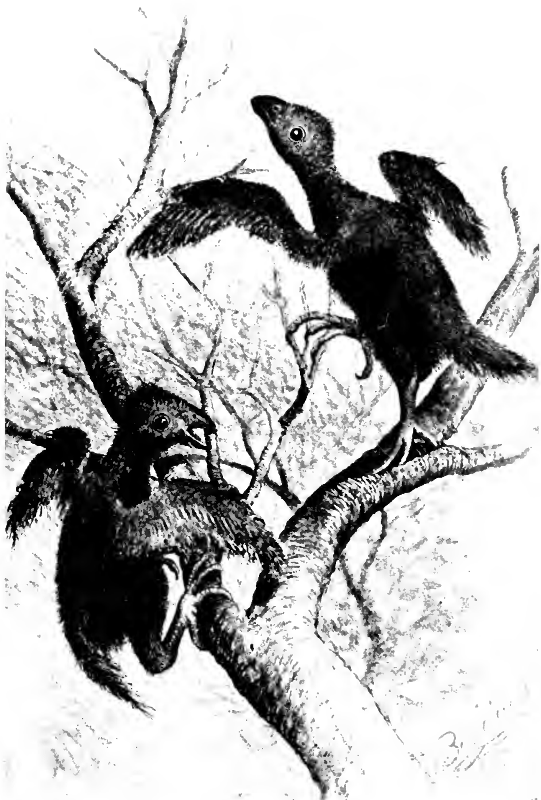
the birds are Nature's housekeepers, and every class of birds has distinct and different duties.

"Some one must sweep the air, to keep down mosquitoes, gnats and midges. What do we find? Swallows dart on their nimble wings above shallow water, fields and marshes; Purple Martins whirl about the gardens, and Swifts near the roofs of houses; while, in the open country, Whip-poor-wills and Night-hawks scour the air of dusk and dawn. On dead branches, fence-rails or gables, where there is nothing to impede their aërial sallies, sit Kingbirds, Pewees, Phoebes and kindred dusky fly-catchers. No insect is too large to escape the Night-hawk or the Kingbird, none is too small to be worthy the attention of the tiny Wood Pewee.

"Nature provides, also, that the foliage shall be properly swept and tended. The larger birds, such as Thrushes, Bluebirds, Robins, Mocking-birds, Catbirds, Thrashers and Tanagers hunt insects the whole day long. Cuckoos will even eat hairy caterpillars such as all other birds refuse, so much so, that the lining of a Cuckoo's stomach has been found felted with hair, like a felt hat. The outermost twigs of trees and shrubbery, twigs so tender that they will bend under the least

weight, are under the charge of the Warblers and the Vireos. It is of little use for insects to lay their eggs on the tender leaves at the tips of twigs that their young may have sweet foliage on which to feed. Whether the leaves are attacked by larvæ, plant-lice, nits, canker-worms, leaf-hoppers or various sorts of flies, little escapes the searching eyes of the birds. The Warbler takes a quick breakfast or dinner, flitting from tree to tree, but where the hasty Warbler has only been able to find a light lunch, the painstaking Vireo follows and takes a full meal, cocking his little head from side to side to search carefully the under side of the leaves.

"The care of the bark of trees is turned over to another group of birds. This is the listening patrol, or, if you please, the sappers and miners of the bird world. These are the birds which use their bills as a mallet and chisel, whose tongues are barbed spears. Woodpeckers leave few grubs in the trees that they attack. The Flicker gorges himself on the larger insects that live on the bark and ants form a considerable part of his diet. The Brown Creeper works his spiral way up the trunk of a tree, really searching for any tiny insect, grub or egg which may have been laid in the



Courtesy of U. S. National Museum.

YOUNG HOACTZINS.

Primitive bird-form still seen in the young of this species, who use the claws on the ends of their wings like climbing limbs.

interstices of bark, but always with the absorbed manner of some one who has lost a treasure and is seeking it in every crack. The little Chickadees and Kinglets leave no branch or twig unsearched.

"What shall we say, Shan, of the hosts of birds who keep the ground clean? Blackbirds, Crows, Robins, Song-Sparrows, Chewinks, Oven-birds, Brown Thrashers, Ground Warblers, Grouse, Woodcock and Plovers have sharp eyes on every grass-patch, on every piece of soft ground in field, or wood or forest. Woe to the white larvæ of May beetles or June bugs, to the wireworms which eat the roots of grasses and grains, to the maggots of crane-flies, root-borers which ruin the hay crop. What of the grasshoppers, locusts, chinch bugs, cutworms and army worms, which, each year, ruin enough food to feed all the armies of the world? Ten thousand times worse would be their devastation, if it were not for the birds to whom Nature has entrusted the care of the ground in her great housekeeping problem.

"Weeds—the menace of cultivated fields—are not to be kept down with a hoe. Small chance would the farmer or market gardener have for making a living, if it were not for the birds. The Sparrows, the Finches, Siskins, Larks, Grackles,

Juncos, Grosbeaks, Longspurs and Redpolls keep weeds down, which, otherwise, would spread apace. Laysan Island, Shan, is but a world in miniature, and in the air, on the foliage of the shrubs and on the ground is waged the perpetual battle between the Birds and the Insects."

"Good thing, too," answered the boy; "there wouldn't be much chance for the human race, I reckon, if it weren't for the birds."

"One summer without birds," said the Feather Man solemnly, "and not a single human being would live to see Christmas Day. The insect tribes, innumerable, multiplying with a rapidity that absolutely defies the power of the greatest mathematicians to compute, would devour every green thing. Cattle and herbivorous animals the world over would starve and die and their rotting bodies would raise vast pestilences, the plagues themselves insect-born and insect-spread. Against the creeping and the gnawing hordes all Man's power and Man's science would be of no avail. He would perish under a crawling shroud. And, after he was dead, still the insects would increase, until, driven by fierce hunger, there would be nothing left for them to prey on but each other, and the whole world would become a writhing,

wriggling mass of the noisome brood. Civilization thus flutters at the points of a bird's wing.

"Sometimes this rescue of civilization comes in such a way as to seem like a miracle. It happened so at Salt Lake City. When the Mormons, after their terrible and heart-breaking journey through the wilds and the desert finally came to Utah and settled down, they were threatened with ruin by millions of black crickets which swept down upon their fields like a horde of Huns and swept them clean. With characteristic courage, the Mormons sowed their seed again next year, but no sooner did the crops give promise of a bountiful yield, when down, again, came the horde of black crickets.

"Then came the apparent miracle. Without a single advance guard, into a country where man had never been before, appearing from nowhere in particular, came an avenging army of gray-winged, white-bodied 'angels.' Hundreds and thousands of Gulls poured down upon those grain fields and they dealt with those crickets so effectively that in two days' time there wasn't a 'crick' to be heard anywhere. The Mormons took this as a sign that Providence was with them. Ever since that time Gulls have been protected in Utah and there is a monument in Salt Lake City

in grateful recognition of that bird-rescue. It was a true rescue, for many of the people had regarded the black cricket as a sign of evil, and, had it not been for the Gulls they would have gone further into the desert and, in all probability, have been wiped off the face of the earth.

"Yet, Shan, it seems to me that the greater miracle is not an occasional visit from birds, but the presence of birds with us always. Consider it, a vast array of feathered workers, an avian army, which is never tired, never disheartened, which asks no pay, never loafs and never goes on strike! Were our people wise, instead of ignoring the birds, there would be keen competition among us to see who could attract the greatest number of these volunteer workers and soldiers."

"Instead of that," rejoined Shan, "they're being pursued all the time. Look at this slaughter here!"

"The hunt for feathers has made almost as many species extinct as has the hunt for food," the Feather Man replied. "As far back as we have any knowledge, the human race has sought to adorn itself by feathers. Even before the days of the Roman Empire, the nations of the east, such as Persia, used feathers of Peacocks and Paradise

Birds for decoration. But they were used only as a sign of rank, for the nobles. In the middle ages, feathers were used by the knights, but only such as had performed great feats were allowed to wear them.

"Among our North American Indians the same thing was true. The Indians of the Eastern States, as you know, used to wear collars and head-dresses of Wild Turkey feathers, but only certain chiefs and medicine men might wear them, and no one could be chief or medicine man until he had shown himself worthy of the honor. Among the Indians of the plains and of the Rockies, Eagle feathers were used. But the rules and regulations governing the wearing of those feathers formed a code severe.

"To begin with, no man could wear such feathers unless he, himself, had shot the Eagle, with a weapon that he had made himself—there was no buying a gun at a store! The birds were killed with stone-tipped arrows shot from a hand-made bow. Then, after the young brave had secured his Eagle feathers, he was compelled to come into the council of chiefs, and recite each deed for which he felt himself justified in claiming the right to wear a feather. He had to produce witnesses

to prove his feats and they had to be sufficiently remarkable to win the approval of those red warriors.

"The Indians themselves tell of the time when feathers were first worn, and why they came to be worn. There are many versions of the story. The one I recall best is that of the Shuswap Indians, on the Fraser River, where I lived for a time. Do you want to hear the story?"

Shan's movement of attention was sufficient answer, and the Feather Man continued,

"In the very early days," he began, "so the Indians say, when the Thunder Bird still flew above the mountains, there was a very strong and brave Indian named Tlecsa, who dwelt with his two brothers in a little hut by the river and lived by fishing. His home was not far from Marble Cañon, on the top of a high rock near which lived Great Eagle.

"Now Great Eagle was much bigger than any of the Eagles you see nowadays, ten times as big, the Indians say. Great Eagle lived by killing the Indians. No matter how strongly they built their houses, no matter how careful they might be in going from their canoes, every few days Great Eagle would sweep down into the valley, grab an Indian

Courtesy of U. S. National Museum.

USE OF FEATHERS BY INDIANS.

Two upper pictures show turkey feathers as used by tribes living in New England territory; two lower show eagle feathers as used by Indians of the Plains.

in his powerful talons, dash his head against a rock and carry the body back for the little eaglets' breakfast.

"Said Tlecsa, one day,

" 'I will show my brethren that an Indian is stronger than Great Eagle, and to prove it, I will ornament myself with Eagle feathers.'

"So Tlecsa put some white paint in one side of his mouth and some red paint on the other side. Then he went out and stood by the river, as though dreaming.

"Great Eagle saw him, and swooping down through the cañon with a rush like the wind when it is seeking a quarrel, he clutched Tlecsa and bore him above the cliffs with three strokes of his mighty wings, each of which was as large as a canoe. When near the top of the cliff, he dashed Tlecsa violently against the rock.

"Tlecsa was badly hurt, but he said nothing. Only he opened his mouth on the one side and all the red paint ran out. His brothers, watching below, said,

" 'He is dead, see his blood!'

"Still Great Eagle was not satisfied. He knew that an Indian might bleed and still not be dead, and so he hurled Tlecsa against the rock a second

time. Again Tlecsa warded off the blow with his stone flaker. Again he was badly hurt, but he controlled himself from making any sound, only opened the other side of his mouth, and the white paint flowed out upon the rocks. His brothers, watching below, said,

" 'He is surely dead. See his brains!'

"Now Great Eagle thought he was dead, so he laid him on a ledge of rocks near the nest. But Tlecsa started up and hit Great Eagle with his flaker.

"Great Eagle rushed at him with his beak. No living creature could endure a bite from that beak, for it was as long as two fish-spears and when it snapped together it was like the sound of a rock plunging down a mountain.

"Tlecsa sprang over the beak and landed on the back of Great Eagle.

"Up soared Great Eagle, up and up, but he could not shake Tlecsa from his seat. Then Tlecsa, leaning back, pulled out, one by one, the tail feathers of Great Eagle, and the huge bird, no longer able to steer his way, fell upon the rocks wounded. So Tlecsa cut off his head with his flaker.

"Then he went back to the nest and tied one of

the eaglets to each of his wrists and jumped off the edge of the cliff. The eaglets were too young to fly well, but they fluttered enough to break Tlecsa's fall and he came back to his own village, with the tail-feathers of Great Eagle stuck in his hair. Then Tlecsa pulled the large feathers of the wings of the eaglets and out of their tails and gave them to his brothers, and said to the eaglets,

"'You shall never grow up to be like Great Eagle. You shall only be ordinary Eagles. You shall have no power to kill people as long as there is an Indian who wears an Eagle's feather in his hair. And it was so, and it still is so.' Thus you see, Shan," the Feather Man concluded, "that it was only because of brave deeds that Eagle feathers might be worn."

"Was it only the Indians who forbade feather-wearing by anybody who wished?" asked the boy.

"No," the Feather Man replied; "among the Aztecs, as you know, the Quetzal—a bird belonging to the Trogon family—was sacred to the emperor. But, even so, only a warrior who had distinguished himself in battle was allowed to shoot a Quetzal bird in order to bring the feathers to the emperor.

"Even in comparatively modern times, the sport

of falconry, or flying Hawks after birds, was only permitted to the highest nobles of the land, and, throughout Europe, if a peasant owned a Peregrine Falcon, he was punishable with death."

"It's not like that, now," said the boy.

"No," agreed the Feather Man, "and it is one of the signs which show clearly how we have lost the old ideal of courage and abandoned the principle of confining marks of honor to those who have shown especial bravery. Nowadays, any one, no matter how mean or paltry their work in life or their character may be, if he or she has the money, can buy and wear feathers which, aforetime, were confined to the brave. We have exchanged our standard of values. We count by dollars instead of deeds.

"Why has the Whistling Swan become rare? Why is the Pelican in need of protection? Why is this island strewn with the bones of Albatross?

"Because some silly woman wants to wear their feathers in her hat.

"Has she any right to such adornment? In all her life has she done anything worthy of honor? No. Her only desire is to rival some other woman who possesses similar feathers—and—she has the price!

"I believe, Shan," the Feather Man said gravely, "that there is no more vicious phrase on the lips of any one than that cheap boast 'I have the price.'

"Think of it—to boast of being able to pay for the slaughter of birds; the price for cruelty, for barbarism, for massacre! One might as well excuse murder on the ground that one had the price to pay for it. So long as the ideals of certain people depend—whether much or little—on this idea that any wrong can be made right by the payment of money, so long is the presence of such people in a country a menace to its honor and a blot to its citizenship.

"You know the story of the Egrets," the Feather Man continued. "You know that the bridal plumage of the Snowy Egret forms the 'aigrettes' which women wear on their hats. You know that they are worn by the birds only at the time of nesting, and that every bird killed at that time causes the starvation to death of the young. You know that the National Association of Audubon Societies—one of the most valued and honored organizations in all the United States—has spent well on to a million dollars and incredible toil to try and teach the women of America that the wear-

ing of an 'aigrette' is a symbol of rapacious cruelty.

"You know, or you ought to know, that twenty years ago, there were thousands of Egrets in Florida, and that now, nothing keeps the breed alive, save that the United States Government and the Audubon Society have taken over the islands on which the last few colonies remain, and that the Audubon Society—a private organization, depending for its support on the subscriptions of intelligent people—pays the salaries of wardens to keep the plume-hunters from exterminating the few colonies that remain. A few of the birds are also guarded on the Federal bird refuges, and the species may still be saved from total extinction.

"You know, or you ought to know, that the United States has passed the strictest laws against the shooting of an Egret, against the sale of aigrettes, against the shipment of the feathers, and, in some places, against the possession of the same.

"Yet the women of America will pay almost any price to bribe plume-hunters to creep upon the nests at night and murder the parent birds. Many women of America rejoice in nothing so much as displaying the badge of their hired murders, or at

Courtesy of American Museum of Natural History.

SAVED FROM THE WOMEN.

One of the few remaining colonies in South Carolina where the egret or white heron now is allowed to breed unmolested.

least, such women as wear aigrettes do so. I don't say that women are absolutely unteachable where their personal adornment is concerned, but nearly so. Pearson found this in his experience with a girl who was employed in the offices of the Audubon Society.

" 'There was a time,' he writes, 'when I used to think that any woman with human instincts would give up the wearing of feathers at once, on being told of the barbaric cruelties involved in their acquistion. But I have learned, to my amazement, that such is not the case.

" 'Not long ago, I received one of the shocks of my life. Somewhat over two years ago, a young woman came to work in our office. I suppose she had never heard, except casually, of the great scourge of the millinery trade in feathers.

" 'Since that time, however, she has been in daily touch with all the important efforts made in this country and abroad to legislate the traffic out of existence, to guard from the plume-hunters the colonies of Egrets and other water birds and to educate public sentiment to a proper appreciation of the importance of bird protection. She has typewritten a four-hundred page book on birds and bird protection, has acknowledged the receipt

of letters from the wardens telling of desperate rifle battles that they have had with poachers, and has drawn up a letter and resolutions of condolence to the widow of one of our agents who was shot to death while guarding a Florida bird rookery.

" 'I have never known a woman who labored more conscientiously or who, apparently, was more interested in the work. Frequently her eyes would open wide and she would express resentment when reports reached the office of the atrocities perpetrated on wild birds by the heartless agents of the feather trade.

" 'Recently, she married and left us. Last week she called at the office, looking very happy and radiant. After a few minutes' conversation, she approached the subject which evidently lay close to her heart. Indicating a cluster of paradise aigrettes, kept in a case in the office for exhibition purposes, she looked me straight in the face, and in the most frank and guileless manner, asked me to sell them to her for her new hat!'

"That sort of thing, Shan," the Feather Man continued, "is what we have to fight. Those who have the interest of birds at heart have not only to try and break down the carelessness of others, but also we have to combat the deliberate dis-

regard of every decent feeling for the sake of a game bird which may be good to eat or a plumage bird whose feathers may be worn on a hat."

"You spoke of an Audubon Society agent being killed on a Florida bird rookery, sir," said the boy; "who was that?"

"A bird warden, by name Guy Bradley," the Feather Man replied, "lies buried on a lonely sand key near the Cuthbert Egret Rookery. Plume-hunters knew that the Egrets were nesting, and they knew, too, that an Audubon Society agent was there to protect the birds from marauders. But, to offset this, they knew also that in every town and village of the United States there was a woman saying, 'I have the price!' and urging them on to murder. So, to please the women, and line their own pockets, they shot the warden at his post of duty and massacred the birds."

He caught a significant gesture on the boy's part.

"Yes," he said, "I feel the same way. It makes your fingers itch for the trigger of a gun."

"Did they never find out who did it?"

The Feather Man shook his head.

"Your friend Ned Thompson had been seen down in the neighborhood," he said, "but there

was nothing that could be proved against him. I think he was hustled out of Florida, though."

"Some day I'm going to meet that man, and—" Shan left the sentence unfinished.

"Time brings its own revenges, as a rule," the Feather Man replied; "you don't need to think of vengeance on Ned Thompson. He is punished enough, it seems to me, a disgraced man and a wanderer on the face of the earth. Forget him and concentrate on your work. If that motor boat comes soon, we'll try and do some work on Lysianski Island."

The very next day the long expected motor-boat arrived, together with messages from the members of the expedition. The Hawaiians, who had towed a small sailing skiff behind the motor boat returned to Hawaii in it, leaving the Feather Man and Shan alone as before.

Several of the smaller reefs and rocks had not, as yet, been visited by the plume-hunters. One of these was Lyskianski,[1] and, in order that Shan might be able to carry out his idea of making a complete series of bird pictures, the Feather Man had decided that Shan should spend two or three

[1] In strict accuracy, Lysianski Island was ravaged by plume-hunters the same year as Laysan.

weeks there. No expedition had visited Lysianski with photographic apparatus, and Shan's pictures, therefore, in addition to their value as bird records, would also be of geographic importance. Lysianski was about seventy miles from Laysan and therefore out of sight of the larger island.

Accordingly, it was arranged that after the Feather Man had put the lad ashore there in the motor boat, he would make the trip to Lysianski, once a week, to see that everything went well. On seeing the boat, Shan was to light a small fire, and dampen it, so that it would send up a column of smoke. By alternately covering and uncovering the fire, smoke could be allowed to ascend in puffs. If the smoke ascended in series of three puffs together, that would mean that Shan was in good health and all was going well. If the smoke arose in a steady spiral it would signify that Shan was in need of something, and the Feather Man would come to him.

The landing at Lysianski was difficult, though nothing like Bird Rock, which the boy had vainly tried to climb, but Shan managed it safely and found himself on the little islet, with provisions, matches for the fire, and his photographic apparatus. He waved a cheery farewell to the

Feather Man, put up the little dog tent, which was all that he had brought to shield him from the weather, and started his three weeks' vigil.

The birds were much tamer on Lysianski than on the larger island, for the plume-hunters had not been there, and Shan had abundant opportunities to see and study the cake-walk of the Laysan Albatross. It was a queer performance. One couple which Shan watched for several hours and which he photographed with his smaller camera, meantime snatching time to change plates and take a few pictures with his larger camera, carried out their queer antics on an open piece of ground, not six feet away from where Shan was lying.

First one of the birds approached the other, making a curious squeaking cry, not unlike that of a mouse. With every step forward he made a bow to his partner, something like that of a Teeter, but more gravely. The other bird, accepting the invitation to dance, bowed gravely in return, not once, but half a dozen times. Then they crossed their bills, several times, as if fencing. The first bird next turned his head on one side, as though it were a position in dancing, and lifted his wing in such a way that the primary feathers pointed out to one side. His partner, turning slowly, com-

menced to make a curious sound, something like the neighing of a horse.

Then began the most curious part of the dance, which has given it the name of the "cake-walk." The bird taking the lead, with wings balancing, danced slowly round his partner, stepping slowly with each foot held high, like a negro cake-walker, a gait utterly unlike that of the bird at other times. The partner turned slowly, still neighing. This figure finished, the two birds came together, as though they would be ready to embrace each other had they arms fitted to do so. Failing this, both birds put their beaks up in the air, rising on their toes—like ballet-dancers—puffing out their breasts and uttering a raucous duet of long-drawn groans.

After a few days, Shan found out that he could start the birds dancing at almost any time, by bowing gravely to one of the birds. In all the time that he was at Laysan and Lysianski Islands, Shan never found a single occasion when, if he bowed to a bird, it was not instantly responded to with the utmost gravity and good will. He was thus able to get a complete series of pictures with the Biological Survey apparatus.

Feeling that it would be better to develop the

plates on Laysan, where he had set up a regular dark room, Shan kept his large camera and plates on a ledge of rocks in a small cave, blocking up the entrance with stones so that the inquisitive birds might not discover it and either peck at the camera, or possibly, knock down the plates. He was soon to be thankful for this precaution. The small film camera he kept with him, in the dog tent.

The first week passed and Shan's hopes were high. Owing to the tameness of the birds, he had secured a wonderful series of pictures, and, not being pressed for time, he had taken them with such care that he was well assured no better photographs had ever been made. When, therefore, on the appointed day, he saw the Feather Man coming across the smooth sea in the little motor-boat, he was ready to light his fire and send up the signals which declared that he was safe and that all went well.

By the time the second week was drawing to a close, Shan decided that he had taken a sufficiency of plates. There was no need to stay longer. He was anxious to return, moreover, in order to develop the plates that he had taken and check up his results.

The night before the boat was expected, towards

midnight, Shan was suddenly awakened by the sound of a ship's propeller.

Astonished beyond measure, for he knew well that no vessels came near those treacherous reefs and that the revenue cutter was not expected for another month, Shan tumbled out of his dog tent and peered toward the sea.

There was no moon, but in the clear starlight and the faint white light of the foam breaking on the reefs, the boy saw clearly the outlines of a small steamer, looking like a cross between a yacht and a fishing smack, but which, even to Shan's untrained eye, did not look like an American vessel.

"Now, what in thunder," said Shan, as he looked out across the sea, "is that craft doing here at night?"

He was soon to know. A boat set off from the shore and started towards the beach.

As the boat came nearer, Shan saw a figure rise and peer at something on the island. Crouching where he was, the boy knew that he could not be seen, but turning his head, he saw, white in the dim light, the outlines of his tent. This it was that the newcomers had seen.

An order, given in a high-pitched whining voice, was followed by the cessation of rowing.

Shan wondered.

If these people were here on honest business, why should they be afraid of a small tent?

The answer came with a burst of certainty to the boy's lips,

"Plume pirates!"

They had devastated Laysan the season before, now, this year, they were come to do the same to Lysianski.

Shan slipped back to his tent and got out his rifle, then returned to the beach.

The boat, after a considerable delay, came forward slowly.

"Who's there?" cried Shan.

A confused murmuring was the only reply. The boat still came on.

"Who's there?" cried the boy again. "Answer, or I fire!"

Again that confused murmur.

Raising the muzzle, so that the shot would go wide of the boat, Shan set finger to trigger and fired.

The shot rang in the silence of the night like a cannon, and the Albatrosses and Terns, startled at the sound, wheeled from their nests with hoarse cries.

There was no answer from the boat, which came forward swiftly.

This put Shan in a quandary. For all that he actually knew, these might not be plume-hunters at all, they might be Hawaiians, who had business on the island. He, Shan, had no official position. If he shot to kill, and the boy knew his own aim well enough to know that he would not be likely to miss, he might put himself in a terrible difficulty. It would be manslaughter. Shan retreated back up the beach.

The keel of the boat ground on the bottom, and with a rush, every man in the boat leaped out and ran forward for the boy. Knives gleamed in their hands. As they drew nearer, in the faint light, Shan could see that they were Japanese.

He hesitated no longer.

Throwing his rifle to his shoulder he fired, but, even at the moment of firing, indecision seized him and he threw up the muzzle of the gun. The men were on him in a couple of steps and a big man who was in advance of the others, far different in height and appearance from the Japanese who followed, struck him on the left hand with the butt end of a pistol, at the same time dashing his other fist into the boy's face.

Shan fell headlong, stunned.

When he slowly struggled back to consciousness, a couple of hours later, dawn was breaking and it was light enough to see. The boy turned on his elbow, hardly restraining a yell of pain as he moved his wrist, which had been broken by the first vicious blow.

Thirty or more Japanese were busy on the beach, unloading boxes and various killing and skinning implements, evidently under the direction of a white man. His back was to Shan, but, somehow, there was something about his pose that was familiar.

At the sound of the boy's groan he turned and coming quickly to where Shan lay, looked down at him with a satisfied smile.

"Ned!" gasped Shan, "Ned Thompson!"

"I reckon yo' didn't expect to find me here, did yo'?" the former game warden said, bitterly; "yo' reckoned yo' was done with me when yo' friends tarred an' feathered me an' rode me on a rail. Well, that ain't a mite to what my yellow friends are goin' to do to yo'!"

"I wish I'd aimed!" said Shan.

"Last night, yo' mean? Yo' wouldn't be alive now, if yo' had," was the cheerful reply.

Shan made no answer.

"Now," said the disgraced game warden, "here is where yo' and I get even! Yo' uncle chased me off'n his place. I got even with him, I reckon, an' now's my chance to get even with yo'."

He changed his voice abruptly.

"What are yo' doin' here, anyway?"

A moment's thought sufficed for Shan to realize that if he had been unconscious a couple of hours, everything that he possessed in the little tent must have been ransacked. There was nothing to gain by a refusal to answer.

"I'm photographing birds," he said. "You've probably found my camera and films."

"I found 'em," the man answered. "I can use a camera myself, whiles, an' I reckon I'll keep that. Yo' can go hunt for yo' films in the sea."

Shan ground his teeth, but thought of the large camera and plates well hidden in the little cave.

"Now," his enemy continued, "how did you-all get here?"

Shan puzzled for a moment, then told the truth, or at least in part.

"I came here with a university expedition," he said curtly, "and when they found what you and your yellow butchers had done on Laysan, they

went away. I asked to be allowed to stay, to do some bird photography."

"Yo've only got two weeks' grub in the tent," said Thompson; "when were they a-goin' to come for yo'?"

Shan suddenly was struck with a brilliant idea.

"In ten days," he said.

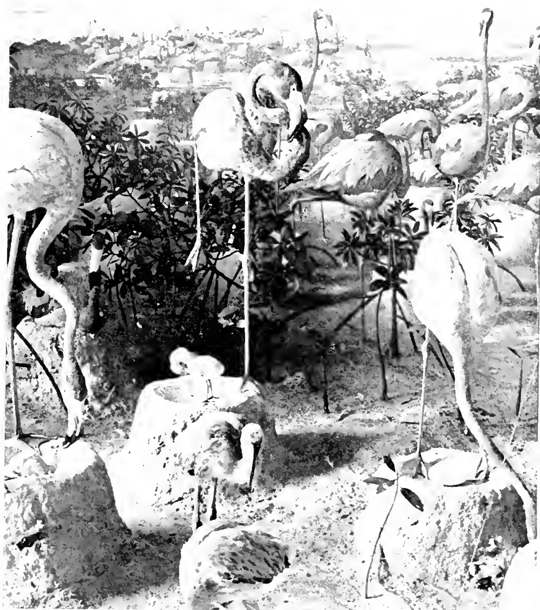
He wondered, as he said it, whether the Feather Man would make his visit that day and if he would see the plume pirates' vessel in the offing. Perhaps he might guess what had happened. But it would be no use for him to land, the odds were too great.

"What ship is coming for yo'?" asked his captor.

Not another word would Shan say.

All that long hot day, Shan lay stretched upon the sand, his wrists roughly bandaged and his feet bound.

Each hour his hopes beat higher, for he knew that the Feather Man assuredly would not desert him. This was the day on which he ought to make the signal smoke. If no smoke were seen, the Feather Man was sure to come and find out what was the matter. If he did not come, to Shan's mind it would be a sure sign that his old friend



Courtesy of American Museum of Natural History.

FLAMINGOES ON THEIR NESTS.

Where earth, sea and sky are ablaze with their pink forms, the loveliest sight in the whole world of bird-land.

had rightly judged the meaning of the presence of the strange vessel and had sheered off to avoid giving the alarm. When the morning passed without any sign of the Feather Man, Shan grew confident, and when evening came it was all that he could do to keep from showing his delight.

Ned Thompson noted the boy's manner and questioned him closely, but in vain. Shan had always found it easy to keep silence, and, as night came on and his broken wrist gave him more and more pain, he set his will definitely to the intention of not saying a word about the Feather Man and the motor boat should fever and delirium set in.

He was tormented by thirst, and Ned Thompson, knowing this, had left a jug of water near the boy, just out of reach. He was tormented even more by a sense of his own helplessness, and his enemy, realizing this, laid the boy where he could not help but see the Japanese poachers clubbing the confiding Albatrosses, stunning them or breaking their legs and cutting the wings from the living birds.

Two little Albatross chicks, just able to walk, deserted by the death of their parents, had toddled within reach of Shan, and the boy had allowed the fluffy chicks to snuggle under his arm as he lay there. His tongue was black with thirst and his

arm, untreated and untended, was aching with the agonies of its fevered state, but he was glad of the chance of tending the two little fluffy orphans.

Ned Thompson had seen this, too, and, next morning, he came quietly to where Shan lay, plucked out the little Albatross chicks from under the wounded boy's arm, wrung their necks with a smile of contempt and flung them down at Shan's feet.

Not even that could wring a word from the boy.

Hardly stopping for sleep, the Japanese feather poachers worked incessantly. According to the boy's story, they had but ten days. That meant only nine days, for they must be away early enough to avoid meeting any other vessel. It would take two days to load. That left but seven days for the slaughter. Three days had passed, and already half the birds of the island were slain.

That night, Shan, lying with his ear to the ground, thought that he heard, afar off, the "chug-chug" of a motor-boat.

He lifted his head to listen.

Silence.

He laid his head down, and again clearly could hear, or rather could feel, a muffled vibration over the water.

The boy's heart beat with delight. There was but one motor-boat likely to come near Lysianski Island—that of the Feather Man.

Shivering from excitement as well as from fever, Shan lay still and listened. For an hour he heard the beating, which seemed to grow slower and fainter and then died away.

As Shan's hopes had risen high, so, now, they fell low. Almost, he feared, the Feather Man must have abandoned him. This thought he dismissed as soon as it formed itself in his mind. He knew the Feather Man too well for that. There must be some other solution.

Alone wakeful on the island, Shan thought long and intently. Then he remembered that while the beating of the motor boat had become fainter, it had also become slower. Quite possibly the cessation of the throbbing was not because it had become too far off to hear, but because it was too close to risk discovery by the pulsation of the engine. Yet, listen as he might, there was no plash of oars.

The night was still, there was no sound save that of a seal heaving itself up clumsily on the beach not far from where Shan lay. Seals were not common on those islands and Shan wished for

his camera. Although dizzy with pain, he turned his head to watch it.

A curious seal, that!

Crawling more nimbly than is the nature of a seal, it passed swiftly across the beach and hid in the bushes.

A seal hiding in bushes?

Shan puzzled vaguely over this, in a half dreaming way. Then a sharp whisper caught his ear.

"Shan!"

He was alert in an instant.

Raising his unhurt right hand, he moved it slowly from side to side to show that he heard.

For answer, an automatic pistol was put into his hand, and the Feather Man sidled out of the bushes and lay beside him.

In tense whispers, Shan told of his injury and of Ned Thompson's brutality. The Feather Man clicked his teeth in anger as he heard that the lad had lain with a broken wrist untended, for four days, with little food and less water.

"Can you use your right hand to shoot?" was all the other asked.

"Yes," said Shan grimly.

"I've wirelessed the revenue cutter from the nearest point," the Feather Man said, "and she's

on her way. She'll be here by daybreak or a little later. If anything breaks loose we'll have to stand the poachers off alone until she comes."

"We can do that," said Shan.

"Try to sleep," said his friend; "I'll watch."

And Shan, calmed and soothed by the presence of the Feather Man beside him, dropped into a deep sleep, despite fever, his broken wrist and the pangs of hunger. A drink of water from the Feather Man's flask had given him new life.

He was wakened by a light touch on his shoulder.

"Ready, my boy," said the familiar voice. "We'll have to fight for it, soon."

Almost as he spoke a hurly-burly arose on the poachers' vessel and a gun was fired.

At this warning signal, every poacher on the island, though wearied from the almost unceasing labor of the last three days, sprang to arms and started down the beach toward the boat.

A crackle of pistol shots rang out, and in the space of ten seconds the poachers' boat was riddled with holes.

The Feather Man changed the magazine of his pistol rapidly, turning quietly to Shan.

"They'll not take that boat, I'm thinking," he

said. "And, if they send another one from the ship, we'll treat it the same way."

A bullet flattened itself against the rock behind which Shan and the Feather Man were crouching.

"Good shooting," said the latter.

"That's Ned Thompson," declared Shan. "With all his faults, he can shoot."

"He'll need to," remarked the Feather Man.

His revolver spoke.

Shan looked at him questioningly.

"Somebody's hand showed," said the Feather Man calmly, "and I reckoned he might as well see what it felt like to have a finger amputated, free, gratis and for nothing."

Shan made no comment, he had seen the Feather Man shoot, before.

"What started all this rumpus?" asked Shan.

"If," said the Feather Man, "you will roll your head slightly to the left side—without raising it, mind you—you'll see why."

Cautiously Shan looked.

A thin line of smoke trailed on the horizon.

"The Revenue Cutter *Thetis*," remarked the Feather Man, "coming up at full speed."[1]

[1] The *Thetis* arrested 32 Japanese plume-hunters in 1910 and took them to Honolulu for trial.

The sight drove the Japanese frantic. A dozen of them broke from their hiding-places and charged.

"Shoot at the ankle, son," remarked the Feather Man, calmly, "there's no need to hurt them too much."

Both pistols cracked and four men fell. The rest flattened themselves on the ground.

"You, Ned Thompson," called the Feather Man, "tell those yellow friends of yours that I've got a bead on the head of every man-Jack of them lying on the ground. If I don't shoot, it's merely because I want to give them a chance. And if any one else fires a shot, you can arrange for some Japanese funerals, right quick!"

Silence followed this remark and then a fusillade of shots was heard behind the building.

"When thieves fall out," remarked the Feather Man, "honest men come by their own."

Presently, out from behind the building, came Ned Thompson, disarmed, his hands bound, in the grasp of a dozen Japanese.

"Ned Thompson," said the Feather Man, "this is the end of your rope. You shot Bull Adam, there's little doubt of that, and you shot Guy Bradley on the Egret rookery. You see that smoke on

the horizon. That's the revenue cutter. You can't escape. Your boat is full of holes. You're caught red-handed. Have you anything to say?"

The former game warden stared back defiantly.

"Reckon not," he said; "I can take my medicine."

"Shan," said the Feather Man, "you see this man. You know, for a moral certainty, that he shot your uncle. He's going to get punished for poaching. Do you want to tell the United States officers of the murder? It'll make it hard for him, if you do, because federal officials don't drop a murder case easily."

Shan looked vengefully at his half-bandaged wrist, and then shook his head.

"Bull said," he answered, "that he didn't want me to call on the law. That yellow dog has done me all the harm he could, but he's caught himself in his own net. I'll say no word to make what's going to happen to him worse than it has to be."

The Feather Man laid his hand on Shan's shoulder.

"Whether you will win your post in the Biological Survey or not, my boy," he said, "and I've reason to know that you will, you've won your place as a man."

THE END

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