SOME NEW BOOKS.

A Popular Account of Evolution.

The book entitled *Life and Evolution* by F. W. HEADLEY (E. P. Dutton & Co.) is a revised and expanded reproduction of lectures delivered to the Haileybury Natural Science Society. From the nature of the audience to which they were delivered the lectures aim at being intelligible without the need of much preliminary knowledge. Difficult questions are not shirked, but an effort is made to render them clear to any one who will give attention to the subject. Owing to their method of treatment the lectures in their present form are likely to prove eminently useful. The author undertakes, first, to depict the micro-organisms, their structure, such as it is, and their way of life. From them he goes on to the inhabitants of the sea, of its shore and surface waters and of its depths. Reptiles next come upon the stage. Then in birds, the descendants of reptiles, we see vitality at perhaps its highest, and investigate the machinery by means of which they sail the air. After this Mr. Headley goes back to the amœba and the infusorian and finds in them the first beginnings of life. In crabs, chickens, dogs, monkeys, he traces the development of intelligence till evolution culminates in man. Lastly he depicts the working of natural selection and shows it regulating the course of evolution from the lowest forms up to the highest.

It seems to us that we may best exemplify the scope and value of a work which, however, should be read as a whole, by an examination of two chapters, which deal respectively with the struggle for existence and with the minds of men and animals.

I.

It is obvious that if the natural increase of any species were not somehow checked it would soon people all the seas, all the rivers, all the lands. Our author recalls that Darwin selected for his *a priori* proof of the struggle for existence the very slow breeding elephant, and demonstrated that if their numbers were not somehow kept down the descendants of one pair would before 750 years had passed amount to nearly nineteen millions. Of course this rapid increase means competition, a competition in which survival is the prize of success and extinction the penalty of failure. This is now accepted on all hands as established fact. But why, it may be asked, if the struggle is so universal do we see so little of it? The truth is that for plants and for animals the struggle comes only occasionally. There are crises that carry off victims by the hundred and the thousand, and there are quiet interspaces which make up the greater part of the lives both of animals and of plants. Whether these survive and leave descendants or survive only as fossils (or not even as fossils) depends on their ability to meet the recurrent crises. The crises come in the form of severe cold or drought, or a new disease, or a sudden attack from a fierce enemy, or geographical change causing an influx of new life forms into old regions.

There was a wonderful example of the last named crisis when South America, which previously had been an island, a natural museum full of ancient forms of life, became connected with North America. In what is called the Santa Cruz period, because all its most typical animals have been discovered as fossils at Santa Cruz in Patagonia, the fauna of South America was such as could be found nowhere else. North America must at the time have been separated from the southern half of the continent by a strait or sea; for its fauna was very different. The southern half of the New World had a marvellous collection of animals, found there and not elsewhere. Perhaps the strangest of them all were the prototheres, the feet of one species of which mimic those of horses, for each bears only one single toe. Their general anatomy, however, shows that these prototheres were by no means horses. Besides many unique species of animals and birds South America in the Santa Cruz period had others which present affinities to species found only in remote parts of the earth. The marsupials, for instance, resembled those of Australia and suggest that a land connection formerly existed with the Australasian region. The strange hoofed animals to which we have referred have their nearest allies in the little hyrax, the coney of the Bible, whose teeth are like those of a rabbit, but whose feet suggest the horse and its congeners. Now in the Old World the hyrax is found only in Syria and Africa, and as a fossil in Europe. Ancient land connection between South America and Africa is indicated.

Huge as many of the animals of the Santa Cruz period were they were not formidable in attack and not very strong in defence. There were, it is true, carnivorous marsupials, allied to the striped wolf of Australia, but in comparison with the great carnivora, the lion and the tiger, or even the puma and jaguar, they had little striking power. At a later date, in what is called the Pampean period, after the Isthmus of Panama had been formed, the previously secluded land where the above mentioned peculiar forms had been developed was invaded and more up to date types from North America swarmed in. The cat tribe was represented by the puma and the jaguar. There were also sabre toothed tigers, bears, foxlike dogs, mastodons, tapirs, horses, deer, peccaries, huanacos, rats, mice, perhaps opossums. The descendants of these invaders are still living, or are found as fossils in the débris of the Andes that lie spread over the Pampas regions. The heavy, slow moving, ill armed South American animals were poor antagonists for so formidable an invading host. Some species of the Santa Cruz period no doubt held out longer than others. Some underwent further evolution and grew to greater bulk, their large size perhaps defending them for a time. However that may be, they all eventually passed away and left the newcomers in possession of the field.

Mr. Headley goes on to remind us that on a small scale catastrophes similar to this invasion of South America have happened in recent times. New Zealand has been invaded by European animals, importations that were meant to be blessings but which have proved curses. Rabbits multiplied till they devoured everything. Ferrets were then naturalized in the hope that they would keep down the rabbits, but the ferrets preferred to live on the non-flying native birds. Preserves have been established to save these and other forms of native life, but when once the balance of nature has been upset it is hard to reestablish an equilibrium. Starlings were imported into Australia to eat the fruit destroying caterpillars, but they preferred to eat the fruit, and have proved a greater plague than that which they were intended to cure.

II.

We see, then, that among animals there is a real struggle for existence, first, against climatic conditions; secondly, between individuals, and thirdly, between groups. Is there a like struggle among plants? Our author shows that there is such a struggle, and that it is no less real than that among animals, though generally even less apparent. Sometimes, however, we seem actually to see it, as, for example, on the bare heaps of stones and débris that glaciers have deposited in valleys. Various hardy plants get a footing there and gradually make something of a soil, but then they are ousted by others that have the advantage when once a soil has been formed for them. Mr. Moore in his "Tanganyika Problem" gives an account of a similar phenomenon in Africa. A lake retreats and leaves flats of bare parched sand. In this inhospitable soil spring up euphorbias (spurges). These plants grow big there, and after a time become small trees, able to shelter other plants for which they have prepared the soil. In Denmark birches formerly covered the forest lands, but eventually there came an invasion of beeches. The invaders had the advantage that they could grow under the birches, whereas the birches could not grow under them. The beech shuts out the light, while the birch does not. Nothing but holly grows well under the beech. Being an evergreen, holly is able to make use of the light when the beech is leafless. So it has come to pass that in Denmark the birch is being ousted by the beech. Mr. Wallace in his "Tropical Nature" describes the struggle that goes on in tropical forests. There are the great trees, the monarchs of the forests, and below these trees of smaller growth that between them effectually shut out the light. Hence at ordinary times the seeds of the monarchs have no chance to grow. When some big tree falls, however, and carries with it numbers of the smaller trees, then there is an opportunity.

Not only are there wars within the vegetable world, as well as within the animal, but there are wars between plants and animals. Mr. Headley directs attention to the way in which the desert plants protect themselves from the animal world. Many are armed with thorns, which are of various origin, some being branches, some hardened cells, some hardened leaves. Some desert plants are poisonous, some are nauseous if not actually poisonous. Some are tough as string and wiry in addition. The colocynth, which has pretty green leaves and bears a small round gourd loaded with pips, trusts to its nauseous flavor and poisonous properties. The camel, able to stomach most things, fights shy of the colocynth. On the whole, desert plants form a very unappetizing assemblage. Each of them has brought its own peculiar kind of protective nauseousness to perfection. As camels, gazelles, monkeys and goats have gone on improving their powers of coping with a prickly or nauseous diet the desert plants have kept pace with them. The result has been a drawn battle between the plants and the animals.

We have thus far said nothing about the part played by disease in the struggle of animals, or, for that matter, of plants, for existence. It is well known that an epidemic may depopulate a grouse moor. Smallpox, consumption or measles may swoop down on Pacific islanders and sweep a whole people out of existence. Apart from epidemics it is probable that disease kills more wild animals than most persons imagine. To a wild animal even a small ailment is apt to be fatal, and so quickly fatal that we are not likely to notice its victim, especially as the sufferer is likely to hide himself away. Upon domestic animals the effect of disease is frequent and visible enough. Pigs get rheumatism, or something not unlike it; pigeons get bad throats; highly bred horses have many maladies. The most unpleasant phenomenon to which the struggle for existence among animals gives rise is the persecution of the weak by their near relatives. No sooner does an old hen get sickly than her more vigorous companions—her own daughters among them—peck her and tease her and hasten her end. No sooner does a cow show signs of weakness than she is worried by other members of the herd. In time of dearth rats become cannibals, a pack of them setting on a weakly one, who is speedily devoured. Swans, when the nesting season comes round, will not tolerate the presence of their young of the previous year on their ponds. A pair of golden eagles will not allow another pair within the large circle which they claim as their own domain. There is a great amount of bullying among pigeons, and it is said that a weak bird is sometimes harried to death by a stronger. In addition to the widespread tendency to pester and plague the weak, we must take account of the regular battles which take place between males in the mating season. Even in the case of species among which pairing is the rule there is often a great deal of fighting. It is, however, among polygamous animals, such as the antelope, the deer and the jungle fowl, that the fights are most desperate and systematic. It should be noted that the intolerance of weakness which is so general among animals really reduces the amount of suffering. There are no lingering maladies. Individuals in whom disease appears early in life are not likely to leave any progeny behind them.

III.

In what animals does Mr. Headley look for the first beginnings of mental evolution? To answer this question we must first accept a criterion of mind. The author of this book adopts as criterion the power of choice. He admits, indeed, that the power of learning by experience, where it can be proved, is a more indisputable test, but he points out that there are cases where conclusive evidence for this power fails us. In such cases there may be a learning from experience or there may not, but there is an indubitable power of choice. The first instance cited by Mr. Headley is that of the amœba. This microscopic animal, a minute blob of protoplasm forming a single cell, has beyond doubt the power of choice. It exercises this power whenever it eats. Its favorite food consists of minute vegetables called diatoms encased in an envelope of flint. When an amœba comes in contact with a diatom he often swallows it. He makes an aperture, a mouth, where a mouth is required, and the diatom passes into his interior. When, on the other hand, he comes in contact with a small grain of flint, the amœba does not treat it as he treats the flinty envelope of the diatom. He leaves it alone. We can hardly describe this phenomenon as a matter of mere chemistry. It is not like the refusal of oil and water to mix. Nor is the amœba's taking of what he wants for food at all similar to the rushing together of the atoms of oxygen and hydrogen to form water.

There are among the infusorians some which are more conspicuously hunters of food than the amœba. Our author reproduces from Binet's "Psychic Life of the Micro-Organisms" an account of the predatory methods of an infusorian called Amphileptus meleagris. Amphileptus swims by means of minute threads called cilia. When he encounters Epistylis plicatilis, an infusorian that anchors itself by means of a long stalk, he feels it and partly encloses it in his pliable body. At last he makes a direct attack by fastening himself on the upper part of his victim, and then opens his huge mouth, which is never to be seen except when he is eating, and slips over the epistylis like the finger of a glove over a finger of the hand. Amphileptus then endeavors to wrench the epistylis from its anchor by twisting, and having succeeded, continues the work of digestion. Mr. Headley says that he himself once found an amphileptus anser—the long neck suggesting that of a goose—that had a good sized rotifer inside him. Rotifers, or wheel animalcules, are animals of a relatively high class, having mouths, gullets, stomachs, bands of muscle, brains, and, many of them, eyes. They are big enough to be seen beneath a lens multiplying six times.

Not only do infusorians go a-hunting, but they hunt in a way which shows that they have intelligence. Our author opines that those who belittle them cannot have watched them at work. He insists that chemical reaction supplies no explanation of the behavior of amphileptus, or even of amœba. Whether in such a case consciousness accompanies the power of choice and the pursuit of particular food it is pronounced hard to say. Many of our own movements are automatic, and are not directed by the brain, but by one of the lower nerve ganglia. Since these nerve ganglia, more highly developed than anything an amœba or amphileptus possesses, can set muscles in motion without any concomitant consciousness, it might be argued that infusorians must live an unconscious life. Mr. Headley suggests, however, that our nerve ganglia may have each of them a consciousness of its own, unrecognized by us in whose service they work, because their dim twilight consciousness is eclipsed by a more brilliant light, the consciousness of the brain. With the loss of their independence, being, as they are, the more subordinate parts of a complicated machine, the nerve ganglia may have lost also their original self-consciousness.

Do the one celled organisms learn by experience; that is to say, by a system of trial and error? Our author tells us that he has experimented on an organism that ranks only a little higher in the scale of animal existence than the two infusorians above named, and has found evidence of what we should call in one of the higher animals a power of profiting by experience, a thing generally considered to be impossible without intelligence. The organism known as zoothamnium, found in both fresh and salt water, is a treelike colony of one celled infusorians that swim by means of cilia. This colony of zooids lives fixed by its stem, which, with its band of muscle, is wonderfully contractile. At the slightest suspicion of danger the expanded "tree" will, as a rule, shrink back into a small compass. If a colony or zoothamnium is put in a small tank it will expand, the various zooids being on the lookout for any microscopic edibles that they may be able to draw into their insides. If, however, the tank is jarred, the stem and branches contract, and there is an instantaneous collapse, after which occurs a comparatively slow reexpansion, as if to see whether the coast is clear again. Mr. Headley found that when the tank had been jarred three or four times, and each jar had been followed by an instantaneous contraction, succeeded by a reexpansion, the zoothamnium began to realize that there was no danger, and would no longer contract. Apparently it had learned by experience that the jarring did not mean that there was any danger at hand. It remembered that no unpleasant consequences resulted from a jar.

Our author's conclusion is that even the micro-organisms have minds. He therefore makes intelligence and consciousness coextensive with animal life. He is even inclined to think that we ought to push the domain of consciousness further, attributing it, though in a form still more dim and rudimentary, to vegetables. The deduction rests on the assumption that "if we lived under such conditions and had similar wants, our intelligence would lead us to behave like this or that." Investigation of lower organisms would be fruitless unless we assume that there is a unity in nature, and that the same principles hold true whether we are trying to understand the psychology of a man or that of an infusorian

IV.

When we pass from the micro-organisms to animals higher in the scale of being, we find that the movements and actions of the latter may be distributed in three classes. Some are called reflex, others instinctive, and others again intelligent. Reflex actions go on independently of the brain. A frog, after the removal of his brain, will use his foot to rub off a drop of acid that has been put on his body.

Instinctive actions are in some cases confused with reflexes, though there is always this difference, that the former involve the activity of the whole animal, and not, like the reflexes, that of a part only. The most perfect, not to say diabolically perfect, instincts are observable in insects. When a queen bee emerges from the cell her first instinct is to rush to the other cells that contain queen pupæ, which she seems to know by their greater size. If she is not balked by the working bees, she tears open the cells and kills off all possible rivals. Take the case also of the so-called solitary wasp, that inserts her sting into the nerve ganglion of a spider so as to paralyze it but not kill it. Then she, the mother wasp, stows her victim in the cell in which she places her eggs. The paralyzed spider remains fresh till the wasp grub hatches out and is able to banquet on the food his mother has stored up for him. Examples of instinct no less wonderful are afforded in the life history of the Sitaris beetle and of the Yucca moth, as likewise in the familiar case of the silk moth caterpillar's spinning of its cocoon.

What is Mr. Headley's definition of instinct? He would define a perfectly instinctive action as one which is performed without practice. The possibility of learning or practising is excluded in the case of many actions, since these are performed without instruction, and only once during a lifetime. Many experiments have been made on young chickens hatched in incubators, with a view to discovering what equipment of instinctive skill they have at birth, and how much, on the other hand, they have to learn. The outcome of some interesting tests is reproduced from Prof. Lloyd Morgan's "Habit and Instinct." It came out very clearly that pecking was instinctive, and the chicks never pecked at objects beyond their reach, though their aim was not always quite accurate. Our author is inclined to think that a failure to aim accurately was due to weakness, and that if the chicks had been fed by hand for a day or two without being allowed to practise pecking they might have shown in their first essays perfect exactitude of aim. When it came to distinguishing things good for young chicks from things bad, the products of incubators were all at sea. Though they much relished certain worms, they were observed to mistake for them pieces of worsted wool of similar color; they would swallow these pieces, but, feeling uncomfortable inside, would avoid wool for the future.

Another example of the distinction between instinct and habit is offered by the young swallow, who when he first jumps from the nest shows himself an adept at flight, but is not so good at sudden twists and turns, the capital accomplishment of the swallow, as are his parents. Many birds, notably gulls and the great soaring birds, spend a great deal of time in the air perfecting themselves in the art of flight. Another interesting fact brought out in the book before us is that instinct may be snubbed till an acquired habit supersedes it. For instance, it is natural for a hen to keep her young chicks on dry land. She herself has an instinctive dislike for water, except for drinking. Yet a hen who for three successive years had been made to sit on ducks' eggs came to think it right and proper that her brood should take to the water. She would fly to a stone in the middle of the duck pond and call them to her. The fourth year she was put to sit upon her own eggs. She flew to the stone as before, however, and expected her chicks to swim to her as her ducklings had done. There is another story, seemingly well authenticated, of a hen on whom a similar experiment had been made actually pushing her chicks into the water.

What, then, are our author's general deductions as to instincts? He finds instincts absolutely perfect when, as we have said, they are required only once during the lifetime of the animals, as, for example, in the spinning of the cocoon by the caterpillar. The caterpiller is able to care for himself from the moment he emerges from the egg. Whenever, on the other hand, there is parental instruction, instincts become weakened. Young chickens just hatched show skill at nothing save pecking, and as we have seen, even their earliest pecking leaves something to be desired. Starting with this one accomplishment, they are educated by their mothers till they are fitted to face the world with its dangers and pitfalls. Birds, in such matters as song, nest building and flight, though they receive no instruction, perfect themselves by practice. Not much practice, however, is required, the arts mentioned being almost instinctive. Mammals, on the contrary, have a poor instinctive endowment. They learn from their parents and playmates, learn also much from experience, and so solidify and stiffen the habits that their mode of life requires.

V.

What of human instincts? Man's endowment in this respect is very meagre. The instinct to suck the breast is, as with other mammals, ready for use, but there is very little more. This poverty in respect of instinct means, however, a rich endowment of another kind, for the rule is, "poor in instinct, rich in intelligence and in power of learning."

Man, preeminent in intellectual endowment, is far more helpless in infancy than any other animal, and it is long before he emerges from his helplessness. All his infantile movements are made awkwardly, as if with conscious effort. If we watch a small child trying to pick a flower, we observe that he makes bad shots, being unable to estimate the flower's distance from himself; his muscles, moreover, are not yet trained to cooperate with one another. Instead of instincts, in the strict sense of the word, man has instinctive impulses, as for example, the impulse to play, to imitate, to contend against obstacles (the fighting propensity), and to use his right hand when skill is required. Equipped with these impulses, he gradually coordinates his muscular activities, observes everything around him, makes endless experiments, finds what suits him and what does not suit him, what is pleasant and what is disagreeable.

Mr. Headley points out that some of the instinctive impulses which we consider most human are highly developed in monkeys. He cites Mr. Romanes's account of the brown Capuchin monkey that he and his sister kept as a pet: "One day he obtained possession of a hearth brush, one of the kind that has the handle screwed into the brush. He soon found the way to unscrew the handle, and having done that he immediately began to try find out the way to screw it in again. This he in time accomplished. As soon as he had accomplished his wish he unscrewed the handle again, and then screwed it in again the second time, rather more easily than the first, and so on many times." For the same monkey a store of nuts was kept locked in a trunk. When the key was given him he tried for two full hours without ceasing to unlock the trunk with the key. He had watched the process of unlocking and thought he could do the trick. He found the way to put the key in, but never succeeded in opening the trunk. The lid had to be pressed down before it would open, and this he had not noticed. That he was a great imitator, however, and had wonderful perseverance is certain. How, asks our author, ought we to class this imitation? Was it simple imitation, only on a par with the endless repetition by a child of a sound heard, without any attempt to approximate more closely to it? Mr. Headley is inclined to regard it as of a rather higher class than this, because there was a definite end in view. Compare, however, the brown Capuchin monkey with a boy trying to imitate the note of a cuckoo. The cuckoo tells his name to the woods and then is silent. The boy first imitates the note with only moderate success, but, keeping the idea of the note in his mind, he tries to approximate more and more closely to it. This is pronounced something higher than the monkey's merely working the key about in the lock because he has seen other people do it. The boy notes his gradual progress toward success and profits by it; the monkey merely fumbles with the key in the hope that something will happen.

Mr. Headley's final verdict is that with all his brain power man is akin to the micro-organisms. The verdict, of course, will convey widely different meanings to different people. Some will think of the micro-organisms as sharing the greatness of man. Others will see in the verdict rather the degradation of man than the ennobling of the lower ranks of animals. Fresh from laboratory experiments, they will say that man, like the uni-cellular organisms, gives to every stimulus from without an inevitable response. His environment plays upon him, they may say, as a musician plays upon an instrument, and all the actions which seem to depend upon the will are, according to this view, only disguised reflexes, disguised by the complications of the brain, by the conflict between contending motives (contending stimuli from without), and by the accompaniment of consciousness. The high and the low, the complex and the simple, so the materialist may argue, must stand or fall altogether. If an infusorian is but an instrument played on by the environment, man must be set down equally as an instrument that is played upon, though a very splendid one. Mr. Headley, for his part, cannot help cherishing at least some thread of hope that we may possess free will in some true sense. He finds, at all events, consolation in the fact that for practical purposes what is wanted is not free will, but a working belief in it. "When the time for decision and for action comes a man must feel that he is free to choose or he is lost. This working belief in free will, even though the thing itself be proved to be a phantom and an illusion, is the inalienable property of every healthy man."

M. W. H.

The Seigniorial System in Canada.

An account of the interesting remnant of the feudal system which existed on our borders down to 1854 will be found in the volume entitled *The Seigniorial System in Canada*, by Dr. WILLIAM BENNETT MUNRO, assistant professor of government in Harvard University (Longmans). This book is based entirely on first hand research, the author having made it a rule to accept no statement of importance from other than authoritative sources. Most of the material from which information has been gleaned is not at present accessible to the general reader; much of it is still in manuscript, while such of it as is in print is to be reached for the most part only in Government publications, which were issued in limited numbers more than half a century ago, and are now not easy to obtain. It would not be easy to exaggerate the value of this examination of a remarkable feature in the institutional history of the Canadian Dominion which hitherto has been but slightly studied by writers on the policy and achievements of France in the New World. Parkman gives a very inadequate sketch. We add that a comprehension of the causes of the French Revolution will be furthered by a knowledge of the structure and workings of the seigniorial system, which at an epoch comparatively recent survived in Canada. As our author points out in his first chapter, the merits and the faults of the French political, social and economic system which came to an end in 1789 may be best seen and studied in the colonial possessions of the Bourbon monarchy. The development of feudalism in its later stages was more uniform and consistent in New France than in Old France; its workings were less obscured by clouds of privilege, and as a system it had more symmetry. Mr. Munro's investigations have convinced him that on the whole Canadian feudalism had all the merits of the system which formed its background at home, while it lacked many of the odious incidents that had served to make the latter a heavy burden upon the agricultural classes of France.

We pass over the first three chapters, which contain a concise description of the feudal system (as it existed in France down to the period when the first French settlements in the New World were made), and also an enumeration of the seigniorial grants made at various dates between 1593 and 1760, when the French régime came to an end. Thenceforward, the colony having passed permanently out of the hands of the French monarchy, the background was materially altered; for England a century before had swept from her dominions the last of the important relics of feudal tenure. Public opinion in the home country now became an important factor in the determination of colonial relations, a factor which, under French rule, had served in no degree to mould the policy of the home authorities. For these reasons the attitude of the British Government toward the seigniorial system in Canada was less consistent than had been that of the French Government before 1760, and was often based on a much less accurate knowledge of colonial conditions. To the lack of definiteness in policy our author ascribes many of the abuses which characterized Canadian seigniorialism under British administration.

I.

The parts of the book to which we would direct special attention are the chapters which treat of the character and condition of the seigniorial noblesse, of the relation of the tenure system to the Catholic Church, and finally, of its relation to popular discontent and the rebellion of 1837-38. It has been the custom of some writers to use the term "seigniors" and "noblesse" interchangeably, but, as a matter of fact, not all the Canadian seigniors were members of the aristocracy. In speaking of France of the *ancien régime*, it is approximately correct to say that a seignior was a member of the noblesse; in New France, on the contrary, the possession of a fief or seigniorate gave no noble status whatever. The commoner who received a colonial fief remained a commoner. Some Canadian seigniors, it is true, received rank in the noblesse, but in every case by specific letters patent from the Crown, and never as an incident of their tenure. As patents of nobility, however, were never granted in Canada except to the owners of seigniories, it follows that while the Canadian seignior was by no means always a noble the Canadian noble was always a seignior. In France just the reverse was true. Of course, members of the French noblesse who were not seigniors might be serving in Canada as officers of the forces. That would not make them members of the Canadian noblesse.

The noblesse of New France was never a very numerous body, and included only two Countships, that of Orsainville and that of St. Laurent, the latter comprising the island of Orleans, just below Quebec. Of baronies, five in all seem to have been created—four in Canada and one in Acadia. Of the baronial grants, the most interesting is the last in point of creation, that of Longueuil, bestowed in 1700 on Charles Lemoyne, by way of compensation for the notable services which had been rendered by various members of the Lemoyne family. The seigniorial grant of Longueuil lay on the south shore of the St. Lawrence, almost opposite the island of Montreal. Of all the titles of honor granted by the French crown in Canada, that of the Baron de Longueuil is the only one now included in the British peerage.

Among the noble holdings in New France, there was only one chatellenie, that, namely, of Coulonge, which was given to Louis d'Ailleboust in 1656. There seem to have been two Marquisates in Canada, but very little is known about them. A grant of certain lands at Three Rivers is designated in a deed of sale executed in 1686 as the "Marquisat de Sablé." No trace of any patent creating this marquisate has been found, however, nor is any Marquis de Sablé mentioned in any of the Canadian records of the time. All that can be learned of the other marquisate is that in the closing years of the seventeenth century the title of Marquis de Miscou was conferred upon one Michel de Saint-Martin, a French adventurer. The title presumably relates to the island of Miscou in the Gulf of St. Lawrence, but there is no evidence that the Marquis ever came to New France.

In addition to the above named grants of higher dignities, many "letters of noblesse" were issued from time to time, giving the seigniors rank among the lesser nobility. In its widest sense the term "noblesse" included all lay members of the privileged orders, no matter what their rank or their method of acquiring it; for the attributes of nobility might be inherited, or obtained by letters patent from the king, or acquired through the tenure of certain designated offices in the royal service, either military or civil. There were therefore in France a large number of untitled nobles, or *gentilshommes*, who possessed all the attributes and privileges of nobility, and transmitted their quality and status to their posterity. Some of the emigrants to New France were already members of the noblesse at home; and these, of course, retained their rank in Canada. Others were commoners when they arrived, but received elevation as a reward for their interest in colonial development or for efficient service of the Crown.

The grant of letters of noblesse to five prominent colonists about 1667 made such an impression that forthwith traders, and even artisans, were seized with a desire to obtain seigniories in the hope that social elevation might follow. The whole colony became infatuated with artistocratic ideas. We are told, for instance, that Noël Langlois was a good carpenter until he secured a seigniory and aspired to be a *gentilhomme*, when he became proud and indolent, and that Jacques Le Ber, a Montreal shopkeeper, who had by years of work and thrift amassed what for those days was a fortune, cheerfully paid out 6,000 livres to be made a gentleman. He became M. de Senneville and seignior of the fief of St. Paul's Island. Langlois the carpenter became seignior of the fief of Port Joly. As early as 1679 the colonial authorities began to call the attention of the Minister to the danger of granting too many patents of nobility in the colony. In 1685 Gov. Denonville wrote: "Let me inform you, sir, that the noblesse of this colony are a beggarly lot, and that to increase their number is but to increase the number of drones." The letters patent continued to come, however, until in 1691 the Intendant fairly implored the King to grant no more of them unless he simply wished to "increase the number of beggars." When Canada passed into British hands many of the *gentilshommes* sold their seigniories and went to France. Naturally the percentage of exodus was higher among them than among the habitants, as their tenants were called. It was estimated that after the treaty was signed in 1763 only twenty-two noble families remained in New France; and four years later a table submitted to the home authorities by Gov. Carleton showed how badly the hegira had depleted their ranks. The new suzerains respected the rank and privileges of those who remained, and Carleton suggested that in view of the influence which they possessed over the habitants no effort should be spared to bring the noblesse into sympathy with the new administration.

Neither the seigniors nor the noblesse of Canada can properly be said to have formed a privileged order. Since no direct taxes were ever levied in the colony, there were no exemptions in favor of any class of the people. The seigniors and the nobility paid tithes, and if they engaged in trade they paid the regular import and export duties. Before the law they were but the peers of the habitants, and the Intendant saw to it that the equality was no mere fiction of judicial administration. "Like the attempt to foster a system of private justice, the endeavor to nurture a seigniorial aristocracy and to reproduce beyond the seas a counterpart of the French nobility proved a rather discouraging failure. The little band of colonial élite was nursed liberally with royal favors, but the gaunt, lean body would not thrive; its debility was chronic from first to last."

II.

From the beginning to the end of the French régime, one of the bulwarks of Canadian feudalism was the Catholic Church, which, with its various subordinate institutions and orders, entered heartily into the spirit of the system, gave it unvarying support and was a strong factor in securing its development and extension. We should bear in mind that in New France the Church never lost, as it did in Old France, the confidence of the masses of the people; the higher ranks in the ecclesiastical hierarchy always kept in touch with the lower and the lower clergy with the parishioners. Mr. Munro points out that "the Canadian clergy where never regarded as a privileged order; on the contrary, they gave to the colony much more than they took from it. If ever there were laborers worthy of their hire these were the spiritual pioneers of France in the New World."

The support of feudalism by the powerful influence of the clergy formed a factor in the development of the system which is not easily overestimated. Nevertheless, there were circumstances which, during the closing years of the French era, served greatly to weaken the seigniorial system in Canada. The long wars with England, which continued with but little interruption from 1745 to 1760, so hampered immigration from France that during this period the number of settlers who came into the seigniories was very small. The wars also subjected agricultural conditions to a severe strain, for the authorities found it necessary to put into the field practically the whole adult male population. It is not surprising that under these circumstances land should have gone out of cultivation or have been left for years without proper care. Many holdings and even whole seigniories were abandoned, seigniorial dues remained unpaid, mills and churches went into decay, in short the whole agricultural system became disorganized. The reorganization of economic conditions, more particularly the rearrangement of those which had become entirely deranged by the enormous depreciation of the paper currency during the years preceding the conquest of Canada, was the task which first confronted the new British authorities.

After the British conquest of Canada many of the seigniories passed from French into English hands. Well to do English settlers came to the colony and bought out seigniories, and English merchants of Quebec and Montreal frequently did the same thing. The new seigniors were often hard masters, enforcing the seigniorial dues and services to the letter and calling freely—usually with success—upon the courts for assistance in such enforcement. They looked upon their seigniories as means of profit, whereas the seigniors of the French colonial régime had been forced to regard themselves merely as royal agents for the upbuilding of the colony, or, in other words, as trustees for land held for the use of future settlers and for the sons of the people. It was natural, therefore, that the French speaking habitant should dislike his new English speaking landlord and desire that the latter should have no such favor shown to him before the law as was involved in the right to obtain, for a small sum, absolute property in a seigniory.

The Church too, disliked the incoming of the English seigniors, for most of them were Protestants, and hence not only paid no tithes themselves, but were ready to sub-grant lands to Protestant settlers, who also would pay none. By reason of this freedom from tithes and from the necessity of observing the numerous holy days of the Catholic Church, the Protestant settler had a great economic advantage, and inasmuch as he worked his land more intelligently than his Catholic and French neighbor, he became so much more prosperous that the habitant was jealous of him and frequently tried to drive him away by petty persecution and boycotting. The new English settler, moreover, turned his attention to the growing of new products, notably hemp, and in this policy the civil authorities encouraged him; but as hemp paid no tithe, the Church frowned upon its cultivation by the habitant, despite the fact that it could yield good profits.

III.

Such were some of the causes which led the habitant to exhibit signs of restlessness and discontent during the fourth decade of the nineteenth century. Under the working of the French law of succession their domains had been divided and subdivided, until a holding in the peculiar longitudinal shape which it retained would scarcely have sufficed to support a family, even had the habitant adopted up to date methods of cultivation. This he did not do; his methods were, for the most part, those of his great grandfather of the old French epoch. Fertilization of the land was rare; systematic rotation of crops would have been most difficult on the narrow strip of land which the habitant held; and agricultural implements had been but little improved. If anything, the habitant was at this time worse off than he had been before the British Conquest; for, while his average holding was much smaller, neither his seignior nor his Church had in the least relaxed demands upon him. The maintenance of his numerous progeny—large families were still the rule—was to him an uphill task, and the effort to accomplish it too often made him a spiritless drudge. No wonder then that he became an easy prey to the sophistry of his political leaders, who exploited him to their own political benefit in Papineau's Rebellion. For a time the revolt looked ominous enough, but, being poorly organized and miserably managed, it was suppressed by the colonial authorities without much difficulty.

The rising, however, was not without far reaching results; for it drew the attention of the British Government to the gravity of the situation and caused Ministers to seek fuller information before legislating further for Lower Canada. To this end the British Government decided in 1838 to send out to the colony a High Commissioner with dictatorial powers, who was to assert the supremacy of the law, to hear complaints from all parties and to recommend to the home authorities some plan of government for the province under which internal conflicts might be avoided. It is well known that the person selected for High Commissioner was John George Lambton, first Earl of Durham. The workings and the future of the seigniorial system of land tenure inevitably engaged his lordship's attention, and the results of his investigation, together with recommendations as to the future treatment of Canada by the home Government, were presented in 1839 to Parliament in his famous "Report on the Affairs of British North America."

Durham recognized very clearly the wisdom of the British authorities in seeking the extinction of the old French system of land tenure. He pointed out that while the rural population of Lower Canada was increasing steadily, the amount of cultivated land supporting this population was not increasing in the same proportion. According to an estimate made in 1826, the population of the various seigniories had more than quadrupled during the forty-two preceding years; but in this interval the quantity of land under cultivation in the province had increased by only one-third or thereabouts. Since 1826 the same anomaly in development had been witnessed. The time was past, Durham declared, for continuing the maintenance of a system which encouraged this condition of affairs. He showed that the French rules of succession to real property had caused the oblong tracts of land to be so cut up into long narrow strips that healthy agricultural progress was being strangled, and pointed to the northern shore of the St. Lawrence, where from Quebec to Montreal the alluvial land was shredded into mere ribbons, often with a river frontage of only a few rods and a depth of a mile or more. Along this river front ran the main road, and along the road the habitants had built their dwellings, thus "giving the country of the seigniories the appearance of one never ending, straggling village." The people were thus forced, Durham added, to devote their energies to the pursuit of what was in his opinion "the worst possible method of small farming."

The High Commissioner saw, however, that the faults were not all on the side of the habitant. A good deal of the difficulty he attributed to the Englishmen who had bought out seigniories from their French Canadian owners and had then proceeded to exercise their seigniorial rights in a manner "which the Canadian reasonably regards as oppressive." Differing from his dependents in race, religion and language, the new seignior needed to exercise much tact, friendliness and forbearance in order to get along amicably with them. Too often, however, he displayed none of these qualities. Hence it was that Durham found in the land tenure system one of the causes for the general estrangement of the two races. One of Durham's associates, Charles Buller, outlined a definite scheme for the commutation of seigniorial lands, according to which the annual dues owing by either seignior or habitant should be made an annual rent charge on the land, which annual charge might at any time be commuted for a lump sum on a reasonable basis. This plan was substantially followed by the Colonial Legislature when some fifteen years later it undertook to arrange a scheme of commutation. It was not, however, until 1854 that the seigniorial system of French Canada was abolished. That the legal foundation upon which the social order of Lower Canada rested should then have been cut away without doing any violence to the superstructure is considered by the author of the book before us a tribute to the moderation and the progressive spirit of the Canadian legislators who undertook to solve the problem.

MR. STICKNEY AND THE TAILOR.

How the Railroad Man Was Discouraged in His Quest for Fashionable Clothes.

A. B. Stickney, the president of the Chicago Great Western Railway, does not answer the popular description of a railway magnate in his personal appearance, says the Washington *Post*. He looks more like a well to do farmer off on a holiday than a multimillionaire. A friend of Mr. Stickney related this story and vouched for its accuracy:

"Mr. Stickney is notoriously careless in his dress, to the great annoyance of his wife and family.

"When he was starting East recently Mrs. Stickney got after him and made him promise to go to a first class tailor upon his arrival in New York and order a complete wardrobe of clothes.

"'As I was leaving the Waldorf,' said Stickney to me in relating the incident, 'the morning after my arrival, I remembered the promise I had made to my wife about getting some clothes, so I dropped in the first place I came to. It was on Fifth avenue and seemed to be a pretty swell establishment.

"'I walked about examining different pieces of cloth, trying to make up my mind what I would select.

"'Presently a very distinguished looking individual approached. In a very condescending tone he asked me what I wished. I was a little taken aback, but meekly informed him that I had thought of getting some clothes. "My friend," was the reply of the haughty personage, "I think you are in the wrong shop. We are too high priced for you. Doubtless you can find what you want over on Sixth avenue."'

"Mr. Stickney thanked the lordly tailor and left. He said that it was the first and only time he had ever attempted to order clothes of a fashionable New York tailor.

Mr. Stickney's wealth is estimated in the neighborhood of $20,000,000.