We are pleased that as a result of the publicity given to Lone Scouting through these columns many new members have joined the movement during the past few weeks. This week applications for membership have been received from Cobden, Hydro, Burkes Falls and Harriston, and at Durham there is every prospect of a full Patrol being formed.

A recent check up of the records of the Ontario Lone Scout Department showed that since its inception two years ago about 460 boys have been admitted to membership in the movement. Of course quite a few of these have been since transferred to regular troops which have been formed as a result of Lone Scout activity.

The Lonies at Fenelon Falls under Senior Patrol Leader Doug. Warren have had a very busy time just recently. On July 4th they had the pleasure of again meeting their friends of the 51st Toronto Troop, who camped near the town. The Lonies helped the Toronto Scouts to make camp, and entered ito their activities with zest.

Later the Lone Scouts were invited to visit the camp of the 90th Toronto Troop at Sandy Point, on Sturgeon Lake. They hiked over to the camp on July 8th, and to their surprise met an old friend who turned out to be none other than "Cookie" ("Colonel" Walton), who was so popular at the Lone Scout Camp at Ebor Park last summer. The Lonies stayed over night with the 90th, and entered into their programme enthusiastically, having a great time at the evening council fire.

We like to see this fraternization between the Lonies and their city brothers, and we are pleased to state that quite a few members of the Lone Scouts have gone to camp this year with regular troops, at the latter's invitation.

The Fenelon Falls Lone Scouts also report a rather unique "Good Turn" which might be copied by other Lonies who live along the lake shore. They recently assisted the local town authorities to clean up the beach, which we think was exceedingly good work, as we have seen quite a few beaches recently that could very well benefit by a similar "Good Turn."

Lone Scout visitors to Provincial Headquarters in Toronto recently have included Bill Gilbert, of Essex, anl Jack Bassett, of Listowel, and Harold Nickle of Harriston was in Toronto a short time ago, but he did not pay us a visit. Lonies who come to Toronto for any reason are always welcome visitors to Scout Headquarters, so we hope you won't forget to pay us a call.

This week's Summer Time Proficiency Badge is the Angler's Badge. The requirements are as follows:

1. By the usual angling methods catch and name seven different species of fish. At least one specimen must be taken by fly-casting or trolling and one by bait-casting. In single handed fly-casting the rod must not exceed seven ounces in weight; in double handed fly-casting the rod may be one ounce weight for each foot in length; in bait fishing the rod must not exceed ten feet in length nor twelve ounces in weight.

2. Show proficiency in accurate single-handed casting with the fly for distances of 20, 40 and 50 feet, or in bait casting for distance of 40, 60 and 70 feet.

3. Make three artificial flies (either after three standard patterns or in imitation of different natural flies). Make a neat single gut leader at least four feet long, or a twisted or braided leader at least three feet long. Splice the broken joint of a rod neatly.

4. Give the open season for the game fishes in his vicinity, and explain how and why they are protected by the law.

Applications for membership in the Lone Scouts will be received from boys between the ages of 12 and 18 inclusive, who cannot become members of a regular Troop, for reason of locality or other handicap. Applications should be sent to the Lone Scout Department, The Boys Scouts Association, 330 Bay Street, Toronto, 2.—"Lone E."

Birds Necessary To Human Welfare

JULIAN S. HUXLEY

Eminent English biologist and writer.

To watch birds is delightful enough in itself; but most people like a background against which they can set their observations.

These feathered creatures, what are they in the economy of Nature? What is their history? How do they compare with other kinds of living things? There are no other animals built in at all the same way as birds. How did they come to evolve into their present condition?

The first thing that evolutionary study teaches us is that birds were not always so different from other creatures as they are today. The few fossil birds known from the upper Cretaceous age, 70 or 80 million years back, all had teeth, like any lizard. When we reach the Jurassic period, near twice as long ago, the only two specimens of birds so far found were so unlike any ordinary bird in their construction that, if it were not for the lucky accident of their having been embedded in such fine mud that the imprint of their feathers is still preserved to us, we should have been in doubt as to whether they were birds at all. They might have been agile reptiles, for they were toothed, had long jointed tail bones, and big claws on their fore limbs.

Birds, in fact, are an offshoot from one kind of very active reptile, probably related to some of the smaller dinosaurs. They became birds through the evolution of feathers out of scales, which first, by acting as a heat-retaining blanket, allowed their temperature to be kept at a high level, and, secondly, made flight possible.

There have been three other groups of animals to achieve true flight: one, the flying insects, arose from a wholly different stock; two, from the same back-boned stock to which the birds belong—the flying mammals or bats, and the flying reptiles or pterodactyls, the latter all long extinct.

The great advantage which the birds had over their vertebrate competitors in the art of flying was that they, possessing feathers, could make a wing of these; while the skinny flight-membranes of bats and pterodactyls had to be stretched taut and so demanded attachment to hind as well as fore limbs. Bats cannot run or hop, nor could pterodactyls; their legs are subordinated to their wings. But birds kept their legs clear of this entanglement, as the ancestors of man kept their fore limbs clear by running; and so birds were free both of the air and of the earth, having one pair of limbs for each element.

Insects are the equals of birds in this respect; but they are inferior in another. They can never grow big. It would take too long to go into the reason why, but the fact remains; an insect as big as a swan or even as a thrush is, luckily for us, unthinkable. Small size is in itself a disadvantage; it brings the further disadvantage in its train that it prevents an animal from having a constant temperature higher than its surroundings, for its bulk is so small in proportion to its surface that the heat generated by the chemical combustion in its muscles all leaks away in no time.

So insects are not only small, but the whole tempo of their lives goes up and down with the temperature of the outer world. They cannot achieve the constancy of living possible to a bird or mammal, and are at a great disadvantage in winter, being put out of action more or less completely by the cold.

However, though birds can grow big in comparison with insects, they are limited in size in comparison with other vertebrates. This comes from the fact of flight; the laws of aerodynamics make it very inconvenient for a flying bird to weigh over 50 pounds, and quite impossible for it to weigh as much as a horse or even a leopard. It is only birds which have given up flying, like the ostrich or cassowary, which have even begun to grow big according to mammalian standards. The stock size for birds, in fact, is from something under an ounce to about 10 or 15 pounds.

Birds and mammals developed from two quite distinct reptilian stocks. Birds have kept reptilian-looking scales on their feet, and have stuck to the reptiles method of reproduction by large-yoked eggs. In some ways, however, the bird branch has evolved beyond their rivals, the mammals, and in these respects must be regarded as at the very tiptop of the tree of life. Birds have the highest temperature, and therefore the greatest speed of vital chemistry, of any creatures. The have the greatest activity, the greatest emotional variety; they show the highest extremes of beauty in color and pattern, they have the most striking and highly developed courtship of any group of animals, and their songs are by far the most beautiful and elaborate music that the world knew before the coming of man. The are the most mobile of creatures, and so are at a great advantage over every other kind of animal in high altitudes; for they can breed there and take advantage of the riches of the Arctic lands and still more of the Arctic seas during the summer, and then migrate to temperate climates.

What part do birds play in the elaborate system of exchanges which constitutes the balance of Nature? The great majority of them are eaters of other animals. For this they have stuck to the ancestral predilections of vertebrates, which were all in origin flesh eaters.

The birds as a whole stuck to a meat diet; but their average size determined the average size of their prey. The great majority of them are so moderate in bulk that they can only eat small creatures, though they will include worms and snails and spiders, will for the most part be insects. Some of the larger birds eat creatures up to the scale of frogs and mice, or are carrion feeders, or prey on smaller birds or on fish. But if we could take statistics on the food of all birds, we should find that insects headed the list.

Now insects are in the great majority vegetable feeders. So that in regard to what we may call biological trade—the complicated circulation of matter through lifeless forms in earth, water, and air, through green plants, animal bodies, and microscopic scavengers like moulds and bacteria, and back into lifeless forms again—the net effect of birds is to be a check upon insects in their consumption of green plants and their products. In this way they are allies of man.

So birds have a place in civilization. While we are mechanizing life, we should see that a place is kept for them, for our delectation and that of our posterity.

New Letters Patent For Governor-General

Ottawa.—New letters patent constituting the office of Governor-General of Canada have been issued by King George V., together with new instructions for the guidance of the conduct of the Governor-General. The last time letters patent were issued was in 1905 by King Edward VII. In general the recent documents bring the office of the Governor-General into accord with the recommendations of the Imperial Conference of 1926, which were adopted by the Parliaments of the Empire at various dates since that year.

Specifically, they remove from the Government of the United Kingdom the last vestiges of control exercised by that Government over the appointment of a Governor-General to Canada, making it a direct and personal one by His Majesty, acting on the advice of H.M. Government in Canada. Formerly in defining the powers and authority of the Governor-General, the letters patent directed His Excellency to carry out such instructions "as may from time to time be given him under our sign manual and signet, or by order-in-Privy Council, or by us through one of our principal secretaries of state." In the new issue, the last two references are eliminated.

The same deletion occurs in the document containing the King's instructions.

An archaism is removed from these instructions having reference to the grant of pardons, etc., by the Governor-General. Previously His Excellency had the authority to prescribe banishment for political offenders. That obsolete form of punishment is done away with by merely deleting the sentence which conveyed that power.

Prayer

He who prays as he ought will endeavor to live as he prays.—Owen.

Latest in Gas Masks

Three charming young ladies are exhibiting the latest types of gas masks at the Society of Chemical Industries exhibition held in Westminster, England. The exhibition displayed many of the latest marvels of science.

Grasshoppers Still Invade Nebraska

Country Left Barren in Wake of Hordes Despite Desperate Offensive

Buffalo, Neb.—Wooden fence posts, wagon tongues, even clothing hung out to dry, were quickly devoured by the gray-yellow horde. Anything containing vegetable fibre attracts the hungry grasshoppers.

Although farmers said several millions of the grasshoppers had been killed, additional swarms are expected when eggs now infesting the ground have incubated. Fires in which bodies of the slain insects were being burned dotted the plains tonight. Introduction of poison as a weapon resulted in the death of thousands of the insects.

At some points the bodies of the grasshoppers were piled high on the rails, impeding trains. At others they made the ground slippery beneath the tires of automobiles.

Some of the farmers, their crops destroyed, raised money by packing the dead grasshoppers in preservatives and selling them to fishermen for bait at 20 cents a pound.

The insect invasion has devastated gardens, crops and fruit trees, and behind their advance stretches a sere swath. Damage already is in the millions of dollars.

Entymologists said the grasshoppers soon would sprout wings and increase the area of their damage. Unless checked soon, they will be in control of the entire tier of Northern Nebraska counties.

Fields, green today, may be splotched tomorrow with barren stretches. Another day, and the fertile Platte Valley may be barren.

City and town dwellers also are witnessing the march of the grasshoppers. Gardens and trees are left leafless. Hungry grasshoppers swarm solidly on the houses, gather in clusters and fall to the ground from trees and telephone poles.

Burning of the insects was decided upon when farmers feared their cattle would die after eating the bodies of grasshoppers which had been killed by poison.

Harvesting In West Early This Year

Winnipeg. — Wheat cutting commenced in the St. Adolphe district of Manitoba on July 25th, the earliest, it is believed, such operations have occurred in Manitoba.

One farmer, resident in Manitoba, for 36 years, declared it was "the earliest date for wheat cutting in my experience." St. Adolphe is two miles south of Winnipeg.

British Star

"Bunny" Austin, England's ranking Davis Cup tennis player, returns a fast one during a set which he won from Sydney Wood of New York.

Seven Women Fliers to Compete In British Air Classic

London. — Forty-two competitors, including seven women, are ready to start in the 1,000 mile race for the King's cup, British air race classic. The field includes the first Canadian in the event, John C. Webster, of Montreal, flying a Canadian machine.

A daughter's challenge to her father is one of the features of the race. Capt. The Hon. Frederick G. Guest and his daughter, Miss Diana Guest will fly moth planes, leaving together 28 minutes and nine seconds after the first starters.

No one would be surprised if the trophy remained in feminine hands for another year. Miss Winnifred Brown, who last year was the first woman to capture the trophy, is heavily handicapped, however, leaving an hour, 17 minutes and five second after the first machines.

Lady Bailey, famous for her long distance flights, is most heavily handicapped of the women entrants, being scheduled to start an hour, 52 minutes and 27 seconds after the first machines which take off from Heston airdrome at 6 a.m. Miss F. J. Crossley, daughter of a motor car manufacturer, in a plane piloted by flying officer H. S. Deach, a member of the Royal Air Force speed flight, takes off with the first group.

The scratch competitor is Flight-Lieut. C. B. Winchott, whose plane is capable of a speed of 150 miles an hour. He starts two hours, 33 minutes and 13 seconds behind the first planes.

Water Replaces Steam in New British Engine

Tradition of 300 Years Upset by Invention Using Liquid Working Substance

London.—A new kind of engine that uses liquid water instead of steam, discards boilers and condensers, develops more power in less space than ordinary steam and gas engines, with freedom from explosion hazards and heat wastes, will shortly be offered for experimental commercial use here.

It is the invention of J. F. J. Malone, engineer, of Newcastle-on-Tyne, who has experimented with the novel water engine for several years. The details of its operation have just been revealed.

Since steam and other engines have been worked always by the expansion of gases of one kind or another for some 300 years, this new kind of prime mover that is operated by expansion of liquid instead of expansion of gases has created much interest in engineering circles.

Water Stays Liquid

Both the new water engine and conventional steam engines use water, but in the case of the steam engine the water must be changed to steam before any work can be done. In the Malone engine the water stays liquid even under pressures of tons per square inch created within the engine.

Rapid heating and cooling of the liquid water are necessary in order that the water engine will operate. This was accomplished by Mr. Malone through the development of a novel form of heat transfer within one of the cylinders of the water engine.

Other advantages claimed for the engine are:

Only a small amount of water is needed and this reduces the size of the engine and allows it to be used where water is scarce.

It runs and changes speed more noiselessly than conventional engines.

It loses less heat than other engines and its outside shell is cool to the touch.

Its mechanism is simpler and the working parts need be opened for inspection only once in four years.

There is no incessant boiler cleaning, no water gauges, no risk of shortness or foulness of water.

The control system is simpler than in the steam engine.

It has no exhaust, as the water is used over and over.

All bearings within the engine are cold and lubricated by the water itself.

New Cards Invented To Aid Bridge Players

Zurich.—A new kind of playing cards, according to The N.Y. Times, will soon be adopted by bridge players all over Europe and America, according to Dr. Paul Herrmann of Zurich, an authority on the game.

The cards, made in Austria, lessen the chances of a revoke at contract bridge, a game rapidly becoming more complicated. Hearts are red, diamonds pink, spades black and clubs dark green; the cards themselves are longer and narrower than those at present used and are made to fit the present-day duplicate contract boards.

Dr. Herrmann thinks that bidding by players themselves, in duplicate contract, will rapidly be superseded by the employment of an announcer, thus eliminating all likelihood of information being wrongly transmitted by inflexion of the voice when calling.

Efforts are being made to adopt a more uniform system, both in the forms in which contract bridge is now played and in the methods of scoring, in order that international competitions may be arranged between leading bridge clubs.

70-Year-Old Man Enters University

Toronto.—A freshman has been admitted to Queen's University, Kingston, for the summer classes, who is 70 years old, is an ex-mayor and also an ex-member of the Canadian Parliament. Mr. I. E. Pedlow of Renfrew, Ont., is Canada's oldest "freshman."

Mr. Pedlow's college days will be followed with great interest, for he has carved out an honorable and useful career for himself, and is now taking his studies, which usually come first, last.

Scientist Explains New Discovery

New Germ Isolation Process May Aid in Devising Cures

Chicago.—A mild-mannered little man, described for fellow scientists here recently his disease germ discovery, expected to have as far-reaching effect on the treatment of human ills as the processes evolved by the famous Louis Pasteur.

The man is Dr. Arnold I. Kendall, professor of bacteriology at the Northwestern University Medical School for the last 20 odd years. His discovery consists of a process of making visible under the microscope bacteria so tiny that research workers heretofore have been unable to identify it.

"The discovery is as startling the the scientific world as the discoveries of Pasteur," said Dean Irving Cutter, of the Medical School.

"Dr. Kendall's accomplishment means that we now stand on the threshold of a great discovery," added Dr. Edward C. Rosenow, eminent bacteriologist.

Dr. Kendall has developed what he calls the "K Medium," a soupy solution in which the invisible bacteria now may be isolated. His experiments are not over despite his years of research, he said, and practical use of his discovery is yet to come. He now is hard at work on a paper describing his "K Medium" in detail, so that it may be manufactured in laboratories other than his own.

A small intestine of a rabbit, dog, swine or man, chemically treated, is the essential ingredient of the solution, he said. He asserted that his experiments in Chicago hospitals over a period of years indicated that it could and would isolate the bacteria of a majority of the malignant diseases.

Isolation of the infinitesimal germs means that such diseases as sleeping sickness, paralysis, influenza, cancer and rheumatism may be traced to their primary causes and that physicians hereafter may be able to devise specific cures for them.

Saskatchewan-Britain Cattle Trade Growing

Regina.—Saskatchewan is shipping 150 head of cattle per week to Great Britain as a result of contracts entered into by the British Co-Operative Wholesale Society.

During the visit of officials of this society to Regina during the spring it was suggested approximately 100 head be shipped weekly. Officials of the Government and the Saskatchewan Live Stock Pool did not feel that the province was in a position to handle this order, and suggested starting with a small shipment and increasing it as the pool became supplied.

As a result it was learn from unofficial sources shipments had grown to 150 head per week under the contract.

Former Cannibals Demand Classics

London.—Civilization and education have wrought such a change in the head-hunting and one-time cannibal tribes of New Guinea that an urgent request came from that country for Bunyan's "Pilgrim's Progress" in the Tubetube language. This is one of the tongues of a Papuan tribe, and is the 123rd language into which the Religious Tract Society has translated the famous classic.

This edition has eight colored illustrations, and some thousands of volumes have already been dispatched. On arrival they are made up into suitable-sized packages to go up country on the heads of the native bearers.

Edison Forced To Cease Active Work

West Orange, N.J.—Thomas A. Edison, inventor, has been forced to cease active work at the age of 84.

Overwork during experiments in producing rubber from the golden rod plant, on which the aged inventor worked steadily all winter at Fort Myers, Fla., have made it necessary for Edison to take a vacation from the laboratory, according to his brother-in-law, John V. Miller—a vacation that may presage retirement.