Registered No. M.—1752

THE YOUNG CITIZEN

AN ILLUSTRATED MAGAZINE OF WORLD-BROTHERHOOD

Vol. 3 | January 1, 1926 | No. 10

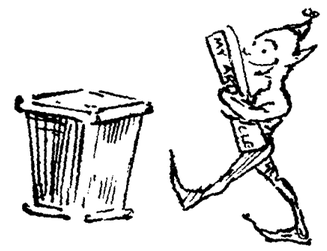
to Re-Shape the World

C. S. Arundale, M. A., LL. B.

Editorial Notices

All communications must be written on one side of the paper only, or they cannot be inserted.

Uninvited communications must be accompanied with a fully stamped and directed envelope for return, in case of rejection. Otherwise, if declined, they will be destroyed.



tartner ti
is a sc.p
allowed
for pa..

ws paragraphs, if short and well written, will be welcomed, and used if suitable. All the for this paper, except the actual three P's, printing, pulling, paper, is done for Service, not t. The probable losses are borne by a "cheerful giver".

All literary communications must be sent to the Editor. Business communications to the Manager, P. O. Box 39, Madras.

All communications must bear the name and address of the author, not necessarily for publication, but as a guarantee of good faith.

ANNIE BESANT AND G. S. ARUNDALE, *Editors*

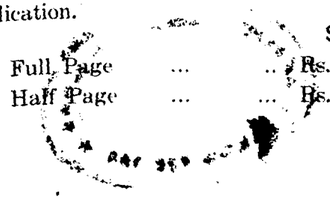
Business Notices

SUBSCRIPTIONS:	INDIA:	**Rs. 3, post free**		
	AMERICA:	**$ 1**	,,	**$ 1.75c.**
	GREAT BRITAIN:	**4s.**	,,	**6s.**
	OTHER COUNTRIES:	**4s.**	,,	**6s. equivalent values**
	SINGLE COPIES:	**As. 6**		**As. 8**

ADVERTISEMENTS: All communications and enquiries regarding Advertisement, should be addressed to the Manager. Special Rates, not given below, may be obtained from him by application.

Scale of Rates

Full Page	...	... Rs. 15	Quarter Page	...	... Rs. 5
Half Page	...	... Rs. 8	One-Eighth Page	...	... Rs. 3



ld be
nted,
the reaso
hat we

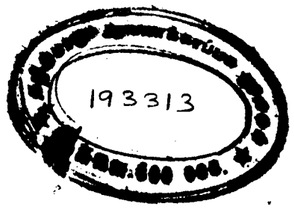
Contents

In the February Number of

The Young Citizen

WILL APPEAR:

FROM THE FRONT
IN THE WORLD'S SERVICE



The Young Citizen

AN ILLUSTRATED MAGAZINE OF WORLD-BROTHERHOOD

VOL. 3 | MADRAS, 1st JANUARY, 1926 | No. 10

From The Front

By RT. REV. G. S. ARUNDALE

JANUARY 1st is not the New Year for everybody, yet it marks *a* New Year, and I earnestly hope that all who feel the spirit of a new year upon them will give that spirit full play. There is a saying that hell is paved with good intentions. Nothing is farther from the truth. Every good intention is a step to heaven, though a good intention allowed to remain such, with no effort towards fruition, does only an infinitesimal amount of good, and the practice of not fulfilling good intentions is distinctly undesirable. Yet any one who is capable of good intentions is getting somewhere, and it is certainly better to have intended well and not realised, than never to have intended well at all.

So I beg every reader to resolve afresh upon certain needs, whether of character or of activity, and to make a point of starting the new year with a definite resolution about some acquirement, which he will endeavor as long as possible to carry into effect, at least to some extent. Failure is of quite secondary importance up to a certain point. Of course, we cannot always fail, at least not in regard to the things we have been trying to do. Sooner or later we must succeed at everything which humanity must perfectly achieve in connection with evolution in the human kingdom. To-day, however, being far from perfection, we are expected to fail, and failure is part of the road to success. But we are expected to go on trying, no matter how colossal the failures may be. And there is one point about failure on which I should like to lay much stress. Taken rightly, it is a very beautiful and wonderful link with others. As far as I can, whenever I fail, I try at the same time to perform this act of self-recollectedness—I arouse a strong feeling of sympathy and understanding within myself, vivified by the very failure or trouble through which I am passing. That which I experience, I can the better understand. Indeed, I wonder whether one can deeply understand without having experienced.

So let us bravely resolve, intend, and profit from the failures as they come. I have just been writing, during the public Convention of the Theosophical Society, in a number of autograph books, and I rather like one particular piece of wisdom which has served me in good stead on many of these occasions. "At all times be happy; and when you can't be happy, be as happy as you can." It sounds rather confused and contradictory, but the meaning is that if only we are wise we can extract happiness out of everything. It is mighty hard sometimes, I know. Perhaps impossible, now and then. Yet everything is leading to happiness. Everything is gradually bringing happiness about, and we should do well to dig for the hidden happiness underneath the sorrow, which seems to hide it so well. The best resolve is the resolve to be happy, let come what may. Not to be callous or indifferent: that is not to be happy. But to be at peace, to be contented, calm, serene—that is to be happy. For to be at peace, to be contented, means that we understand, that we know the reasons and purposes of things, in a word, that we

wise. The wise are happy, and the happy are wise. True wisdom and happiness are the same thing.

If it so happens that you find yourselves unhappy, just look to see what it is that you have missed. What is it that you have got wrong? Where are you ignorant? What have you not understood? Where has the lower nature triumphed over the higher! Where has time obscured Eternity? Where has the unreal veiled the Real? If only you can ask yourselves these questions, the answer will not be long in coming; and the sunshine of happiness will dispel the fleeting clouds of sorrow. The difficulty generally lies in our being *overwhelmed*, in our becoming slaves, instead of being masters. When one is a slave, one cannot think or feel as a free man. Only the free are happy, and the happy are always free. Therefore, never allow yourselves to be at the mercy of any phase of consciousness. Live in the Will which is above all moods, and make these the servants of your great purposes.

Resolve to be happy, and happiness will spread from you, and joyousness will shine throughout the land. Keep the lamp of happiness burning, cost the oil what it may. You can afford the cost whatever it be, for you possess the wealth of your Divinity. Do not hesitate to spend this wealth, for only by spending it can you increase it. The more you hoard it, the less it grows. Spend it freely. Use it to dispel unhappiness, and say to yourselves each time you feel unhappy: "I am forgetting my Divinity. Therefore am I unhappy. Again I remember it. I am God, and I am growing to Divine Self-Consciousness through these very trials. They are carrying me on. Therefore have I reason to be happy, for I am coming nearer to my goal."

Myself

BY EDGAR A. GUEST

I have to live with myself and so
I want myself to be fit to know.
I want to be able, as days go by,
Always to look myself straight in the eye;
I don't want to stand, with the setting sun,
And hate myself for things I've done.
I don't want to keep on a closet shelf
A lot of secrets about myself,
And fool myself, as I come and go,
Into thinking that nobody else will know
The kind of a man I really am;
I don't want to dress myself up in sham.
I want to go out with my head erect,
I want to deserve all men's respect;
But here in the struggle for fame and self
I want to be able to like myself.
I don't want to look at myself and know
That I'm bluster and bluff and empty show.
I can never hide myself from me;
I see what others may never see;
I know what others may never know,
I can never fool myself, and so,
Whatever happens, I want to be
Self-respecting and conscience free.

—*The Young Theosophist* (America)

To Develop Your Personality

Be interested and interesting! When you are talking, concentrate on what you are saying; put your whole soul into it, get as enthusiastic over it as though you were advising a General how to capture a stronghold.

Then, when the other fellow is talking, listen to what he is saying. Listen with your eyes; look at him; don't bat your eyes, unless they are snapping with interest. Listen with your body. Don't be restless, but assume an attitude of concern about the matter under discussion, no matter how trivial. Follow every word the speaker says and make it easier for him to talk.

Be sincere! Personality will never amount to anything unless it rings true. Deal with people above board and in the open. Don't be afraid of anything or anybody.

See only the good in others! Close your eyes to their faults and deal with everybody just as though they were wholly good. Appeal to their best natures always.

Practise the golden rule and make it work for you.

Put a little pep into everything you do, everything you say, and into the way you look. Turn the corners of your mouth up all day; smile readily and laugh heartily.

Say to yourself once every hour: "How good it is to be living in such a wonderful world!" Then some morning you'll wake up and find you have personality.—*The Trade Compositor*

Servers of Humanity

CHARLES DARWIN

CHARLES Darwin, the man who, through a life-time of patient study, collected the facts which prove the truth of the evolutionary process of creation, was one of the most charming, modest, and gentle-hearted men who ever lived. His whole object was to find the truth and tell what really *is*, certain that truth must be good, and that an obstinate adherence to what is wrong must be bad. And this quiet student, unhasting and unresting in his search, finally turned the main current of all modern thought. Most men of our present time agree that evolution is the method by which the earth has come to be what it is, by a gradual unfoldment and evolution of all its inhabitants, the Divine Plan which draws out all the latent possibilities in everything.

Darwin must have been an essentially great man who could consummate this great change in human thought. Of course, he did not originate the idea of evolutionary change; that had existed when the world began, but he took the trouble to collect and marshal the proofs, and make clear the methods in greater detail over a wider range of life.

As has always occurred whenever any change from commonly accepted notions has been suggested, Darwin's statements of his observations and their consequences were received with derision, anger, distortion and abuse by people who did not understand them. On the other side, some of his genuine readers, excited by the outbursts of savage injustice which his conclusions had drawn upon him, answered with equal heat, and, in some instances, pushed his conclusions to greater lengths than the facts warranted.

To all this turmoil Darwin himself remained indifferent. He went on quietly with his observation of the facts of life in all its forms, and was content to let the truth emerge. The truth has ever emerged when we have developed ourselves sufficiently to understand and comprehend it. Truth always shows itself to the man who is wise; mere intellectual capacity alone is not enough to guide us through the intricate mazes of this world. The intellect, as in Darwin's case, must be balanced with human sympathy and feeling.

As we see by the law of evolution that everything about us is gradually through experience developing and unfolding itself, it rests with each one of us to hasten that process as much as possible. How can we do this? Let us try with all our hearts to follow the high example of the Ideal Knight.

The Ideal Knight is brave, truthful, tender, courteous, self-controlled. He never raises his hand against anyone weaker than himself, nor takes an unfair advantage of another, nor speaks ill of the absent, nor is unfaithful to a friend. Honor is his law, and gentleness his ornament. He is helpful and considerate, especially to the weak, is fearless in danger, compassionate in triumph, forgiving when wronged, kind to child and animal.

The Ideal Knight has as his motto: "Live pure, speak true, right wrong, follow the King."—*My Magazine*

Life's Thorns

The trouble with a lot of us is that we want to accomplish many things, but aren't willing to pay the price.

If life were a game in which the rewards were handed out on a silver platter to anyone who happened to ask for them, lots of folks would sleep in rose-beds.

But, unfortunately, you've got to reckon with the thorns.

"He who would climb a tree," said Thackeray, "must grasp its branches—not the blossoms."

Which means that you've got to pull yourself up over the rough places and not expect simply to coast down hill all the time.

We get pretty much what we go after—if we go after it hard enough and persistently enough.

—Jerome P. Fleishman

Life is a mirror for king and for slave
'Tis just what you are and do,
Then give to the world the best you have
And the best will come back to you.

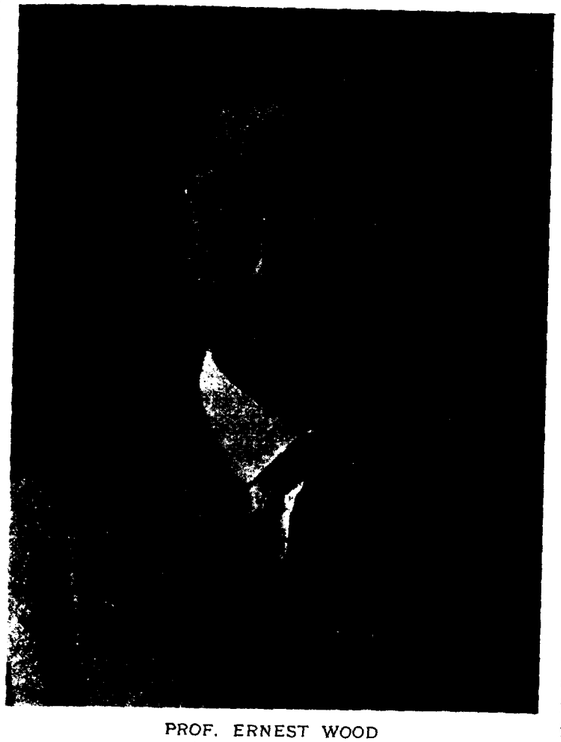
A Modern Educationist

ERNEST WOOD

THE honored post of an *Açharya* in ancient India rightly belonged to a man capable of deep self-introspection. It was he who could intuit the requirements of those in his charge, by laying them alongside his own synthetic vision of things. His personal inner experiences were the torchlights with which he saw and made others see things. Without this inner vision, this inner world of experience, he stood on the same level as his pupils. He was a man of self-realisation, in short, a Yogi.

The hero of this short sketch, with whom I had the fortune of being intimately associated for over two years, is such a Yogi. He wears no ochre-colored clothes—which we have come to consider as the symbol of a Yogi to-day—but is a man of deep, broad, inner culture, which entitles him to be called a herald of the new era to-day.

His books, with which the reader is probably acquainted, *Concentration*, *Memory-Training*, *Character-Building*, *Destiny*, or his recent publications, *Personal Psychology or The Sub-Conscious Mind*, *Raja Yoga*—*The Occult Science of the Hindus* and *The Seven Rays*, bear an ample testimony to the above assertion. His are not the ill-digested recipes of the modern four-penny essayists, who pander to the morbid taste of the vulgar curious, but the results of a deep psychological study of life—works of sterling merit, propounding truths of Yoga in modern terminology, giving valuable and well-guided suggestions for inner development. What exactly the contribution of these writings is to the Psychology of Education is beyond the pale of this article and can better be attempted by worthier hands. I shall content myself with giving a brief account of the new experiment he made in Education and the success that attended his efforts.



PROF. ERNEST WOOD

Prof. Ernest Wood came out to India on a short holiday, when he was 24 years of age, while studying for the B. Sc. degree in the College of Technology, Manchester. But he very soon realised that his lot was indissolubly linked with the educational advancement of this country, and he plunged headlong into the arena. He started the well-known Wood College at Madanapalle and established many high and primary schools in the Madras Presidency.

It was about 1917-18, when the political agitation in our country was growing strong, that the National University was started with the sole object of leading the students—who were just then awakening to the gravity of the National problems—into right channels of thought and action, and training them up into the ideals of Indian Nationality, untrammelled by official red-tapism which excluded all teaching of religion, morals or handicrafts and contented itself with manufacturing a race of competing clerks. At this time it was that Prof. Wood was sent to Sindh by Dr. Annie Besant, the Chairman of the Executive Committee of the Society for the Promotion of National Education, to start a College of which he later became the Principal. It was here that all the plans of his experiment were laid, where he attempted to put all his ideals into practice, and where, working under him, I had the opportunity of studying him at close quarters.

On assuming charge of the Principalship, Prof. Wood kept one thing clear before his mind. He was not going to allow it to be the usual institution with its inevitable mental-grinding, but a real, live educational centre, where pursuit of studies would be a pleasure to the student and where he would grow up in an atmosphere of love and joy, receiving proper training of the head, heart and hand.

He so arranged the College time-table that the non-resident students passed the whole day in the College. They came early in the morning, had their lunch in the College Restaurant, which was run by them, and returned home in the evening.

He started various departments in the College, so that each student could specialise in one faculty or another. He bought the adjoining 40 acres of agricultural land, a part of which was used as the play-ground. The students of Agriculture ran the farm and the dairy, while those of Mechanical Engineering got their practical training in attending to the water-pumping engine. Some took to rubber stamp or carpet making, while others undertook to run a press and conducted a College and a Scout Magazine.

These institutions served various purposes. They kept the boys busy during the leisure hours in the afternoon and at the same time gave them a chance of acquiring proficiency in a handicraft which could be a source of income to them, both during and after their College career. If the student of to-day cannot beg his way through student-life, as did the brahmachari of old, he ought to be helped to learn some handicraft to support himself. This was the idea at the back of Prof. Wood's mind and thus it was that he succeeded in making the College a veritable educational colony—Sir Ashutosh and Major Powell of the Calcutta University only developed the idea very recently—though it had to bid good-bye to all its ideals on its recent affiliation to the Government University.

Perfect in organisation, which is the characteristic of the Anglo-Saxon race to which he belongs, Prof. Wood is no less a capable teacher. A student of science originally, he has studied other subjects, like Philosophy, Literature, Political Science, etc., and can do justice to any. Talk with him on Inorganic Chemistry or Sir Jagadish Chandra Bose's discoveries, on Plato, Descartes or Shri Shankarâchârya, on Kapila or Haeckel, on poetry of Wordsworth or Tagore, on the recent developments in the scientific world, or the latest theories of Philosophy, and you will find him at home in them all.

He is a Samskrit scholar, and has translated *The Garuda Purana*, in *The Sacred Books of the Hindus Series*. He has studied the various Systems of Indian Philosophy in their original Samskrit texts. The most original criticism of Western Metaphysics from the stand-point of an Indian I have ever heard, was from his lips in the Philosophy classes, which he conducted, in addition to his duties as a Professor of Physics. On Psychology, he speaks with authority, and he had the rare distinction of addressing the Post-Graduate students of the Harvard University on this subject during his recent visit to America.

Being blessed with the exuberance of Oriental imagination, he can put himself into the attitude of his Indian students. Teaching experience for many years has given him an insight into Indian ideals, and he has written *A Text Book of Indian Citizenship*, which, whilst it demonstrates the clearness of his intellect and the sweep of his vision with which he coheres various facts into an organic whole, indicates beyond doubt the [illegible] his broad sympathies.

But with all his superb intellect, his baffling versatility, his greatness lies in the life he lives. Not his the fashionable foppishness or self-complacency that unfortunately characterises the present-day Indian Professor, but a simplicity and a humility that one rarely comes across to-day. His was a simple attire worth a few rupees. Never did an angry word escape his lips, nor a thought of superiority ever cross his mind. Nobody was too low to work with. He had a perpetual smile on his face and from his magnetic personality did he ever radiate a love and benediction on all. He was the veritable guardian-angel of the institution.

He was magnanimous almost to a fault. While investigating a case of fraud in South India, he was poisoned with arsenic and yet he took no legal action against the culprit. He had a small monthly income on which both he and his wife lived, but even from this they saved by denying themselves simple luxuries to help many a poor and deserving student. His humility and simplicity of manners, amiability of disposition and generosity endeared him to all and made him an object of worship to many. His services to the College were honorary, and yet I believe no [illegible] Principal ever worked so much for his college as [illegible] did. Within the short space of two years, he ha[illegible]

phenomenal record of achievement. By dint of hard labor and personal sacrifice and with the co-operation of his devoted wife, Mrs. Hilda Wood (author of a book *Three Heroes of Finland*, illustrated by her), who always worked hand in hand with him, and the redoubtable band of co-workers, he brought the College into the forefront of the educational institutions, and his services received their due meed of praise from some of the illustrious visitors like Gandhiji, Lok. Tilak, Mrs. Naidu and Mr. Jayakar, and even a high Government official, like Dr. Harold Mann, the Director of Agriculture for the Bombay Presidency. Rev. C. F. Andrews, whose services to our country lie in the same direction, once remarked that the College was "a flower-gift of Prof. Wood from the desert sands of Sindh".

Service of India is a burning passion with Prof. Wood. During his travels abroad for the last five years, he has addressed many a meeting from public platforms and the University auditoriums in the various countries of Europe, the United States, South American States, China, Japan or Australia. But wherever he has gone, his one theme has been India and Her Message to the world. And grateful India welcomes him back to a greater service and achievement.

K. L. M.

Lost Cities Beneath the Sea

ANCIENT records tell of many fabled civilisations, States and magnificent cities "in the deep bosom of the ocean buried".

Recent amazing finds by archæologists and chance discoveries prove that some of these traditional stories are based on actual fact. Lost worlds of legend are gradually coming into the light of day.

Diving into the clear blue waters of the Mediterranean off the north coast of Africa, an Arab fisherman saw dimly through the blue water the outlines of a city.

Instead of coming to the familiar sandy sea-bed, with its waving vegetation, he found himself swimming down towards the roofs of submerged mansions. Grasping an object, he came to the surface.

He then found that, instead of the fish for which he had dived, he held in his hand an exquisitely wrought object of beautiful design and workmanship.

This find was made just off Jerba, an island (according to Sir Denison Ross, Director of the School of Oriental Studies) once known as the Land of the Lotus Eaters. English, French and American archæologists have hastened to the spot, and divers will soon walk the silent streets of the watery city where men have not walked for more than 3000 years. Photographs of the submerged city are to be made from aeroplanes.

This astonishing find comes at a time when several expeditions are probing the mysteries of lost civilisations.

One is searching for the lost Phœnician cities, of which Carthage was the chief. Another is slashing its way through the dense forests of Yucatan, in Mexico, and has already explored the forgotton city of Chichin Itza, capital of the ancient Maya Civilisation.

Seekers for the cities of the Phœnicians have already made important finds. At Utica, a city of Cato, bodies have been found, with fingers adorned by rings set with blazing jewels.

Evidence that these people of a lost civilisation were highly skilled and cultivated has been found in the shape of magnificent goldsmith work, examples of ceramic art, razors, and similar toilet articles.

According to an ancient legend, there lay off Tunis an abode of evil spirits and enchanters, "under the roots of the ocean". It was known as Domdaniel. The site of this fabled den of evil spirits coincides with the city now found by the Arab fisherman.

In Yucatan, buried under the luxuriant vegetation and great forest trees, an American and British expedition has uncovered a forgotten city. It is now known to be the former capital of the Aztecs, a people who has disappeared mysteriously from the face of the earth.

Many scholars have held that beneath the Atlantic lies the fabled continent of Atlantis. It was believed to have linked up Europe with South America. The islands of the Azores are said to have been the high mountain peaks of the lost land. Discovery of Atlantis would solve many unanswered questions as to the racial distribution of mankind on the earth.

Recently the Maya Expedition in Mexico came upon the site of yet another city of that lost civilisation—the city of Comalcalco, on the Rio Seco.

Vast plazas were uncovered, terraced pyramids, sites of heathen temples, a noble palace 260 ft in length, with vaulted chambers and beautiful stucco reliefs and inscriptions. The ancient peoples have vanished, leaving only these massive stone and marble monuments and eternal roads to bear witness to their former grandeur.

Mighty Hunters in the World of Ants

BY S. F. AARON

ALL species of ants—of the honey-making, the agricultural, the carpenter, the aphid-herding, the fruit-eating or the leaf-eating—are commonly omnivorous, and it is not unusual to see materials of all kinds, even in the remotest sense edible, dragged to the colony domicile for the feeding of the young. With those forms of ants that do not make any special effort to acquire certain foods, honey dew probably comprises the largest bulk of their harvest. Nearly all forms are first attracted to the herds of aphids, or ant-cows, that happen to become located in numbers on weed stems, rose bushes or tree twigs within ranging distance of the ant colony.

On the ground, this ranging distance may not exceed, even for the largest home-making ants, more than a few yards, but into trees, or over elevated waysides, as, for example, a fallen tree trunk or a fence, it may extend more than a hundred feet, often to the topmost branches of a forest giant and then some space from its foot.

MARCHING ARMY ANTS FROM THE GUIANA JUNGLE

LEFT: Army ants marching in single file: note the great killing mandibles on the central figure (magnified five times). RIGHT: Army ant bringing home as booty the leg of a victim. This straddling of the burden is characteristic

The Smaller the Ant the Bigger Its Load

Next to the desire for milking aphids for their sweet nectar, ants seem to prefer a carnivorous diet and they are constantly on the look-out for game, without any special regard for one kind over another. As hunters, they are as diligent as when in quest of more easily acquired food. Their intrepidity permits them to attack anything which their keen sense of smell informs them is not a foeman altogether beyond their strength, although in defence of the home or of the ant-cow pastures they do not scruple to attack anything that threatens, leaping upon the bill or feet of a bird, the snout of a mouse or a shrew, or even upon the investigator's projected finger and being apparently willing to be sacrificed in the single-handed effort to hold off an enemy.

Invertebrates of all kinds, insects mostly, of course, but also centipedes, millepedes, spiders, pedipalpi, sow bugs and earthworms, are welcome grist to the ant mills which, unlike those of the gods, grind rapidly. The smaller the ant the bigger its load and the more daring its captures, but these are never so easily observed and hence seem much less common than the hunting experiences of the larger species. The big black carpenter ant is the commonest and, with the big red ant, the largest, of our North American Formicidæ. It is also the most agile, the bravest, and, probably, the most varied in its foraging habits. It may generally serve as an example for all of its relatives, big and little and of every species.

It often happens that there is no colony of aphids located near an ant colony and, therefore, almost the entire ant commissariat must be of captured game. One may wonder, if there is anything in the idea of the influence of food upon racial characteristics, whether the young of ants reared carnivorously become braver in battle or more warlike than those depending solely on honey dew for their food, but such evidently is not the case with the black carpenter ants.

The method of ants in capturing their prey is that of mere strength and agility, with a very certain readiness for permanent retreat when overmatched, or of temporary retreat and swift counter-attacks, when meeting with severe opposition. Aside from this latter show of caution coupled with a fierce determination, there is no practised cunning, no stealth nor strategy. The attacker and defender

are often so evenly matched that it is only by force of numbers that the invader of the ant domain becomes a victim to the insatiable desire for food.

The winged, six-legged folks have a certain means of retreat from the attacks of ants. Even the stingers, including the digger and mud-dauber wasps and bees, are glad to get away from these persistent foes of every other crawling thing. Large and powerful beetles, slow to take wing, heavy-bodied caterpillars, great hairy-legged ground spiders, swift, gliding centipedes and leaping grasshoppers are not easily overcome by herds of ants, and most frequently make their escape, either ploddingly, or by swift retreat, now and then leaving some dead and dying ants in their wake.

Ants Have No Means of Signalling

These reinforced attacks of ants upon desired victims have been somewhat exaggerated; the subject is a fruitful one for the story-tellers who have relied on the common practice of quoting and have not given the investigators credit for close observation. It can be stated with certainty that ants have no means of signalling for the aid of their fellows when making an attack upon a slow-moving insect, too big for one ant to manage. The sudden swarming of ants around the contestants is simply explained by the fact that anywhere within the hunting range of ants there are nearly always many rangers, and these soon come upon the struggling pair. With equal certainty they come upon one of their own number with a load it can easily carry, yet they insist upon helping. Or, on the other hand, dozens of ants may pass close by one of their fellows in difficulties and not discover its plight.

AN ANT ATTACKING A MEASURING WORM

The worm successfully defends itself by means of rapid squirming and by exuding the sticky, green secretion from its mouth, which the ant seems to dislike greatly

With amusement, yet with a certain sympathy, one may behold a very determined ant seize the leg of a resting butterfly, moth or dragon-fly, and suddenly find itself carried into the air. I once saw a persistent black carpenter, that was defending a herd of aphids, grab a red admiral butterfly which was attracted also by the honey dew. The surprised visitor was not slow in using its powerful wings. At such times, ants determinedly stick tight in order to inflict punishment upon the trespasser. An ant may grip your finger with its jaws for half a minute until it nearly punctures the skin. There could be no telling how far that ant journeyed, for a butterfly of the species, with a bitten leg, can go a considerable distance in half a minute.

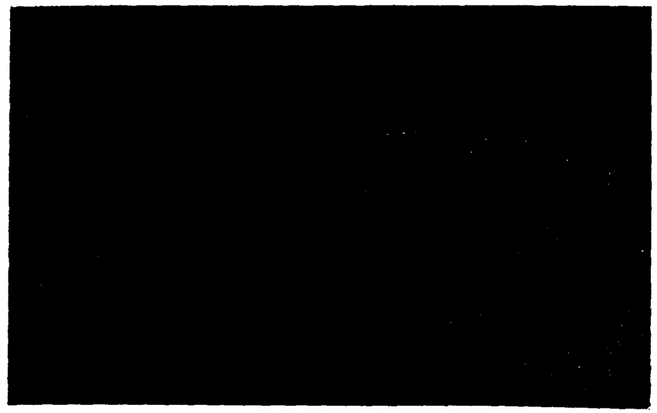
It is pretty certain that for the rest of its life, a matter of a few weeks at most, this particular ant was a wanderer in strange regions, always seeking for its home.

Ants Not Always the Victors

One of the most difficult tasks that an ant encounters is the dragging of a stout beetle or bug, a bluebottle fly or a woodroach, the many claws of the victim catching in every grass stalk or other obstruction, and often defying the most determined pulls and jerks to get it loosened. Watching one such effort from time to time, with an eye on my watch, served to demonstrate that one ant spent nearly two hours pulling a stout Noctuid moth about five and a half feet through a tangle of grass stems, being aided or hindered now and then by a few of its co-workers. Another ant put in nearly as long a time getting a large black Tachinid fly less than nine feet up a tree trunk, the odd part about this last grand effort being that the nest was at the base of the tree and the labor was entirely futile. The ant finally discovered this and the fly came down little faster than it went up, but was at last, when near the colony habitation, torn apart by a swarm of ants and carried in piecemeal.

There is nothing more amusing in the complicated affairs of Nature than an encounter between

an ant and a caterpillar, the former determined to make the latter food for its nurslings. The manner of defence of all caterpillars that are not armed with urticating spines is to double and squirm about



CARPENTER ANTS CAPTURING A SPIDER

The victim has seized one of its foes and may inflict, through its venomous fangs, a fatal wound. An ant has severed one of the spider's legs and is carrying it away

in such a way as to reach the enemy with the head and effective mouth parts that secrete not only silk for the cocoon, but deterrent liquids that are more or less distasteful and even poisonous. This protective liquid is of the same nature as the brown exudation from the mouth of a grasshopper that leads children to issue the order: "Spit tobacco and I'll let you go."

The exudation from most caterpillars is greenish; it is sticky and irritating even, no doubt, to the thick, chitenous exo-skeleton of predacious insects. It is evident that the ant that tackles a caterpillar is a true patriot and deserves the commendation of its co-workers, though it only desires to obey its instincts and, therefore, its determination to make the caterpillar food for its young.

The writer of this account witnessed such a contest which, however, ended quite differently from most battles of the kind.

Larger Insect the Victim

The brown and dark-streaked larva of a Geometrid moth, this and its relatives being commonly called measuring worms, was about three times the bulk of its would-be captor. Rearing up on its extremely posterior legs the caterpillar proved capable of swift and decided means of meeting its foe at every angle, conducting a defence for which its usually lethargic nature deserved much. Moreover, it seemed never to exhaust its store of repellent juice. But the valiant and well-endowed defence on the part of the caterpillar was equally matched by the fierce, if somewhat unworthy, attack of the comparatively almost insignificant aggressor.

A carpenter ant's sole weapons are its jaws. Aside from these it has what, in the parlance of pugilism and fencing, is called foot-work. In comparison the caterpillar appeared almost as though remaining fixed, though it did squirm about so as to cover nine or ten square inches, the ant getting over a square foot or more of space in its retreats and attacks which consisted of a series of rapid charges. The ant seized the caterpillar with its jaws and immediately let go when the worm's head came around like a catapult and smeared the aggressor with that protective exudation. The ant retreated several inches and rapidly endeavored to clear its body, legs and antennæ of the irritating fluid—a matter of some twenty seconds, when it charged in again. The caterpillar meanwhile feeling the injury from the jaws continued its squirming as though in a fire. Finally the ant took so

STICKING TIGHT TO INFLICT PUNISHMENT

Sometimes powerful wings or legs take the ant in the wrong direction as does the long leap of this young red-legged grasshopper

long between attacks that the caterpillar was able to make one stretching reach up a short weed stem and although upon its next hunt for its desired victim the ant passed over all of the ground—evenly

directly under the caterpillar not two inches above it and kept this up for more than ten minutes, it at last gave up the quest and disappeared.

More tragic is an ant's capture of a ground spider, one of the funnel-web builders, Agelaena. The two are generally about of a size. If the spider is quite large it makes good its escape, or it may kill the ant. I have seen the latter prevail when the spider was fully one-half larger and also a large brown Lycosid fall victim to half a dozen ants. There were some dead and injured carpenters, however, before they conquered. When the two are more evenly matched and there is but one of the aggressors, it is a sanguinary affair and after a time pretty much one-sided. The ant seizes the spider's leg and according to a means of protection common with many arthropods and some lower vertebrates, the captured member is instantly shed; whereupon, if the ant is satisfied with that and anticipates no greater prize, it makes off, but more frequently it drops the leg and makes another attack, so that often the spider may quickly lose half of its legs. I have even seen it deprived of all but two. Thus disabled, it becomes an easy prey to the ant. But sometimes, in its eagerness to seize a more vulnerable or less transient hold, the ant is itself seized by the spider, though the latter's jaws must be powerful enough to puncture the ant's hard exo-skeleton in order to harm it. This, done, the ant almost instantly succumbs to the spider's poison. It is, however, not unusual for the struggling, agile and equally powerful ant to make counter-use of its jaws, and it generally gets away from the spider's hold in a jiffy, attacking again instantly. In nearly every such instance the spider proves to be the unfortunate victim.

Not explicable in this connection is the contest between a crab spider and a black ant. Lying in wait on wild carrot or other wide-flowering heads, this snarer of unsuspecting insects will seize a visiting ant, hold and quickly kill it. But whenever the crab spider wanders from its lair and travels within the hunting range of the ants it will be attacked and torn apart even by a small member of the colony, the ant attacking in the usual way and freeing the spider of legs, although the two pairs of longer and stronger prey-catching extremities are never parted with when seized, and they serve both protectingly and aggressively in the hard fight that follows. Moreover, they catch in every obstruction and altogether they make the ant's task exceedingly difficult.

The feud between ants and the ambush bug, one of the assassin group, is similar to that of the ant and crab spider. The bug in its lair within flowers that are attractive to honey-seekers takes toll of these unsuspecting lovers of sweets, exactly as do the spiders and with even greater success in immediately reducing the victims to a condition of helplessness, for the puncturing proboscis is a more deadly weapon than the spider's jaws. Moths, butterflies and beetles and even bees three and four times the size of the ambush bug succumb to its powerful grip and thrust, and black carpenter ants are not infrequently among the number.

A Case of Catch as Catch Can

Imagine, then, the surprise one must feel upon seeing an active ambush bug being dragged by a black ant toward the nest. Evidently this was a case of catch as catch can. The bug, with its thick, especially muscular and spined forelegs, had failed to seize the ant; the latter had instead seized the bug's more normally proportioned posterior limb. Taken unaware, the assassin only tried to hold on at first to its chosen situation and then to everything in the way of progress toward being served as food.—*Scientific American*

Killing Fire

Burning oil or petrol cannot be fought with water. A blazing stuff merely floats on the water's surface and is spread abroad by it. The way to put out the oily flame is to stifle it.

This was demonstrated at Elstree, when the leaping fire from a tank containing 500 gallons of crude oil and petrol was fought down in a minute and a half by a layer of foam.

The fire-foam is made by injecting gas into a soapy mixture, or what is analogous to soap-suds, though that is not its chemical name. The mixture, which is now concentrated foam, is held in a cylinder, and water gushing from a hydrant goes through the cylinder and plays a stream of foam on the other side. At Elstree, by using three cylinders together, and always keeping two of them charged with the fire-foam mixture, it was possible for the hydrants to pump such a mass of foam on to the blazing tank that it was covered an inch thick in less than two minutes.

The gas in the billion bubbles of the foam stifles the flames. They cannot fight such a gas attack.

Nature Study in Camps

By Edith Pollitt Holt

Is it possible that any one of us has forgotten our very first night in the woods—the awful stretching stillness, broken perhaps by the dismal wailing call of the loon, the weird lament of the screech owl, the guttural utterance of the bullfrog, or the insistent fear-inspiring song of the whippoor-will?

To most of us who are city-bred, this first night is stamped upon our memory so indelibly that we will never forget how we lay on our cots, trembling and praying for morning to come. For we were not brought up—the majority of us—with the idea of the beauty and love of every one of Nature's creatures, every animal, tree, shrub and insect. Our minds and bodies were educated indoors, and Nature to us was more of a myth than a reality. It was an abstract thing, a meaningless phrase, for I remember my mental image of Mother Nature was far less clear and defined than was my picture of Mrs. Santa Claus.

But now take your mind back to the last night of your first camping experience. Did the cry of the loon scare you well-nigh out of your wits? Did the wailing of the screech owl make goose flesh rise all over your body? No. We loved every sound and the thought that tomorrow night there would be street car noises, the purr of motors and the clatter of shoes upon the sidewalks, instead of the whispering of the pines, the lapping of the water on the shore and the sleepy call of the katydid, was a sorrowful thought and an unpleasant one.

Why? Because through the camping experience, especially the first one, the child learns the truth about Nature and develops a deep reverence and love for God's wonderful works. The trees, animals and flowers become personalities, friends and companions instead of inanimate objects without soul or life.

Most of the children who come to our Summer Camps are residents of large cities where they are more familiar with telephone poles than with trees, and the only plants or flowers they know are a few varieties of hot-house products which adorn their homes on special occasions. Some do not know a Black-eyed Susan from a honeysuckle, nor a pond lily from a tulip. They know nothing of bird life outside of the robin and sparrow families, as a rule, and their knowledge of animals and reptiles takes the form of horror and fear instead of love and interest. But at the end of eight weeks or so when they have learned that most snakes are harmless, gentle creatures doing good for the world, and that little field mice are innocent animals, children have a far broader and better view-point and understanding of life. Their horizons have widened, their sympathies are extended beyond a small circle of acquaintances and even their imaginations have quickened, for no matter how lacking in fancy a child is, he or she cannot fail to see charm, mystery and romance in a robin's nest or an oriole's throaty call. The sight of an ants' village is bound to impress him with the wonder of God's smallest creatures, and even a blue-bell blooming alone amongst a mass of ferns, cannot fail to inspire him with awe. He cannot long remain oblivious to the charm of a wild rabbit scurrying through the woods, or the beauty of the tall pine towering up toward the heavens. A new world can be opened up to these children in eight short weeks, even though swimming, handcraft, boating and a lot of other activities are included in the programme, as well as Nature lore.

It is not the job of the Nature Counsellor alone to train them to a wider understanding of the things about them. It is the work of every Counsellor and adult member of the Camp family. The daily trip into the woods must not be regarded as a formal study but as a rare privilege and treat, and every minute of the Camp programme must be designed to develop the child's love of beauty and his sympathy as well as his body and his mind.

Where can this be accomplished better than at a Summer Camp? Surely the schoolroom has no advantage. Hearing about a thing is very different from the actual seeing of it, and pictures fall short of the realities. No artist can improve upon Nature's coloring, and few botanists can describe a wild rose so that a child knows it without actually seeing it. Every bit of wild life which can be seen should be studied on the principle that botanical science is more than the pulling of a flower to pieces and attaching long Latin names to the dissected parts, and that to know the organism of an animal it is not necessary to cut it open and employ a microscope to learn its habits, its history and its purpose. Our early ancestors and the Indians did not have a minute classification of every bird and beast, and yet who can say that they did not understand and appreciate Nature?

We must aim at developing the heart along with the brain, for unless we do this, Nature study cannot be said to hold any value in our Camp programmes. If we can make a child as enthusiastic over the finding of a nest of baby robins as he would be over the finding of a bank of shiny nickels, then our work has definite value; and if we can make him look forward to watching the sun set as to a special dessert at dinner, we have truly accomplished enough to make any Camp Director burst out with a hymn of joy. But we must not be discouraged if we do not accomplish this, but be thankful if we can plant the seeds for an appreciation of the more spiritual and beautiful things of our world.

Nature teaches many a lesson which cannot be learned in school. I think it was Wordsworth who wrote: "One impulse from a vernal wood may teach more of man, of moral, evil and of good, than all the sages can." How true this is! And one does not have to hunt for rare birds or flowers to enjoy his vacation, but the summer can be made one long, delicious game by finding the beauty in the bevery shrubs, weeds and ferns which surround the tents, the insects which perhaps drop into the milk when we picnic out of doors, and the trees under which we sit to write letters home. The mutual dependence of living things—of flowers and bugs as well as human beings—can be brought out in many interesting ways, stressing the spiritual rather than the formal side of Nature and her fascination.

We cannot make second Burroughs or Thoreaus out of our campers in eight short weeks, but we can teach them that there is no sham in the woods, where a pine is a pine; we can give them a little understanding of the soft language of the birds; we can make them sense the infinite peace and make them love the beautiful incense of moss, ferns and pines. We can instil in them such a reverence of Nature that they will long to protect rather than to destroy. Instead of wanting to kill a snake the moment he crawls into view, they can be encouraged to regard him as a valuable officer of the woods who keeps away insects and other creatures who will destroy trees and flowers. Instead of ruthlessly plucking flowers, because they happen to be growing by the wayside, girls and boys learn to leave them alone, adding further to the beauty of the outdoors. Girls especially need to have petty fears about woodland creatures dispelled, and that this is possible in practically every case was proved to me when a little eight-year-old, who was most nervous and afraid of all creatures upon her arrival at Camp, brought me one day a huge mud turtle, which she had captured. It was alive and fighting, but she had no fear of it and proudly told me all she had learned about her new pet in the Nature classes. "You know," she said, "I used to be such a scary about things, but I don't feel a bit that way now."

On our Camp Seal there are three white bars one for character, one for spirituality, one for love of Nature. We devote our every minute, directly or indirectly, to the development of these three phases of life, all of which are equally important and interdependent, for can we truly develop strong, wholesome character without instilling a love for all fellow-creatures, inanimate as well as animate? Can we develop a spirit of unity, harmony and understanding without a foundation of sympathy for the great realm of the out-of-doors? No! I do not feel that I am exaggerating one whit when I say that the study of Nature is one of the surest and quickest roads to a full and rich childhood, and that the "typical" American boy or girl is that one who has gone beyond the walls of his home or school into the great outdoors where he has learned from the best teachers—the trees, the birds, the animals and the flowers—the primal lessons in love, sacrifice, charity and happiness. In the Summer Camp lies the richest opportunity for this.—*Nature Magazine*

How They Grow Roses for Food in Nanking

IT seems that the Chinese city of Nanking is a notable centre for rose-growing for food and the preparation of rose-leaves for table use. According to a recent issue of *The Chinese Economic Bulletin*, published by the Chinese Government Bureau of Economic Information, with offices at Peking and Shanghai:

Two varieties of roses are cultivated in Nanking. What is known as the "imported" variety is used only for decoration and has little commercial value, because it is not so scented as the indigenous variety. The color of the "imported" variety is either dark or light red and that of the indigenous variety purple. The latter is highly scented and retains its fragrance for months and even years. The dried petals, after being kept for a year or two, become as fragrant as fresh petals after they are moistened. It is this characteristic that has made the flower so much sought after by the Nanking public, its use being chiefly for food-scenting.

The Nanking public uses roses not only to scent tea-leaves or drinks, as people in other parts of China do, but also in the preparation of various kinds of food, especially candy and light refreshments. Nanking bakers use roses very liberally in scenting cakes and other kinds of pastry. During the flowering season, the bakers collect large quantities of these flowers and keep them in a preserved state to be used in the next twelve months. Rose-petals are preserved for food scenting in two ways: They are either dried in the sun and kept in a covered jar, generally of glass, or preserved in sugar syrup. Nanking brewers use rose-petals in preparing a kind of rose-scented liquor. Even pedlers and food vendors boast that their wares are rose-scented. The greatest consumer of roses in Nanking are the bakers and tea dealers, the latter using them to scent tea-leaves.

A candy from sugar and rose-petals is also prepared. This is done by pounding fresh rose-petals into a pulpy mass and mixing with refined sugar, which is further churned with a spoon or ladle until thoroughly mixed. The mixture is then dried in the sun. This preparation is known as "rose sand," because the sugar, when dried, still retains its granular form. This concoction is pretty in color and palatable to the taste, and is a favorite food among Nanking adults and children alike. In spite of the pounding and mixing, the rose undergoes no change in color or scent. The "rose sand" is generally used to sweeten food or drinks. It is also believed to have medicinal value, the rose scent being claimed to possess the quality of strengthening the digestive power. The recipe of preparing "rose sand" is one catty [⅓ lb.] of sugar to every fifty rose petals.

Roses are extensively cultivated by Nanking farmers who live near the city. There is also a special class of florists inside the city. The rose-bed is generally located near the farmer's house, where the land is suitable neither for rice cultivation nor for mulberry plantation, The rose-bed sometimes covers an extensive area and is carefully watered and fertilised. Every one or two years, young shoots can be separated from the parent shrub and, with roots covered with mud, are often sold on the market for transplantation. Rose shoots obtained in this way, however, often fail to grow, because the roots have either been hurt or partially dried up. Nanking horticulturists, for transplantation, prefer the young roses sold by the city florists in pots, which, after being used as table decorations, can be transplanted in the ground, and grow rapidly.

The market price for roses varies with the conditions of the weather. Fair and settled weather in the flowering season will bring good returns to the farmers. Under such weather conditions, the demand for fresh roses is brisk and prices rise accordingly. The market for fresh roses is over in less than a week, buyers being eager to collect flowers and dry them while the sun shines. Rainy and unsettled weather causes the market to become exceedingly dull. The price of the flower is extraordinarily cheap, owing probably to extensive cultivation. In former years, a rose used to be sold for a cash or one-tenth of a copper. The market price now is four cash for a rose of medium size or five roses for two coppers. Nearly every household in Nanking uses roses either as food or decorations. Nearly 10,000,000 pieces, valued at between $15,000 and $20,000, are gathered every year in Nanking.

Besides rose candy, an unusual food manufactured in Nanking, so we read, is the bean curd. It is made of soy beans, mixed with oil dregs, gypsum and soda. In a bean factory the work is done at night. The workers sleep in the afternoon and return in the evening to sell any left-over bean curds before they start in to work for the night. There are several edible by-products of the bean factory, including dried bean curd, "putrid-smelling".—*Literary Digest*

Mira The Wonderful

BY ISABEL M. LEWIS

MIRA the Wonderful, has gained the distinction of the front pages of the newspapers. Astronomical calipers have been taken to this star and it is found to have a diameter of 250,000,000 miles, outclassing the mighty Betelguese and standing second in girth only to the giant Antares with its diameter of 400,000,000 miles. Our puny earth with its 8,000-mile diameter would rattle around inside of Mira (pronounced Myra) like a pea in a giant hogshead.

The astronomers call Mira, Omicron Ceti, it appearing in the constellation of Cetus, the Whale, which is visible in the evening hours of the fall and winter. Betelguese, the red variable star of Orion, is variously estimated to boast a diameter ranging from 215,000,000 miles to 265,000,000. Antares, the fiery red star of the Scorpion, still is undisputed leader.

Measurements of the diameters of a number of stars have been made recently by Pro. F. G. Pease at the Mt. Wilson Observatory, California, by means of the interferometer attached to the 100 inch reflector, the largest telescope in the world. This device for measuring the diameters of the stars was invented by Prof. A. A. Michelson and was first used in measuring the diameter of Betelguese in 1920. Since then, measurements have been made of a number of stars suspected of being exceptionally large—giant stars, as they are called. Among these are Arcturus, Aldebaran, Alpha Hercules and Mira.

By means of the interferometer the angular diameters of the stars are obtained. To change these angular measurements into miles it is necessary to know the distance of the star from the earth. In general, the distance of the star is in doubt by one-fifth of its amount or even more, and this introduces an error of equal size in the star's diameter. It is well to remember this, for otherwise one may be puzzled by the fact that the astronomer sometimes changes his estimate of the diameter of the star when he feels he has a better value of the star's distance from the earth.

Omicron Ceti earned its name of Mira, meaning wonderful, over three centuries ago when, in 1596, the astronomer Fabricius first noted that it underwent most peculiar and remarkable light changes. These changes have been observed now through more than three hundred cycles of about eleven months each. During most of the eleven-month period the star is invisible without the aid of a telescope. Then a sudden rise to maximum brightness will take place within a period of a month or six weeks, when the star will be visible to the naked eye and will become, for a week or ten days, or possibly even longer, a star of the second or third magnitude. Then there will be a rapid decline in brightness.

The star has now become invisible to the naked eye again and will gradually fall to the rank of a ninth magnitude star. On some occasions it becomes fainter than others, and again it may, at its maximum brightness, become exceptionally bright. It is recorded that Sir William Herschel saw it on one occasion as bright as Aldebaran. Additional interest in Mira was aroused about a year and a half ago when Prof. Robert G. Aitken, of the Lick Observatory, was asked to observe this star by Dr. Alfred A. Joy of the Mt. Wilson Observatory, who suspected from observations of this star that he was making with the spectroscope that it possessed a companion star. Prof. Aitken, who is noted as a double star observer, was surprised upon then observing the star to find that it was attended by a faint, bluish companion star which was totally invisible a few years ago when Mira was observed at the Lick Observatory and elsewhere.

As the two stars are in revolution about each other it is impossible to see them as separate stars when one is in line or nearly in line with the other, at each revolution. At present, they are separated by a distance of about four thousand million miles. The planet Neptune, we will recall, is at a distance of nearly three thousand million miles from the sun. What a wonderful spectacle these two suns, Mira and its companion, would be to one observing them from a nearby planet world! Mira is estimated to be at a distance of 165 light years from the earth; that is, the light of Mira takes 165 years to travel to the earth at the rate at which it travels of 186,000 miles in a second. We see Mira to-day, that is, as it was 165 years ago, when the light we now see left this star. —*Nature Magazine*

Gopinath's Dream

By L. M. PEARCE

ON the rock, on the very top of Horsley Konda, Gopinath sits alone, dreaming of the future. Around him seems to be all the mystery and majesty of Old Atlantis and Egypt gathered together and added to India's own, enriching it with a mystic and barbaric grandeur, transmuted into the azure calm of pure wisdom.

The others have left him quite alone, twelve miles from their College, in a wild jungle, on a solitary mountain-top 4000 ft. high. After being there for a week they found it dull and lonely and not one cared to remain with him, but he wanted to stay, for the remainder of the holidays. There is a bungalow (with a garden) and two watchers, bound to stay there, but he does not care to enter or go near it. When it rains he cooks his rice and dal (of which just enough remained to keep him from starving for the time) in a little shelter near the ancient, deserted temple close to the top, otherwise in the open. There is a cow he can milk, there are plants he can use for fruit and vegetables, and water enough. He is perfectly content, with the devas for companions, and all the vibrant Mystery of the Past and Future throbbing and thrilling in the very air of the place and all its surroundings, vast panorama of valleys and plateaus and majestic hills.

He sees his College far away over the valleys, grown into a splendid University, its beautiful granite walls and towers, their delicate shapes and exquisite traceries, their tapering lotus domes and cloistral arches, gleaming and shining in the sun, in their perfect setting of rich green foliage and surrounding hills of loveliest ethereal colors, pale purple, indigo blue, and rose.

There is his own ashrama, himself one of the gurus, a number of the boys living with him. For each of the professors has his own ashrama, and all the ashramas are built round a central quadrangle (or rather, pentangle) near the College buildings. And with each one, and his wife and family, live the students to whom his way of living is congenial. The houses are built in the ancient Indian way, simple and beautiful, with graceful arches and cloisters all round each one.

For each of the gurus, so Gopinath sees in his thoughts, there is also a small hut or grotto, where he can go to meditate and think over his plans for his students. Every one of these little retreats is different from the rest, for each of the gurus has planned his own to suit his particular taste, and has built or made it for himself with the help of his friends. Some are simple little huts built of grey stone, with lichens and dainty little plants and flowers growing where the wind has sown them in quiet crannies all over each. Some are simply natural grottoes among the rocks (like the one below the abalam, beneath the temple, on Mallea Konda), some are rustic shelters among the trees, hidden away in hedgerows. Some, for gurus who like a brisk walk to aid their thoughts, are farther away than others from the ashramas, and all are far enough to be surrounded only by the deva world of Nature, untouched by any of the influences of man's habitations.

From these peaceful places the gurus bring back to the common life of the College the new ideas which come to them outdoors, and which are constantly being worked out in the College, and they bring new life and inspiration to carry on the efforts of students and gurus alike to fulfil their ambitions. These are the ambitions of Nature—to find out and understand more of all science, in every part of the boundless sphere embraced by that comprehensive word; to make more beauty, more nobility in all life; more of the grandeur learned from the constancy of the tree devas, who stay near and keep alive their children, the tamarinds and the rest, that would die if these devas did not so keep touch with them to give them life; more of the wisdom and tolerance of the winds that go everywhere and learn all things without exception; more of the love of the gentle, strong breezes that linger with tender touch round all creatures; and learn wisdom of each thereby. Some of the students, any who choose, have these little retreats of their own, as the gurus do.

But what is this that comes floating over the hills into Gopinath's dream? It looks like a great bird, yards across with its wings out-spread? Steadily, surely, it comes nearer, till it settles on a broad stone platform in a field near the games ground. Into the spacious car which the great bird carries as if in its huge talons of steel, gets the College games team and goes flying away to play matches with their brother colleges in various places. Gopinath sees himself as Games Guru, going with the boys.

The machinery by which the great bird moves is very simple, and members of the games team know what to do if it should happen to get tired and go wrong. It will never stop and fall, for a force has

been discovered which is utilised as power for locomotion and which also has so much of vitality in itself that it keeps up the momentum for some time after the machinery has stopped working, so that there is time to choose a safe place to descend. Besides, the machinery is now so nearly perfected that it seldom or never does get out of order. And so the College is in full touch with other colleges and with all the activities of the world, for classes with their gurus are taken by the great bird to visit and observe the actual things they are studying, geographical, geological, biological, economic, political, and so on.

The College is international, and a certain percentage of the students, boys and girls, are even of the European race. They learn the language of the country by the direct method when they first come as children, and so assimilate the knowledge the College has to give, in its most appropriate tongue. Later on, they learn the knowledge which is common to the whole world, in English also, since that bids fair to be the common language. But they are also required to know the Indian language most widely spoken in the District, since they live and move in that District.

These are some of the things which Gopinath is dreaming most strongly in connection with his College. The details of the building and the life of the College have been suggested to him by another dreamer, and he for the most part acquiesces in them, for they are simple and beautiful, and allow of the free development of individuality in the chelas for whom they are designed. The granite stone of the neighborhood is ideal for the building, since it fulfils the qualities essential in a material for the purpose, that it should be as near as possible to its natural state, and at the same time consistent with the ideal of beauty. And in the building of men and women the essentials are provided in this ideal College, for its foundations are rooted in freedom—freedom to develop the utmost in each one's nature, and the spirit of service, to help others in their development, so far as they require it, *i. e.*, so far as is consistent with their self-respect and individual initiative. This College is the home of liberty and of kindness, and therefore of every science and of at least some fundamental wisdom.

So Gopinath will go back to his present College with a light heart, full of hope, knowing that that future is a certanity, because it is the child of many dreams.

The True Gentleman

The true gentleman carefully avoids whatever may cause a jar or a jolt in the minds of those with whom he is cast—all clashing of opinion, or collision of feeling, all restraint, or suspicion, or gloom, or resentment, his great concern being to make everyone at their ease or at home. He has his eyes on all his company; he is tender towards the bashful, gentle towards the distant, and merciful towards the absurd; he can recollect to whom he is speaking; he guards against unseasonable allusions, or topics which may irritate; he is seldom prominent in conversation, and never wearisome. He makes light of favors while he does them, and seems to be receiving when he is conferring. He never speaks of himself except when compelled, ever defends himself by a mere retort; he has no ears for slander or gossip, is scrupulous in imputing motives to those who interfere with him, and interprets everything for the best. He is never mean or little in his disputes, never takes unfair advantage, never mistakes personalities or sharp sayings for arguments, or insinuates evil which he dare not say out. From a long-sighted prudence, he observes the maxim of the ancient sage, that we should ever conduct ourselves towards our enemy as if he were one day to be our friend. He has too much good sense to be affronted at insults, he is too well employed to remember injuries, and too indolent to bear malice. He is patient, forbearing, and resigned, on philosophical principles; he submits to pain, because it is inevitable, to bereavement, because it is irreparable, and to death, because it is his destiny.—John Henry, Cardinal Newman, in *The Idea of A University Defined and Illustrated.*

Scouting

MR. Bernard Shaw said, early in 1923: "I strongly approve of the Boy Scout Movement...What I stand for is the organisation of child life as such, with a constitution and rights and duties and so forth, as against the present system of caging them in schools under pretence of educating them, and taming and breaking them in as animals are tamed and broken in, not for their own sakes, or for that of the generation of which they will be the adults, but solely to prevent them from being troublesome to their gaolors, parents and elders generally....I welcome it as a beginning of that organisation of child life which must supersede both the family system and the school system, which is the family system's excuse for shirking its duties."

Child life is thus organised with the definite purpose of changing the outlook of each individual from self to service in the early days of youth, when the mind is most susceptible to every kind of influence. The men who have been most successful, it is said, have been those who figured out, when they were still young, what they really wanted most to do in the world, and then went ahead and did it. "This seems," says a writer in *The Scout Brother*, "as if it ought to be easy enough, but I know from my own experience that it is not." Man's taste changes according to his age, experience and knowledge. It is true that some men have become enormously rich in business into which they drifted as office boys or clerks. "But," says the writer again, "many of them are really terribly unhappy and would give all they possess to be doing something else." They are really failures, not getting the most out of life. One reason is that they began their business careers without having had special training for any one particular job. They did not have a chance to pick their own life jobs. It is stated that every boy, every young man, has it in him, provided he is not below the average in intelligence, to do one certain type of work better than anything else. The various proficiency badges invite the Boy Scout to work to earn the badge in the particular art or craft towards which his inclinations and aptitude lie, helping him thus with the aid of his Scout Master to discover his true vocation in life. That is indeed a chance for every individual to solve the problem of picking his own life job. "In the training of the boys," says the Chief Scout of the world, "one point that we greatly need is the inculcation of the Public School spirit, that spirit of playing in their place and playing for the side and not for self, the spirit of not merely playing to the gallery." Scouting endeavors "to get the boy to educate himself through activities which appeal to him . . . The Patrol system of half a dozen boys under their own boy-leader carries out the natural gang-spirit of the youngsters and puts responsibility on the leader, through which he learns leadership, which includes tact, self-confidence, firmness and fairness, while it induces *esprit de corps* and team-work and self-discipline for the honor of the Patrol among the boys." This boy-leader is only the elder brother. According to Sir Robert Baden-Powell, "the word officer gives an entirely wrong notion of the standing and duties of the man in charge of Scouts...His standing is that of an elder brother, while his duties are mainly those of a combined steering-wheel and accelerator—to give the direction and the energy to the boy's activities. To continue the simile, this means he is also the carburettor, since he gives out the right spirit; and to do this he must himself be full of the right spirit and understanding."

There is innate in every youth a love of adventure, a desire to do something, a love of manual work. There is in every healthy young man a passion for life in the open and a desire to be of some service to his neighbor. Scouting, besides teaching the boy good citizenship and good manners and loyalty to one's own country, developes in him the joy of adventure, a chivalrous regard for others, disinterested service and the playing of the game of life in all its aspects. It inculcates the religion of love of God, of the open air, of one's neighbor and of the lower creation. Himself happy, a Scout is a centre of happiness, which he radiates round him. He works for the obliteration of differences with Service and Sacrifice as the keynotes of his life. Here is an instance of how Scouting metamorphoses individuals, internally and externally. Twenty-two destitute boys from the poorest parts of London, knowing nothing of Scouting, were taken by University Scouts to a wood to camp for ten days and were trained. Everybody had to learn and carry out the manifold duties of everyday life. He had to learn and practise "to play the game," self-control, unselfishness, team-spirit. This short communal life taught them comradeship in the little details of daily life. It wrought wonderful changes in the physical and mental condition of the boys. They were transformed into such smart, cheerful, intelligent lads that employers of unskilled labor, were easily persuaded through the papers to find or

make places for them. This is a practical demonstration of the splendid possibilities of Scouting as a factor in the improvement of slums. In India, this has been made use of with excellent results among the so-called untouchables. Many a person gets swamped among the difficulties or temptations in the struggle of life, "mainly because," as the Chief Scout puts it, "he has not been warned what to expect and how to deal with them". The self-education that Scouting supplies in continuation of what one has learnt at school is necessary. "Go forward with confidence," he says. "Paddle your own canoe." The only true success is happiness. "Taking life as a game and giving out love are two steps to Happiness." "Life is a great adventure.. accept it as such," said Theodore Roosevelt. "Take life like a gallant adventures" exhorts Dr. Besant. Everybody's success depends on his own individual effort in the voyage of life and the avoidance of certain dangerous rocks, remembering that there is a bright side to the darkest rock. The reward for actively working one's own success, instead of passively drifting to ruin, is the gain in character, as each rock is rounded, and the attainment of the goal of happiness in the end. "Life would pall if it were all sugar.....difficulties are the salt of life."

C. VASUDEVAYYA

Finding The King

BY C. JINARAJADASA, KNIGHT RAJA

"Who is the King?" "The Perfect Man." Knights, Companions and Pages of the Round Table are pledged to find Him. The more quickly we find Him, the more powerful will be our service. It is both easy and difficult to find the King.

It is easy to find the King if the Indi[illegible] But [illegible] most looking for[illegible] in the[illegible] it we will look where He is [illegible] and [illegible]ve in that us. For He is indeed looking for us, quite as anxious to find us as we are to find Him. But if we look for Him in those places where He is not looking for us, then our search is long, weary and unfruitful.

The King is looking for us in our hearts. It is there He wants to dwell. Indeed, He is dwelling there already, but we do not know that fact, and that is why we are still looking for Him. Dwelling already in our hearts. He is trying to make us know that fact. So when we say we are trying to "Find the King," we really mean that we are training ourselves to salute the King who is already in our hearts.

We salute the King most swiftly as we *feel with* another. "To feel with another" is summed up in one Greek word, "Sympathy," but the English phrase is better as it speaks more clearly. The first step to feeling with another is to say, regarding everyone, not only the person who likes us, but also the person who dislikes us: "He is *my self*."

It is beautiful to say about one we love, "He is myself," though what we really mean is, "I long to be what he is". It is hard to say about one we dislike, "He is myself". But that also is true. What I dislike in him is an ugly part of myself which I see reflected in him. He is only a mirror of myself. So it is always true to say, about friend or foe: "He is myself."

When we learn to say with the mind, about everyone and everything—not only men and women, but also animals, plants, hills and fields, seas and mountains—"That is myself," then we shall slowly learn to *feel with* another. We shall be full of pity when he suffers, even if he is our enemy, and full of gladness when he is happy.

Soon after learning this lesson, when a person irritates us, and we are going to be angry with him, our mind will prompt us, "He is yourself," and we shall keep back the angry word. A little while after, we shall not allow the angry thought to be born; then the King will show us His Face.

To salute everyone and everything with utmost courtesy, because that person or thing and ourselves are one and the same Divine Life, is one way of Finding The King."—*Quest*

Success

The test of life is living. The test of worth is service. He who serves himself and no other is a failure, though death releases his grasp on the ransom of an empire. He who finds life bitter is a failure, though multitudes cheer him on the street. The king who rules an unhappy and maltreated people is a failure. The carpenter who hangs a door well is a success. There is more honor in using one talent well than in abusing the possession of ten.

To keep clean, to do good work, to earn friends, to be happy and bestow happiness, to develop opportunity, to serve where possible and learn not to whine--this is success.--Robert Quillen

Do Your Eyes Tell You Lies?

BY ALON BEMENT

A FRIEND of mine, riding in the country with me the other day, was remarking on two houses set fairly close together by the road-side.

"I wonder," he said, "why the builders didn't make that first house low and broad like the second. See how tall and 'stiff' it looks."

I looked at the two houses and smiled.

"Those houses," I replied, "are identical in size. The difference lies in the eaves, the windows, the chimneys, and the small extension."

Of course, he didn't believe me. I actually had to get out and prove to him by rough measurements made across the lot fronts that the houses were the same. It did seem impossible that putting half a dozen low shrubs around a house and cutting an extra-sized window (so as to make your eyes run sideways to take in all the windows instead of having them appear as spots) and lengthening the eaves could make a stiff prim house look so broad and cosy.

But I had studied how to trick the eye and I knew how easily it could be done. I had seen many curious principles put into practice in marine camouflage, principles that we never could have made work if the eye were not fairly easy to deceive. The fact is, the eye can be tricked much more easily and much more completely than the ear, perhaps because the organs of hearing develop earlier than those of sight.

When we are frightened, we instinctively stop and listen. In the dark, your eyes are practically useless, but your ear keeps on working just the same. Even while you are asleep your ear keeps guard, a little drowsily, perhaps, but awake enough to give you warning before any other sense will. Therefore, within the range of its proper functions, the ear is considerably more to be depended upon than the eye.

We often are not conscious of the defects of the eye until we begin to consider the matter seriously, but at a very early age we have learnt to interpret the illusions that confront us almost without thinking about them.

During the War, one of the earliest discoveries that we made was that we could reduce the visibility of objects on the land by painting them to resemble the objects about them, but when we tried to do the same with ships, we found that it wouldn't work.

The submarine had only to get the ship between it and the sun, and there you were—outlines as clear as anything. Besides that, the atmospheric conditions of the sea change so often and so greatly that you couldn't count on any given condition. You'd paint your vessel to be invisible in a green sea, and the ocean would turn grey or purple.

As it didn't work, we had to try something else. The next time we went to the opposite extreme. We wanted the ships seen—the more vividly the better. The reason for this was that the submarines did not attack from a distance. When a submarine sighted a vessel, it remained on the surface long enough to get the size of the ship and her exact course, and having made its calculation on where the ship would be in 15 minutes, it submerged and headed under water for the place from which it could attack at close quarters.

We discovered we could throw out the calculations of submarine pilots by deceiving them as to the direction the ship was taking. When we found that we could conceal the true perspective of a vessel by the way we used lines, spots and colors, we wanted the lines, spots and colors to show up as brightly as possible. The submarine judged the course of a ship by its perspective lines. Wherever possible, we distorted these lines; we pinched together or widened the natural lines at the bow or the stern, or made wide marks across them, so as to conceal the true shape of the ship and thus in the end make its speed and course difficult to compute.

Sometimes we tried to make them look long, sometimes short. The fast vessels we painted to look short and stubby, and we tried to make the slow freighters look as slim and fast as we could. As a result of this sort of camouflage a number of submarines, in the last few months of the War, so miscalculated the speed and direction of vessels they were attacking, that they came up too close to them, and being unable to train their torpedoes fast enough were promptly run down or captured.....

If you will hold your hand before you silhouetted against a bright area like a very bright sky, you will see, if you move it swiftly to the right, a bright line just behind its back edge, and outside [illegible]ly

that a dark shadow, a sort of a ghost of the hand itself.

It takes a keen eye to see this phenomenon under the most favorable circumstances, but we are told that the light and pursuing shadow are always just behind any swiftly moving object. This is the reason we cannot see a really swift motion. The dark edge following gets confused with the real edge. The camera rarely reveals this, and that is one reason it can show things the eye cannot see. If the fast camera can eliminate this confusion of edges, there seems to be no reason why science may not one day hand us a pair of eyeglasses that will do the same. We have glasses to correct far sight and near sight. Why not glasses for swift sight?

You can be deceived just as easily with color as with line. If you take a deep red background, look at it for a while, then place strips of gray paper against it, the strips will appear a ghostly sort of green. On a blue surface your strips will look orange. Easier than that, try looking at a strong electric light for a few minutes, then look at a blank wall. You'll see the light exactly the same shape, but the color will be purple.

A book on dress recently warned against wearing too much orange, because it gave blue shadows to the face. Primary colors—red, blue, yellow, green, orange and purple—have a tendency to make us see their opposites. In other words, wherever you see one of these, its complement will be hanging around and you will catch glimpses of it now and then out of the tail of your eye.

So, you see, your eyes can't be trusted. Things are not what they seem. At first it may appear rather a low trick for your eye to play you; but when you think about it, I believe you will agree with me that it is a fair arrangement. If the eye could not be tricked into making high spaces seem low, and broad ones slim, you would have to go on living with your imperfections. But with an understanding of the law of tricking the eye by subtle placements of lines and colors, it is prosible to change the ugly thing and make it seem quite beautiful.

To go back to the house proposition, for instance. You have seen how easy it is to transform an exterior. Suppose we discuss a few things we might do with the interior of a house.

If the builder has placed your mantelpiece too high, you don't have to sit and bewail your fate at having all your rooms look ill-proportioned. You simply place two long, tall vases on the floor, at each end of your mantelpiece. Your imagination draws the connecting lines that seem to draw down the mantelpiece. Or, you might place two low, fat vases on the ends of the mantelpiece itself, and one of those broad, fat clocks in the middle.

If your whole room is too high, try placing objects with vivid colors, such as bowls of bright flowers, on the tables, not on the mantelpiece. By such methods you can direct the eyes where you will; you can keep them down if you like.

Or perhaps your room is too low. Then you would run parallel stripes, rather pale in color, from the floor to the ceiling, or you would place a long mirror high on the wall, to reflect ceiling, and so make your room look lofty. Mirrors always give a feeling of space.

Nowhere is the principle of color harmony—and, for that matter, the principle of line—more important than in dress. I can give you one very simple instance that illustrates them both. Just recently we have discovered that a row of white glass buttons straight down a black dress, from the throat to the hem, can give a look of slenderness. You can suggest a line just by three or four buttons. Or, you will be astonished to find how slim you can make yourself look by wearing dresses cut with the lines sloping inward a little toward the top. That adds an inch or so to your height, too.

Then there are the "distinctive," as the advertisers would say, sleeves and cuffs. If you have short fingers, you'll be surprised to discover how much longer they look when you wear a cuff that droops over the hand. And you'll be equally surprised to discover how much shorter they look than they really are if you wear a number of rings, or if you wear a bracelet close to your hand.

Then there are shoes. If you have normal sized feet, you never have to worry about them. If you haven't, there are all sorts of things that will help you make them look normal. A short vamp, for instance, makes the foot look shorter. With a long vamp, the reverse is true. Laced shoes make the ankle look smaller, just as button shoes make the instep look higher. The black patches on the fancy white sport shoes that run back from the toe along each side, make the whole shoe look smaller by luring the eye away from the true outline.

If you can take an ugly outline and superimpose a beautiful outline, you deceive the eye into seeing only the beauty and being oblivious of the ugly. And that is the æsthetic value of optics.—*Popular Science Monthly*

"Never Say Die"

IN the town of Larks'-Rock, there was a roadside winding about a hill, where a large rock jutted out, on which the larks in the early morning and at sunset often sat and sang. Beneath it, two toads were resting in its shadow, after the heat of a long, hot summer's day.

"My body is very dry!" exclaimed Horny, hopping around in the grass with the hope of finding moisture.

"Dry! Well, I should think so," replied the other toad. "My body feels as if it might burst, so much do I need a swim. Oh, if I could only find moisture enough to cool my heated sides. How long before we can expect rain?" asked Blinky, peering into the cloudless sky, all aglow from the setting sun.

"Rain!" exclaimed Horny. "Why, this is summer. In this country we may not have a shower for many weeks."

"Many weeks!" repeated Blinky wildly. "Oh, dear, how can I endure it?"

"Well, it has been pretty warm to-day, but you're alive to-night; perhaps, to-morrow will be cooler. There might even be a fog! Come, Blinky, let's hop to the bend in the road. We may find a spring of water there."

"Oh, no," groaned the despondent toad. "It's too far away. Hopping makes me tired. My legs get sore, too, in the dry dust. Oh, dear, I wish that I could fly; then I would go with you. Oh, dear, what shall I do? I need water so much and—it will be a month, at least, before we can hope for a shower. I can't endure all those days of suffering! Why, life isn't worth living anyhow! I'm not going to make the effort. I'd rather die."

"Now, Blinky, don't be lazy," said Horny. "Come and hop on down the road with me. Don't give up. We might find a spring. Come, let's go and explore."

"Oh, no, it's too far, and the road is hot and dusty even at nightfall. I'm going to stretch right out here, and when the sun blazes on me tomorrow, I'll die. Then, thank goodness, my trials will be over," said Blinky weeping sadly at the thought of his own misery.

Just then they heard an owl hoot. It was sitting on a rock beneath which they were resting. A hoot is the way Puffy—the owl—had of laughing. Again it shrieked with merriment and exclaimed: "I've been listening to you two fellows talking, and I want to tell you, Blinky, your life won't be over when you lose your body! Oh, no, my toad, you'll find yourself very much mistaken!"

"I shall go to toad-heaven, no matter what you say, Mister Puffy," answered Blinky, beginning to stretch himself out on the dry road, preparatory to dying there. "It must be much pleasanter in heaven. I never could see any reason for staying in this hot, dusty world!"

"He says that if he had wings and could fly, he wouldn't mind going with me to search for water," said Horny.

"Tut! He'll never get wings, until he learns to hop cheerfully. Why, I remember well when I was a toad like you two fellows."

"Is it possible that you ever were a toad like us?" questioned Horny, hopping up on the rock beside Puffy so as to hear better.

"Indeed, I was. You know you both have souls that live after your bodies die. So have I and so has everything; and then, some day, you'll come back here to live again."

"Oh, dear," groaned the toad down in the dust, "I don't like that idea."

"Why, Blinky," said Puffy, "I should think that you would want to live again so as to learn all you can; after a while you'll get to be a beautiful owl like me!" Proudly the bird preened his feathers.

"My! but I'd like to be an owl!" gasped Horny, under his breath and looking up at Puffy with admiration.

"Oh, yes, it's fine to be a bird! One can live in the trees and fly about, instead of just wallowing in the dust or mud. But, I'm not satisfied even with being an owl! I want to be an eagle!" In his excitement at the thought of becoming the king of birds, Puffy flew for a short distance straight up into the sky.

When the bird returned to the rock, Horny exclaimed: "Why, Puffy, what strange ideas you have. A little brown owl wanting to become an eagle?" The happy toad laughed so loud at this thought that he shook with merriment.

"You do wrong to put such notions into our heads," growled Blinky down in the dust. "Why, it makes me more dissatisfied then ever. I should like to be covered with nice soft feathere like yours. Then I wouldn't mind the heat!" Opening his mouth, he gasped for air.

"But you would mind something else," replied the owl quickly. "Blinky, it'll be many a day before you're ready to be a bird; but for you, Horny, there's far greater chance. Hop cheerfully, old fellow. That will make your legs strong so that they can grow into wings." Here Puffy proudly

smoothed down his feathers with his crooked beak.

"Well," retorted Blinky, so angry that he stopped gasping for air to sit up and speak, "I don't think it's fair anyhow, for God to have made you to fly and me only to hop!" He gave a little jump to illustrate the motion.

"But I tell you that once I hopped, too," replied the owl. "Before that I crawled; further back still in my evolution I was a tree and couldn't move at all."

"How did you learn to change your form, Puffy?" asked Horny, looking with admiration at this wonderful bird.

"My secret is that when I see anyone doing something beyond what I can do, I watch and try to learn how he does it. I 'never say die'. Even when it's hard, I try over and over again. Now, you see, I'm trying to learn to fly like an eagle. To do that, I've got to reach the clouds. I can't do it in this one life, but if I get my wings strong while I'm an owl, I'll be ready the next time I come to live on earth to be a better flying bird than an owl, until some day I'll be an eagle. I don't just lie down and die because I find it hard work."

"As Blinky does," said Horny, with a sly wink.

"Yes, and I'll tell you fellows another secret." Here Puffy swelled himself out so big that it was easy to see whence he had received his name. "Some day I'm going to be a man and walk! That will be a long time off yet, but, by and by, I'll be there. Won't I be a fine little man?"

Both toads laughed at such a strange idea, Blinky even forgetting his own troubles to jeer at the owl.

"You may laugh, but just watch and see what will happen to me some day. However, now I only want to be an eagle!"

"Oh, Puffy, but you're very brave," sighed Blinky. "What a long road you've chosen? I'd rather die now and go to toad-heaven than work as hard as you do." Again the lazy fellow laid himself down in the dry dust.

Puffy laughed out loud. It sounded like a hoot, but it was a laugh. "Toad-heaven! Well, a lazy toad like you won't find much. You'll have to come right back here as a toad over and over again until you learn to be a good one, like Horny. He doesn't want to die! He's going to hop and find a spring of water."

"You're right, Puffy. Come along, Blinky, let's hop together," called his friend, starting off down the dusty road.

"Good for you, Horny," hooted the owl. "You're a brave fellow, ready for something mighty fine right now." His joyful cries at the bright prospect of his friend filled the night air.

Blinky did not move, but lay wallowing in the dust.

"Well, good night, then," said Horny, starting off by himself. After he had gone a short distance, he stopped to call back:" "Come, Blinky, it's not so very bad. The dust really feels quite soft to my heated body. Come, don't lie there and die."

"Oh, no," gasped Blinky, "I need a drink of water so such that I'm sure I'll be dead before morning."

Horny started once more, but after hopping a little further on, paused to call back: "If you'll come with me, Blinky, as we hop together, I'll tell you a story to help make the way seem shorter."

"No, I'm determined to die and go to toad-heaven. Go on and let me alone."

"Well, good-bye, then," called Horny for the last time, as he went thumping off down the road.

The home of Mr. and Mrs. Sheldon was within sight of the Larks' Rock where Puffy was resting. In the gloaming of this warm day, they went forth for a stroll. As they passed along the road, Puffy winked his big eyes at them and gave a low hoot; they could see him outlined against the evening sky. But Blinky, lying gasping in the dust at their feet, they did not notice. They walked on, soon overtaking Horny hopping along the road. He was thumping so earnestly in his endeavor to reach a spring that the lady saw him and exclaimed: "Oh, there's a toad! Let's catch him to eat the insects in our conservatory."

Quickly her husband threw his handkerchief over Horny, and tenderly wrapped him in it. They then turned back to carry him to a place which answered Blinky's idea of toad-heaven. They laid him on the damp earth among the ferns and flowers, where a spray of water dashed over his heated body. In an ecstacy of bliss, Horny shut his eyes, wondering if he were dead and had reached toad-heaven. After the couple went away, he gave a few little hops to see if he were still alive. He found that he was and joyfully began feasting on the many insects which were proving such pests to the kind-hearted people who owned the lovely, cool conservatory. Horny then heard the owl's hoot, and realised his friend was somewhere near. Loudly he called: "Oh Puffy, see how lucky I am!"

"Lucky!" hooted the bird, "there's no such thing as luck! You did the best you knew, so you were helped. That's always the way. Why, you've been lifted right into Blinky's idea of toad-heaven, whereas he's out dying in the dust of the road. He'll never find this spot or any other that's fine, because he doesn't do his duty!"

"When the people picked me up, I was hopping so fast that I was thinking my legs were becoming strong enough soon to be wings."

"It was because you were thumping along so joyfully that they saw you. If Blinky had been with you, they also would have lifted him out of the dust. I told him 'never to say die,' but—now it's too late." "Poor Blinky," said Horny sadly.

"Listen, my friend; before I leave you I want to warn you against one thing." Puffy flew down on the roof of the conservatory to talk through a little crack.

"What is it?" asked the toad anxiously.

"Now, don't just stay here in this toad's heaven and get fat and lazy so that you'll forget all about becoming an owl."

"Do you think I'm in danger of doing that?" asked the toad.

"Indeed, yes; here you have everything to make a toad happy. In your contentment you're liable to forget that there's anything beyond for which to strive."

"Oh, Puffy, I shouldn't want to forget about becoming a beautiful and wise owl like you. I'd rather go back to the dusty road and hop so as to keep my legs strong."

"That's not necessary, Horny. 'Take all the good the Gods give you,' but watch yourself. Stop everyday and take time to think about growing to be something higher than a toad and then you'll be all right. Good-bye, old fellow. Don't forget my advice." Away flew the owl, and the toad nestled down in the cool, green moss to think of all he had heard, as well as to adjust himself to his new surroundings.

FLORENCE HORNEY

God's Steward

BY ELLA WHEELER WILCOX

To you who pray by night and day
That wealth may be your share
And give no place to God's good grace
I say, beware, beware!

The fattened purse can bless or curse,
And this we know full well,
Gold paves the street for idle feet
And speeds them fast to Hell.

For Hell is not that final spot
That waits for sin's redress,
It is the sphere all souls find here
Who dwell in selfishness.

Nor, hoofed and horned, by mortals scorned,
Do devils skulk below,
But crowned with pelf and love of self,
Purse proud, through earth they go.

They beggar toil, they seize the soil
(God's gift to one and all),
They sing loud psalms and scatter alms
That blight where'er they fall.

With greedy lust and might of trust
They take the laborer's bread,
Nor understand his lifted hand
When offered alms instead.

The thirst for gain blunts heart and brain;
The gold-mad mind is cursed.
Oh, you who pray for wealth to-day,
Seek God's large wisdom first.

No mortal mind alone can find
The gold-paved path to right.
With reverent mien, ask Powers unseen
To lead with love's great light.

(From N. Y. Journal)

A Patriarchal Tortoise

In 1889, a tortoise, brought from the Mojave desert, was presented to the Los Angeles Chamber of Commerce. This tortoise was given the name of "Jumbo," and soon became a great pet. He is a great eater, and, although he has a large growth over his beak as a result of great age, he finds no difficulty in eating whatever is placed before him. He very much prefers lettuce, grapes and peaches. The picture shows him (See p. 302) eating a leaf of lettuce. As he was brought up in desert where he was used to a minimum of moisture, he seldom drinks water. By those versed in such matters he is said to be over 100 years old, the peculiar and extensive growth over his back rendering this guess quite plausible. He makes daily trips across the exhibit hall, eating from the hands of one of the gentlemen and following across the hall for more. From November to March, he hibernates and revives when spring comes on, without losing any flesh.

—*Nature Magazine*

At

The Laidley Worm

A TALE OF MAGIC AND ENCHANTMENT

By E. C. Matravers

IDA was King of Northumbria and he lived in his great castle of Bamborough overlooking the North Sea. He had two children, a son named Childy Wynd, who was far away at the wars, and a daughter, Margaret. His wife had died when these were still quite young.

One day Margaret was at home alone when she received a message from her father saying that she must prepare the castle with the utmost care for his return, because he was bringing home another wife and he wished her to have a hearty welcome.

Margaret set bravely to work, and in the evening she waited anxiously at the castle gate till the procession appeared riding up the hill. In front was the King with a lady grandly dressed on his right hand. She was looking this way and that to inspect what her new home might be like, and it would seem that the threatening black towers and the moan of the sea did not please her, for she looked sour and cross. And when she saw fair Margaret waiting for them, she looked indeed blacker than thunder, and, turning to her attendants, pointed out the blushing girl with a finger of scorn.

But Margaret stepped forward and with the prettiest grace in the world bade the lady welcome. But the latter scarcely seemed to notice this, for, sweeping past her step-daughter into the hall, she ordered that her supper should be promptly served.

Now, unfortunately, the Queen's sharp ears overheard one of her gentlemen-in-waiting praising the beauty and grace of the Princess, and her sharp eyes saw the admiration with which he watched her movements. For this dire offence she rebuked him harshly, calling it bad manners on his part to praise any but herself. Not only did she rebuke him, but she summoned Margaret to her and said that the whole court should see how hollow her beauty and her pretty manners really were. She was, indeed, the Queen declared, nothing better than a "laidley (loathly) worm".

The courtiers shivered at these terrible words, for they knew the wicked Queen had magic powers, and all had deep misgivings as to the fate of poor Margaret, especially when they heard the Queen muttering something about the spell lasting till the return of Childy Wynd.

Nothing happened, however, for some hours, and everybody was beginning to breathe more freely, when in the evening poor Margaret, who was spinning on the castle terrace, became aware that some strange thing was happening to her. Her arms dropped to her side and became part of her body, her feet were glued together and her whole form was growing longer and thicker and more shapeless every moment. Then everybody ran away from her, for they saw her pretty features changing into the head of a hideous dragon, and for very shame the wretched creature had to wriggle her huge unwieldy folds away and away, down the hill and across the plain, into a dark cavern called Spindlestone Heugh.

When the poor King heard the news, he was very unhappy, but he dared not cross his new wife, so he gave orders that the "laidley worm" should be properly fed and left unhurt in "her" cave, even though everyday many cries and complaints used to reach him about the harm which the great creature did in the neighborhood, for her breath was so venomous that the land was burnt up for miles around, and though she never wanted to kill or hurt any one, yet her hideousness was so terrific that no one willingly went near her hole. Everyday she drank the milk of seven cows, and every day her scorching breath swept over the country.

This sad state of things went on for several years, till at last the news spread into distant lands, and Childy Wynd learnt that some great trouble had befallen his sister. As soon as he heard this, he made up his mind to return home at once, and indeed he might be of great use there, for having travelled far and wide he knew more about witches and spells than anyone expected.

So he ordered a beautiful ship to be built, made all of mountain-ash, only he called it rowan-wood, and he went on board with thirty-three brave followers and set sail for his native shores.

When they drew near and could see the great castle of Bamborough frowning down on them, the step-mother appeared on the walls, and she guessed at once that this gallant ship contained some enemy, so she sent her old witch-wives to stand on the shore and try to sink it with their spells. But these had no power at all, because Childy Wynd had so cunningly built it of rowan-wood over which no evil spirits have any power.

The Queen saw this and was more and more angry. From her watch-tower she then gave orders that her followers should attack the stranger ship at sea and on no account allow it come to

mouth, and take a fresh breath of air for the next dip.

To learn the stroke, first practise the leg drive; next, try the arm movements, and finally the rolling and breathing. This is how to do it.

The Leg Drive.—Lie out flat on the water, face downward, and move your legs in short alternating thrashes like the beat of drumsticks. One leg moves downward, while the other moves upward. While doing this, hold the legs almost straight yet free from tension in order to allow for slight play at knees and ankles. Point the toes and turn them slightly inward, as if pigeon-toed.

The Arm Movement.—The arms move like two paddlewheels, in long, alternate sweeps. Each arm in turn is extended full length in front and enters the water with the elbow slightly higher than the hand, forearm and hand aligned, palm down and flat fingers and thumb close together. The hand enters the water at one side of an imaginary line through the middle of the body. Now sweep the arm downward and backward, bending it so that the elbow looks outward and so that the hand will move in an arc beneath the body until it nears the thigh. Here the arm swerves outward in such a way that the hand and forearm retain leverage on the water as they are brought to the surface. Just before the hand emerges, the palm is turned inward. As the hand clears the water it is flipped gently from the wrist toward the body, but the forearm continues to move outward as the flip is effected and circles outward, until it points ahead. Then, after the bending of the arm is completed, the elbow moves forward and the arm glides out straight again to easy full reach in front, keeping a few inches above the surface of the water and sloping slightly downward after the hand passes beyond the head.

Stroke Supports Shoulders

During the stroke the arms should be moved independently of the body so that the shoulders will not follow their movements. The movement of each arm should be timed so that it will start its drive from the front before the other arm, completing its drive, relinquishes its pressure on the water at the rear. The catch, or entry of the arm into the water, should be made with sufficient vigor to support the shoulders. The power must then be increased until the arm has reached a point beyond the perpendicular position.....

As the hand leaves the water, the muscles should be relaxed. The bending of the arm immediately afterward should be quick, but the forward glide exceedingly slow, to permit a rest between efforts.

Arms and Legs.—The strokes of arms and legs should be timed so that three scissoring motions of the legs (one up, one down, one up) are performed to one drive of each arm, or six scissoring motions to each full stroke. The first and fourth of the six leg motions should be more pronounced than the others. These two wider strokes (called majors) should not exceed a movement of more than 13 or 14 inches; the lesser strokes (called minors) not more than from 6 to 8 inches. The thrash of the legs should be easy.

Breathing.—Breathing is accomplished by rolling the body and moving the head to one side, whichever side is preferred. This brings the face above water so that the swimmer can inhale a breath of air through his mouth during the recovery of the arm on that side. Then the body rolls back, the head is submerged again, and the swimmer exhales through the nose under water during the recovery of the other arm. During the roll, which, by the way, should not be pronounced, it is very important to start the drive of the under arm before turning the head to inhale and to start the drive of the top arm before turning the head to the submerged position.

Learning to Roll

In learning the stroke, it is good practice at first to roll the body heavily to each side, turning the head toward each arm as it sweeps forward above the surface. But once you have learned to coordinate arm and leg action and breathing, abandon this practice. You should roll only to one side to inhale, aiming to conform more and more with the requirements of the standard stroke.

The superiority of the six-beat double-trudgeon crawl is due to the fact that, more than any stroke devised so far, it meets the scientific requirements of effective progression in the water—natural and efficient movements, continuous application of arm and leg power and avoidance of unnecessary resistance.

All movements are easy and unstrained, yet they give good play to the muscles, afford direct, forward impetus and eliminate loss of motion. Propelling force is attained without break in the movements of arms or legs. Resistance is reduced to a minimum, not only because the position of the body and steady progress enable the swimmer to take advantage of the hydroplaning principle, but because the arms recover above water and the leg drive is the narrowest evolved to date.

We owe the discovery of the six-beat double-rhythm stroke to American students of the science of swimming. They worked it out in theory several years before it was tested for practical use. At

first the leading coaches and swimmers could not be induced to give it a trial, claiming that the fast leg thrash was entirely too tiring to be maintained successfully for more than about 100 yards.

Records Broken with Stroke

So it was left to two New York girls—Miss Claire Galligan and Miss Charlotte Boyle, of the Women's Swimming Association—to prove the value of the stroke. They took it up experimentally in the fall of 1917. A few months later they startled the aquatic world by using it in the women's 500 yards National Championship Race, which Miss Galligan won. And the following summer both girls succeeded in shattering speed records with it, up to one mile, clinching the evidence of its worth.

One of the outstanding advantages of the six-beat crawl is that it does not require fast arm movements. On the contrary, the steady leg drive permits slowing up the arms without loss of momentum, thus making it possible to retard the recovery and seek complete relaxation betwen arm pulls. A rapid stroke will prevent full development of either speed or endurance.

Try out this stroke this summer. Time yourself for 100 yards when you first take it up, and again after a month's practice. You will be surprised at your improvement.—*Popular Science Monthly*

Youth and The Animal Kingdom

THE immortal words of Dr. Annie Besant that the "Divine Life sleeps in the mineral, dreams in the animal and awakes in the man," will bring home to the minds of Youth the idea of Universal Brotherhood. The recent discoveries of our great countryman, Sir J. C. Bose, have fully known that plants too have life in them. This indicates that there should be love and good will not only among human beings, but also between human beings and the other great creations of God.

We shall for the present study our relationship with animals. Animals—some of the domestic types at any rate—are very good and agreeable friends of man. Pets like dogs, cats, rabbits and squirrels have become an indispensable appendage in modern society. Naturally a certain amount of affection is rightly bestowed upon them by human beings. And demonstrations like "Animal Shows" and "Animal Weeks" have greatly accelerated and increased the interest which people take in the welfare of animals.

That the animals are susceptible to all good emotions and feelings, has fast become a fact. In the story of "Androcles and the Lion" even the fierce "Monarch of the Jungles" was moved by gratitude. It is said that the faithful horse of Napoleon, witnessing the downfall of its master, died out of misery. In Greek Mythology, Orpheus by his sweet music moved all animals to subjection. The venomous snake falls a victim to the melody of music. The cows danced with ectasy when they heard the sweet tune of Shri Krishna's flute.

"There is in every animal's eye" said Ruskin "a dim image and gleam of humanity, a flash of strange light through which their life looks out and up to our great mystery of command over them and claims the fellowship of the creature, if not, of the soul." The animals are full of good feelings, but they find no expression except through their eyes. This want of expression on the part of animals induces the human beings to take more interest in the poor creatures.

The youth of the country must have kindness to animals, as an item in the programme of their National work. Their kindness and affection towards the animals must not be merely of the passive type of preventing cruelty to animals, but also of the active sense of doing positive good to the animals. Strenuous work in that direction should be carried on. They should actively co-operate with the S. P. C. A. Associations and the Veterinary Department, which are rendering yoemen service in this noble sphere of activity. The youth should bring to the notice of the authorties all cases of suffering of the animals. Further, they should carry on anti-meat campaign and prevail upon people not to take meat. They should do propaganda work, especially in Indian villages, inculcating upon the minds of the people the moral necessity for a very kind attitude towards the poor dumb animals.

Such noble work cannot be judged by any material standard, so characteristic of the twentieth century utilitarianism. Though our great work for the poor creatures will not be materially rewarded, still it is very essential in view of our sacred Hindu Dharma.

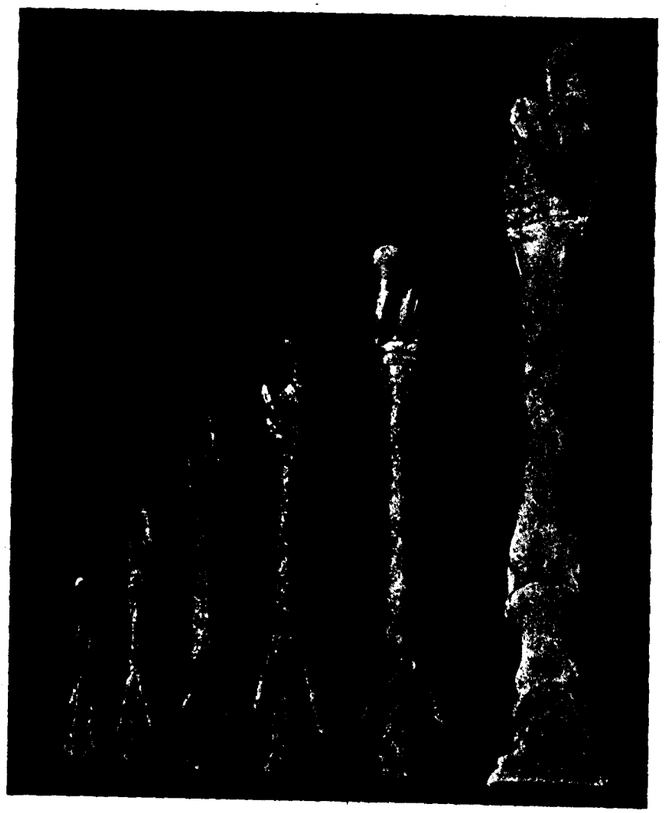
T. S. GANGADHARAN

The Horse of a Million Years Ago

Scientists of a recent Geological Expedition, sent to Texas by the American Museum of Natural History (New York), have discovered in rocks more than a million years old the fossil skeleton of a horse in one of its ancestral stages of evolution.

In the evolution of the horse the newly found specimen represents an intermediate stage between the type called *Pliohippus* and the early Ice Age horse called *Equus*. It is smaller than the modern horse.

While the fossil horse just discovered is almost the earliest one-toed horse, before the long [illegible]us, day of *Pliohipp*ed there had exis[illegible]er quite a numi- of more pvol- tive or less the ved forms c horse. nple, For exsk to if we go ba e n e the E o on the Epoch, whf the ancestor s no horse wean a larger tiscover cat, we did four that he has fore toes on hree on feet and t feet. his hinsequent The subs of the evolution s most horse i arked by the gradual loss of all of these clearly ept the single toe on which our modern toes exc alk. Other parts of the animal, especially horses w , have also undergone a striking evolution, the teeth e increase in size has been very great. while th der to place the newly discovered fossil In or n the proper place on the long scale of horse i n, let us essay to follow out the main trend evolutio evolution. of this



HOW THE HORSE LOST ALL BUT ONE TOE

If we begin close to the beginning of the Tertiary Period or the great age of Mammals, we shall find the horse already evolved to the stage called *Eohippus*. This little cat-like creature may be pictured as trotting along over the broad low-lying river valleys of sub-tropical, volcanic Wyoming. He already depended on his fleetness of foot for protection against the carnivorous animals which were rapidly evolving at the same time.

Although he had but three toes on either hind foot, there remained the rudiments of two additional toes which had already begun to disappear. Oddly enough the soft rocks [illegible] which [illegible] bones of horses in the early Eocene Stage of their evolution have been found were formed at about the same time as the oil shales, which we expect some day to use for our oil supply. This fact may, however, be regarded only as an interesting coincidence.

A few hundred thousand years later than *Eohippus* came the primitive horse *Orohippus*, whose skeletons were fossilised in rocks of the Badlands of Wyoming. *Orohippus* was the size of a small dog. The two rudimentary toes of his ancestor *Eohippus*, had already disappeared leaving, however, the same four toes on the fore feet and three on the hind feet.

The next stage is *Epihippus*, still an Eocene Epoch horse. He was not very different from

Eohippus except that the central toe of each foot was beginning to grow larger than the outside toes.

Mesohippus, the horse of the Oligocene Epoch, was about the size of a pointer dog. The middle toe was not only much larger than the side toes, but it now bore most of the animal's weight.

The next epoch was the Miocene, lasting perhaps half a million years, perhaps longer. *Parahippus* of this remote day still had three toes, but only one toe touched the earth. The second and fourth toes were small, while the ancient fifth toe of the fore foot was now only a very short, small splint, which served no purpose at all.

At about the middle of the Miocene Epoch, close to two million years ago, perhaps more, the descendant of the little cat-sized *Eohippus*, with which we began our account, had reached the size of a very small donkey. To this stage the name *Merychippus* has been given.

Do not assume that these names represent separate creatures in the sense that such names as rabbit, pig and dog represent separate animals. The evolution of the horse was a gradual thing, and [illegible] apply these names to its sequence of have [illegible] is simply to put our finger on the [illegible] of the evolution at conveniently separated periods of time and say, as it were: "Let us arbitrarily name this evolving animal at various stages in its evolution, so that we can designate them more or less closely."

Pliohippus was the horse of the early Pliocene Epoch. The two remaining side toes have now been reduced by evolution to long, slender splints which do not even protrude through the skin. *Pliohippus* was not very much smaller than the modern wild horse, although it must be remembered in making comparisons that the draft horse with which we are familiar is not a fair criterion of size, since through artificial selection he has been greatly increased in height and weight within comparatively recent times.

Pliohippus lived at the same time when man was probably changing from the ape to the ape-man. Back at the beginning of the evolution of the horse the ancester of man was some uncertain type of small creature which the popular word monkey would loosely cover. Probably, however, he was even smaller than the little Cebus monkeys which accompany organ-grinders.

Thus the ancestors of man and the horse evolved together, in time though not in place. But just as man was not man as we know him until about a million years ago, so the ancestor of the horse was not the horse we know until some time during the Glacial Epoch.

During all this time the other mammals were also evolving. Closest to the group of early horses whose evolution we have just reviewed are the great extinct titanotheres whose mammoth fossil bones have just been found in Mongolia; the tapirs; the rhinoceroses and a few other extinct types of creatures. It is true these animals do not impress us as having much or any common relationship, especially with the horse, yet a study of their skeletons rather than their external forms shows clearly that they are related. Particularly is this shown in the bones of the feet, for they are the odd-toed sub-order of mammals, and this differentiates them from the other hoofed animals. Especially is the form of the astragal or ankle bone and the *os calcaneum* peculiarly characteristic of this group.

If we go back still farther we find that other groups of mammals were evolving at the same time, so that we can bring into relationship the ancestors of the carnivorous animals, and such commonly known mammals as the pig, the camel, the elephant, the bat, the whale and scores of others. If we trace their evolution back far enough we discover that the branches of their great family tree of the mammals coalesce, probably in some small insect-eating form of animal which dwelt during the days of the great extinct dinosaurs. But of them all, we know the evolution of the horse and his cousins, the zebra and the ass, most fully.—*Scientific American*

Triumph of Photography

Another triumph of Photography in aid of scientific research is recorded in a book by Sir William Bragg, F.R.S., whose work in the field of crystallography has paced him in the forefront of investigators. With the help of X-rays, he has been able to work out the atomic structure of crystals, or, rather, to show how the atoms in a crystal are joined to one another.

Sir William passes a beam of X-rays through a narrow slit, then through a fragment of the solid to be examined, and the emerging rays are allowed to fall upon a photographic plate. In this way, he has shown that the molecular structure of two familiar forms of carbon-graphite and the diamond, are identical, though, as every one knows, their physical properties are very different. An X-ray examination of the atomic combinations within the crystals shows that both the graphite and the diamond present the appearance of hexagonal network.—*Camera*

Printed and Published by B. Ranga Reddy, at the Besant Press, 2nd Line Beach, Madras