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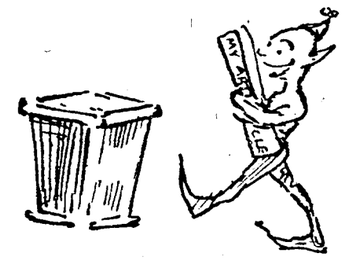

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ANNIE BESANT AND G. S. ARUNDALE, *Editors*

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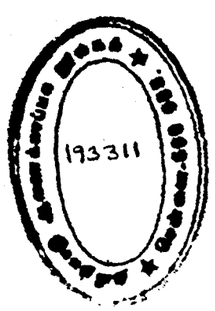
The Young Citizen

WILL APPEAR:

FROM THE FRONT
IN THE WORLD'S SERVICE



The Young Citizen

AN ILLUSTRATED MAGAZINE OF WORLD-BROTHERHOOD

VOL. 3 | MADRAS, 1st FEBRUARY, 1926 | No. 11

From The Front

BY A LOCUM TENENS

ONE quality, almost more than any other, which the Young Citizen in India must try to cultivate is an international spirit. Soon India will be a free Nation, linked in equal partnership with the other Free Nations comprised in the mighty organisation now called the British Empire. She will then be in a position to exert her full influence not only in the Councils of the Empire and the world, but also in the development of civilisation and culture throughout the world. She has certain wonderful and distinctive ideals which are needed for spiritualising the materialistic Civilisation of the West, which is now predominant in the world. But if these ideals are to be applied with discrimination and wisdom, and blended, to the extent that such blending would result in a product of greater richness and pertection, with the ideals of the West, the work must be performed by minds that understand both, and are impelled by the motive of helping forward the progress of humanity as a whole.

More and more are the different parts of the world being brought close to one another by the inventions of Science. What is to be the effect of this closer contact? Is it to be the multiplication of opportunities and facilities for conflict, the extension of the scale on which wars are to be organised, the increase of competition and exploitation and the spreading of the evils in one part of the world rapidly to the others? If this question is to be answered in the negative, the world has to be re-organised and made safe for all that is best in its heritage and for the development of that best under the most favorable conditions possible. This is the great task that lies ahead of the rising generation in every Nation. And how is the task to be achieved unless Young Citizens in the various countries prepare to co-operate with one another, with understanding sympathy for one another's points of view in all matters concerning their lives, brushing aside any racial, National, temperamental or other prejudices or particularities that might stand in the way of such co-operation?

Unfortunately, in India, the inevitable reaction against the glamor of Western Civilisation, to which many of her children of the earlier generation had succumbed, has naturally tended to carry the pendulum to the opposite extreme. It has taken the form, in recent years, of attempts to preach a narrow kind of Nationalism, which would keep India aloof from the rest of the world, with her outlook turned upon the past instead of the future, and immersed in a spirit of inert self-complacency based on the contemplation of pursuits and modes of life not in keeping with, and, as a matter of fact, impossible for large numbers of people in, the present day. If the Young Citizens among our readers find in their thoughts and attitudes traces of the effects of such preachings, we would most earnestly urge them to cast out these traces without any hesitation. We are sure that they would themselves perceive, on very little reflection, that these are not days when one can live for oneself. One has to be an internationalist for good or evil. The choice is between deliberate and cultivated internationalism as a force for good, making for the happiness of the world and being a passive tool of forces of evil and des-

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YOUNG CITIZE

AN ILLUSTRATED MAGAZINE OF WORLD-BROTHE

Vol. 3 February 1, 1926

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uction, which are also international in their weep.

Man begins with himself as the centre of his circle and its circumference. The circle gradually extends, as he evolves, and includes successively his family, his tribe, race and Nation. Patriotism is now universally recognised as the highest form of unselfish emotion which is capable of animating large numbers of people, inducing them to make the most heroic sacrifices. We are now evidently on the threshold of an era when another extension of the average citizen's interests and attachments is called for, this time embracing the whole of humanity. It will undoubtedly be an era of wonderful possibilities and developments, and those who have the privilege of helping to usher it in may well congratulate themselves on the fact that they have been born in such interesting times. But we have also a duty and a responsibility to the generations that are to follow us, namely, to do our best to effect the smooth transition from the old order to the new, without delaying the changes that must come and without the loss of anything that is valuable in our heritage and fit to be carried into the future.

Let us, then, friends, learn to extend our interests to the farthest bounds we can reach, to look at everything from the standpoint of its value to all others, to be citizens of the world as well as citizens of our village or town or country, and to look for and give a helping hand to every cause, every movement that is calculated to break down the separateness between man and erected by superficial differences of thought, feeling, action and life, which hide the essential identity of his spirit.

Bottled Radio

n invention, which is being perfected in Berlin, eserve radio concerts for re-transmission, opens interesting possibility that in the near future ean countries and America will be able to a rapid exchange of programmes, which will overcome the obstacle of atmospherics.

Experiments have shown that the device has stood several hours' test for speech satisfactorily, but that the results for music were not so good.

Attention is now being directed to the production of a permanent record for long-distance broadcasting and the improvement of the musical side.

The invention is a development of the telegraphone, discovered by Poulsen, 25 years ago, made possible by the modern amplifier.

How It Is Done

The principle is that of running a steel wire rough a varying magnetic field so that the magnetisation on a wire varies according to the strength of the field, which is proportionate to the speech current set up by a carbon microphone connected in the circuit.

For reproduction the operation is reversed. The magnetised wire is run past a soft iron core producing currents in the winding of the core similar to those originally produced in the microphone and circuit.

By replacing the telephone transmitter with a telephone line and wireless receiver the machine can be used for recording radio items.

There are no batteries, the power being obtained from a small electric motor which drives the wire spools.

Music and Speech

Difficulties to be surmounted are the provision of a constant speed motor to give equal strength and of a steel wire sufficiently hard to retain the magnetisation given to it.

I see no insuperable difficulties, said Dr. J. H. Roberts, the well-known scientist, to the reproduction of music. As a matter of fact, speech is usually the more exacting test.

The real difficulty is in finding magnetic material for the wire which shall be readily susceptible to magnetisation when passing through the recorder, and yet shall retain its magnetism sufficiently after frequent passage through the reproducer.

Probably the solution will be found in a method of temporarily enhancing the susceptibility at the moment of passing through the recorder, and afterwards increasing the retentivity, analogous to the process of case-hardening of steel.

Dr. Roberts expressed the belief that there were still more promising methods of "bottling" programmes. They were designed to obtain much more permanent records than those of the telegraphone, but as the experiments were not yet completed he was unable to make any further statement.

The chief importance of the devices, apart from the sh pping of programme from one country to anot er, is in "canning" for future use historic eve ts like the King's Speech and the performances of famous stars, who broadcast in this country at wid intervals.—*Daily News*

"My Life is My King's"

"WHAT news, Amar Singh?"

"My Lord, from everywhere the tale is the same. The Empire of Delhi totters to its fall. The last flicker of glory will soon have passed away. A strong hand is needed to bring the imposing, but lifeless, mass to the ground. Prince of Mewar, let yours be that hand. Remember all that your house has suffered at the hands of the House of Delhi, and let that thought nerve your arm to mighty deeds."

The flicker of a smile passed over the face of Rajat Singh, Prince of Mewar.

"I do not care to let revenge guide my policy of State."

"Then, let the great name of your house, the memory of your ancestors of mighty deeds, spur you on."

"Rather let me see where the good of my people impels me; we have just repulsed an attack from Holkar's troops. Like a faint and exhausted maiden, Mewar arises slowly from the iron heels of war. Shall rapine and death once again disfigure her beautiful face, simply that Rajat Singh's name shall be sung by bards? Sufficient for me is the small territory of my ancestors. In the contentment and happiness of my people lies my greatest heaven."

"As my Lord pleases, but remember that those who strike not shall, in these days of turmoil, be struck down. The ideal of Ahimsa is not for kings and soldiers. By brave deeds, by swift and relentless blows alone can kings hope to remain on their throne."

"Enough, Amar Singh. We shall decide about the future in the Durbar to-mbrrow. There is safety in the counsel of many."

"And often dilatoriness too. No, my Lord, the good of your Kingdom demands that the standard of war shall once more be raised. Let your decision be swift, else the blow will be hesitating and feeble."

"Fear not; if we strike, we shall strike well."

Their voices sank into silence. From the clear blue sky, the young moon shed her rays, profuse in her generosity, though weak in her immaturity. And her rays could not have lighted up a fairer scene, for the garden of the Palace of Mewar was one far-famed for its beauty in Rajputana, where beauty had her staunchest votaries among other princes. Roses from distant Persia, the cha mine, the golden champak, all brought their t fragrance to this heavenly spot, where nature nd art enhanced each other's beauty. From the fringe of ashoka trees as they swayed in the soft night breeze, many a petal fluttered to the ground. From amidst the rich verdure, studded by flowers of many hues, rose statues of faultless workmanship, symbolic figures in clear white marble of Indian Gods and Goddesses. Saraswati, Ganesh, Devi and Maheshwara were there, still, calm and silent, in the pale light of the moon, the guardian deities of the spot. The lake in the centre of the garden gleamed like molten silver, as the heavy laden air gently kissed its surface. The sweet calm of the night brooded over the scene. No wonder that, as the Prince gazed into the blue sky with its crescent moon, he felt that the place and time was one ill-meet for the deliberations of warfare and destruction.

"You are silent and grave, my Lord."

"I cannot help my reflections. How many times must my ancestors have sat beneath this self-same sky, discussed the fate of foes and dreamt of future greatness! They have passed away. The young moon to-day showers on me her silvery rays as she did on other crowned heads. O thou fit symbol of all-knowing Silence, adorning the head of the Lord Shankar Himself! What story shalt thou disclose to future Kings of Mewar as they gaze into thy impassive face?"

These last words were spoken more to himself than to the Minister. The grey head of the Monarch bent in grief, and touched the hand of the statue of Lakshmi, extended in blessing. A moment later he raised his head with a deep sigh. The heavy dew of mental pain stood out clear on his brow.

"Who was the messenger to Indore?"

"My son, Vijaya Singh."

"Send him here. I would like to know first hand what he has to say."

The Minister left his sovereign. In deep reverie, Rajat Singh's eyes wandered and fell on the water lilies in the lake. Their slender stems were bending in silent homage to the calm of the night. A light, fleecy cloud passed over the blue expanse of the sky. The rustle of the leaves on the trees could be faintly heard.

"My Lord, I await your commands."

The deep voice, the low respectful tone, brought Rajat Singh back from his wandering thoughts.

"Is it you, Vijaya? Sit down."

Vijaya Singh hesitated as the Prince made room for him on the marble seat.

"This is neither time nor place for ceremonies. I must know many things from you."

There was a shade of annoyance in the Prince's tone.

"As my Lord commands," said Vijaya Singh, seating himself by the side of his sovereign.

"How do matters stand between us and the Maratha Prince? Is war absolutely unavoidable? Tell me the truth."

"The command is useless, my Lord. In nought have I ever deceived you, least of all shall I do so at this supreme moment, when the fate of your country trembles in the balance."

"It is, then, as I feared. You believe that we cannot avoid war. O my unfortunate country!"

Vijaya Singh was silent a moment. Then in a voice low and gentle—a voice almost of pity were it not so deeply respectful—he asked: "What means this strange agitation, my Lord? Is Mewar so denuded of brave hearts that her Lord need tremble at the very mention of war?"

"Not for your sake, my brave men, do I dread the day that I fear must come. But for the silent sufferers—the ryot, peasant compelled to leave his field to barrenness; the widow and the orphan waiting the return of those over whom the grave has closed; to these who cannot share its glory and glamor, what does war mean? Famine, pestilence, the fire and sword of the enemy. My God! Why dost Thou allow earth to be thus drenched with human blood?"

"My Lord, forgive the presumption of one so much younger than yourself in age and wisdom. Wars have been fought from time immemorial and brave men have weltered in their blood on the battlefield from the very beginning of your race."

"Aye, I know it; but misery does not cease to be misery because it has been many times endured. Well, does the Holkar absolutely refuse to fulfil the terms of the last Treaty?"

"Yes, he says that ten thousand soldiers trained by Europeans shall prove the Treaty a scrap of paper."

"Perjured!"

"Why waste anger on the Maratha? My Lord, let the day come and let it find Mewar prepared. Let it find her Lord as eager to vindicate his rights as were his ancestors, when invaded by the whole might of Imperial Delhi."

"Not for myself do I fear. Kings are practically immune from the dangers and horrors of war, but appropriate the glory that the death of obscure men brings them. Would to God I were a common soldier on the field of battle, as easy a mark for the enemies' weapons as others are."

"Heaven forbid, my Lord. Remember no descendant of the House of Mewar shall sit on your throne if you are laid low in death. Do not grieve, my sovereign;" rising and approaching the monarch: "All will be well. Mewar has borne a charmed life in all her history and risen deathless from her very grave."

The Prince held Vijaya Singh's hands in his own cold ones and looked long and intently over the face and form of the Rajput youth. The moon shed her light upon them both, the sovereign, grave and sad, his eyes aglow with a tender light; the follower, upright in his youth and strength, firm and fearless, yet deeply reverent in demeanor.

"The Gods have perhaps destined that I be the last of my unhappy race. But as I look on you now, my son, I almost wish you had been of my flesh and blood, and that the Crown of Mewar might descend upon your brow. A crown of thorns, anxiety and perilous fame its heritage, but worn by men of ex spotless honór from di immemor[illegible]rial."

"Would I could shift the burden of care from your shoulders to mine. My life is yours, my King, to be laid down whenever your welfare needs it."

"Serve Mewar by your life, not by your death. She has need of the services of true and brave hearts like yourself. Go, my boy, I desire to be alone."

"I fear, not altogether alone, but in the company of your sad thoughts, my Lord. But I obey, and shall attend your presence in the Durbar to-morrow.

The Rajput drums vainly sounded the rally on the field of battle. Men, dressed in armor, rushed madly to and fro amidst the din and clash of arms. The dead and wounded strewed the ground over whom riderless horses madly coursed their way. It was the final rout of a small band of brave men forced to give way by sheer weight of numbers. Among the dead and dying one figure could be seen conspicuous by his distinguished appearance, even among those forms of refined features and well-knit limbs. It was Vijaya Singh. The dying youth reclined against a mound of earth.

The heavy dew was on his face, the eyes had already closed. The countenance was pale and impassive. The strong limbs were thrown in the listless attitude eloquent of waning strength and departing life. The broad chest heaved painfully, as [illegible]ts [illegible]e within drew its last breath. Suddenly a cha[illegible]mo[illegible] with its rider passed over the ghastly gro[illegible]d and halted beside the dying hero. "Praise to heaven! I am not too late to save you, my son. Quick, let my soldiers and myself raise you to the saddle and you shall yet live to bless my old age," said Amar Singh. "Not so, father. And yet, if you will, carry one message for me to our King. Tell him that Vijaya Singh has redeemed the pledge given in the garden of Mewar. Go, go!"

"How can I leave you thus, my son. Ah! sad is my lot. The whirlwind has passed by the dry old stump as beneath its notice, but it has struck down the young firm-rooted tree in its first blossoming. Heaven is indeed relentless," and the father wept.

"How has it fared with you, father?" asked Vijaya Singh feebly.

"The day is ours, the main army has won."

"Thank God! My duty to the King, and say I died happy."

A tremor of excessive joy, like the last lurid flash of a dying light, passed over the pale face. The next moment it had gone out, and the earthly casket that once enshrined a noble soul lay in the trembling arms of a grief-stricken father.

Discipline

BY LUA M. GETSINGER

A block of marble caught the glance
Of Buonarotti's eyes;
Which brightened in their deeps
Like meteor-lighted skies.

And one who stood beside him.
Listened smiling as he heard;
For—"I will make an angel of it,"
Was the sculptor's word.

Soon mallet hard and chisel sharp
The stubborn block assailed;
And blow by blow, and pang by pang
The fairy form unveiled.

A brow was lifted high and pure,
The waking eyes outshone;
And as the Master fiercely wrought,
A smile broke through the stone.

Beneath the chisel's edge, the hair
Escaped in floating rings
And plume by plume was slowly freed
In the sweep of half-furled wings.

The stately bust and graceful limbs
Their marble fetters shed;
And where the shapeless block had been,
An Angel stood instead.

O blows that smite! O hurts that pierce
This shrinking heart of mine;
What are ye but the Master's tools
Forming a work divine?

O hopes that crumble at my feet!
O joys that mock and flee!
Ye are only mists that hide
God's greatest gift from me.

Sculptor of souls! I lift to thee
Bound hands and burdened heart;
Spare not Thy chisel. Set me free,
However great the hurt.

How blest if all these seeming ills,
Which drew my thoughts to Thee,
Should only prove that Thou will make
An Angel out of me.—*Reality*

China's Mystery Creatures

Strange creatures, said to have been found in the south of China, are causing a great deal of scientific curiosity.

The most amazing of these discoveries deals with a race of "dog-faced" people. This tribe is said to live far in the interior. They have thick hair all over their bodies, live in trees, and are entirely savage.

There have been reports also of a blue tiger, a creature which is against all known laws of zoology. This beast is not striped like the ordinary tiger, but has a bluish fur resembling the color of coarse dungaree. During one month, a scientist reported, this specimen killed and ate sixty people. The same explorer, Dr. Caldwell, also discovered a badger as big as a bear, and shot a serow, a very rare animal which is a cross between a goat and an antelope.

Dragons and Flying Serpents

All these reports lend color to the theory held by many scientific men that in southern China there are many strange primitive men and animals to be discovered. Life in this region to-day is supposed to be very like that in prehistoric times, and many "prehistoric" animals may be still existing. The men, too, have probably remained almost unchanged.

For years the Chinese themselves have believed that dragons and flying serpents exist in their country. They have been scoffed at as having vivid imaginations, but may it not be a fact that these creatures still lurk in the hinterland where white men have rarely penetrated?

chapters to the similarities of the popular myths on both sides of the Atlantic, similarities so numerous and striking that nothing but a common source can explain them. The deluge legend is found in some form in almost every tribe and race on both sides of the Atlantic, and the author's years of study in such lore have convinced him that they all spring from racial memories of the catastrophe that overtook Atlantis. The Greek and Latin myth of Deucalion and Pyrrha, who survived the flood in an ark, and who repopulated the earth by throwing over their shoulders stones which became men and women, is duplicated so closely by a myth of Central American tribes that it compels belief in a common origin.

The ancient book of the Quiche Indians of Guatemala called the *Popol Vuh* contains legends that seem to hark back directly to the cataclysm which destroyed Atlantis, and at the same time has some striking similarities to the Egyptian *Book of the Dead*. The Maya-Toltecs built Pyramids, whose outward form and inside arrangement are the same as those of the Egyptian Pyramids. It is incredible that this should be merely a coincidence. In a chapter on "The Evidence of the Mummy," Mr. Spence traces the art of embalming from its beginnings among the Crô-Magnons, who put red paint on the bones of their dead to preserve them for future life, to its logical development in Egypt, and continues: "If we now cross the ocean to America, we find almost precisely similar rites obtaining. The Mexicans, Maya and Peruvians all embalmed the dead." Like the Egyptians, they also placed the viscera in canopic jars beside the mummy. To clinch this line of reasoning, if we go now to the Canary Islands—surviving bits of Atlantis—we find that the Guanche aborigines practised the same rites of mummification.

Again, in the chapter on "The Evidence from Witchcraft," Mr. Spence makes some striking points. He shows that our ancient idea of a witch as a baleful woman riding through the air on a broomstick, a tradition that was supposed to be distinctively European, really existed in prehistoric America—among the Maya—in almost exactly the same form, even including the broomstick; that it "is found in its entirety" in pre-Columbian Mexico; that it existed also among the Crô-Magnons of France and "was reflected among the Guanches of the Canary Islands".

DANCE OF WITCHES ROUND AN IDOL
From a picture painted on the wall of a cave of Southern France by a Cro-Magnon artist, 10,000 years ago

The mummies and witches, indeed, seem to be among Mr. Spence's strongest witnesses in favor of Atlantis, and against the theory that the Maya culture was brought to America from Egypt by way of Asia and the Pacific.

There is a good deal of repetition in these two books, but both are of equal value in the author's attempt to establish his novel hypothesis. Readers so constituted that they can feel the spell of such a mystery, a superlative sort of cross-word puzzle, will find themselves well rewarded by delving into Mr. Spence's volumes. It is strongly in his favor that he writes always as a scientist in quest of the truth, making no extravagant assertions, but trying to justify the faith that is in him by a calm marshalling of reasonable proofs. It is difficult to see how any one can read him in the same spirit without conceding that he has made a very strong case.—*Literary Digest International Book Review*

The Poet's Corner

God give us men,
A time like this demands
Strong minds, great hearts, true faith and ready hands.
Men whom the lust of office does not kill;
Men whom the spoils of office cannot buy;
Men who possess opinions and a will;
Men who have honor;
Men who will not lie.

J. G. HOLLAND

Evolution, from the Nebula to 1925

BY ALBERT G. INGALLS

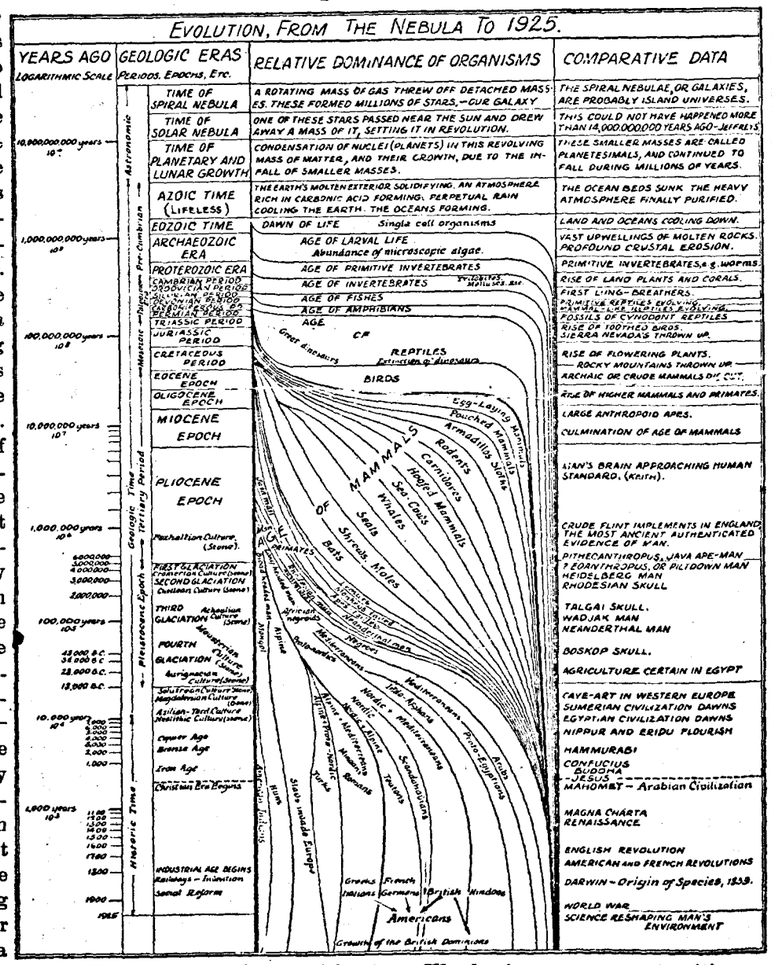
THE principal feature of the geologic chart shown on this page is its unique method of indicating the vast lapse of time since the formation of the earth.

If you will look at the extreme left-hand column of this chart—the column captioned "Years Ago"—you will note that it is divided into nine equal spaces, one above the other. These equal spaces represent *unequal* intervals of time. Each space represents *ten times* as long a duration as the space next below it.

By means of this logarithmic scale we can represent the later periods of geology and evolution—which are perhaps the most interesting and significant ones—on a scale sufficiently large to display them suitably, at the same time representing the older periods in a definite, mathematical relation to them, without exceeding the length of one page. If we should attempt to represent the entire chart on the same scale as the lowest space, it would be more than 300 miles long!

This method was submitted on the accompanying chart, in partly completed form, by Mr. John B. Sparks, who also employs the curves shown in the central column of the chart to indicate the dominance of various types of life and the differentiation of the racial stocks of man. For the upper part of the chart, however, the writer is responsible.

It will be noted that the curves representing the various organisms are brought together at the bottom, indicating that man is dominant over the other animals. This was done thus only because the chart had to be accommodated to the size of the page. Man is dominant today only in one sense. In another sense he is not. There are as many fishes, for example, in the world to-day as there were in the Age of Fishes when fish first became numerous. Likewise the reptiles are still important.



Dinosaurs Became Extinct

We begin our account with an immense, hot nebula of gas in slow rotation. As this nebula cooled it contracted, and as it contracted it rotated faster. This made the nebula bulge more and more at the sides until finally, after it had flattened down like a round lens, some of its matter was thrown off, not in rings, but in two oppositely direct-

The Lost Continent Between Europe and America

BY EDWIN L. SHUMAN

PLATO tells in two of his Dialogues, the *Timæus* and *Critias*, of a tradition to the effect that 9,000 years before Solon's day Athens was attacked by a mighty Power which had come out of the Atlantic Ocean from beyond the Pillars of Hercules, and which, making its way along the northern coast of Africa, had subjugated that whole region, including Egypt. The invaders, Plato goes on to relate, had come from a large island or continent called Atlantis, which was suddenly engulfed in the ocean at that time, with its wonderful civilisation, its fortified capital, palaces, temples, harbors, bridges and shipping.

The world long regarded this story of the lost Atlantis as merely a pleasing fable; but in the last half-century many archæologists have found themselves driven by cumulative evidence into a belief that it is a tradition based on fact—that such a continent actually existed in prehistoric times, and that subsidence of the earth's crust, hastened by a final volcanic cataclysm, caused it to disappear beneath the waves of the Atlantic. Scientists differ on the subject, but even the most sceptical no longer dismiss Atlantis with a scoff. Former land connection between the Old and New Worlds is agreed upon by all geologists. A dozen years ago M. Pierre Termier, Director of Service of the Geologic Chart of France, said in a lecture before the Oceanographic Institute of Paris:

DESIGN ON AN ANCIENT MAYA VASE, FOUND AT CHAMA, CENTRAL AMERICA

It is entirely reasonable to believe that long after the opening of the Strait of Gibraltar, certain of these emerged lands still existed, and among them a marvellous island, separated from the African Continent by a chain of other smaller islands. One thing alone remains to be proved—that the cataclysm which caused this island to disappear was subsequent to the appearance of man in Western Europe. The cataclysm is undoubted. Did men then live who could withstand the reaction and transmit the memory of it? That is the whole question. . . It is from anthropology, from ethnography, and, lastly, from oceanography that I am now awaiting the final answer.

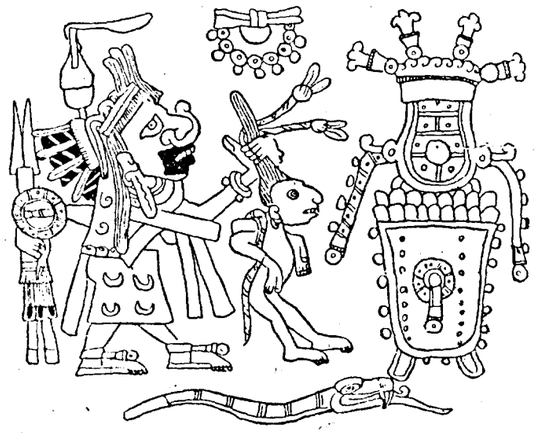
It has long been known, through soundings, that there still exists a vast plateau on the bottom of the Atlantic, a thousand miles wide and averaging nine thousand feet high, stretching from the Azores and Canaries toward the West Indies, and containing volcanic lava in a vitrified form possible only by hardening in the open air. Many scientists are now becoming convinced that the final subsidence of this Atlantean plateau took place at the end of the Great Ice Age, "not more than ten thousand years ago" (Sir William Dawson), and that the present islands in the Atlantic are the mountain-peaks of the sunken continent. That sudden changes are still taking place in this most unstable region was proved two years ago, when the Western Union Telegraph Company, searching for a lost cable that had been laid twenty-five years before, "found to their astonishment in taking soundings at the exact spot where it had been laid down, that the occen bed there had risen nearly two and a quarter miles".

A Scottish scholar, Mr. Lewis Spence, after thirty years' study of myths on both sides of the Atlantic, has now thrown the whole subject into a new and clearer phase with his two books, *The Problem of Atlantis* and *Atlantis in America*. In these he marshals an imposing array of facts and implications tending to prove not only that Atlantis existed, but that it was the common source of the early civilisations alike of Egypt and Peru, of the Crô-Magnons of Europe and the Maya peoples of Central and South America. He may not (and does not) demonstrate all this beyond a doubt, but his massed evidence cannot fail to impress an unbiassed mind.

Having written several important books on the myths and legends of Mexico, Peru, Egypt, and the

North American Indians, Mr. Spence naturally leans most heavily on this kind of evidence, especially in the later volume, *Atlantis in America*; for it was the amazing similarity between the ancient myths and architecture of Egypt and those of the Maya in Mexico that first converted him to a belief in Atlantis as the common origin of both. But he has also collected the evidence from geology, biology, ethnology, archæology, and other fields, and some of these furnish even more convincing proofs for the lay reader.

Mr. Spence is one of those who believe that this mid-Atlantic continent had become the seat of a highly developed civilisation though still in the Old Stone Age, and that submergence first divided the area into two sections, the main one being Atlantis, off the Straits of Gibraltar, and the other Antillia, whose remnants are now the West Indies. As the land continued to sink, sometimes with volcanic cataclysms, the people of Atlantis are supposed to have emigrated, over remaining land connections, to Europe and Africa; much later the survivors in Antillia also fled (by boat) to the American continents. Only thus, Mr. Spence believes, can we account for the sudden appearance of the mysterious Maya civilisation, which has left temples and pyramids in Guatemala, Yucatan and Peru that are the marvel of archæologists. Summarising the evidence from pre-history, the author finds:



A MAYA WITCH, AS PICTURED IN AN OLD MEXICAN MANUSCRIPT
She is about to sacrifice a child, and stands before an urn filled with human hearts. She has the cotton spindle of the Earth Goddess, her skirt is decorated with lunar emblems, and she is adorned with a lunar nose-plate

That the Crô-Magnon or Aurignacian, one of the finest races mentally and physically the world has ever seen, entered South-Western Europe about 25,000 years ago, or about the close of the Great Ice Age.

That its members brought with them so highly developed an art that Prof. Henry Fairfield Osborn has called them "the Paleolithic Greeks".

That this civilisation must have germinated and developed elsewhere, as no early or evolutionary traces of its infancy are to be discovered either in Europe, Africa, or Asia.

That the culture of the Guanches or pre-Spanish aborigines of the Canary Islands has been recognised by the highest authorities as Crô-Magnon, thus proving that the race was indigenous to Atlantis, of which the Canaries are among the last remnants; that it made its way to Europe by land-connection formerly existing, not by boats, as communication by sea was utterly unknown at the time of the first Crô-Magnon migration to Europe.

That remains strongly resembling those of Crô-Magnon man have been found in Lagoa Santa in Brazil and in other parts of South America; that the Red Indians of North America seem to have many of his religious and social practices, and that the same tent-shaped magic mark is found on drawings of bisons made by Crô-Magnons in Europe and by Indians in America.

That a second wave of Crô-Magnon civilisation, the Magdalenian, reached Europe from Atlantis about 16,000 years ago, bringing a great renascence of Aurignacian Art.

That a third and final invasion occurred about 10,000 years ago—being that of the Azilian-Tardenoisian peoples, parents of the Iberian Race, which founded Carthage, populated Spain (where the bull-fight still remains as a relic of the prehistoric cult of the bison), overran Europe, developed its highest culture in Egypt, and apparently penetrated far into Asia.

That the western section of Atlantis (called Antillia) suffered a final submergence about the year 200 B.C., which accounts for the sudden appearance of the Maya in America.

The American continents had already been peopled from Asiatic or Polynesian sources, but here was a new and unheralded strain, more advanced by thousands of years than these existing tribes, a people with a written language and an architecture comparable with that of Egypt. When men discover, as they must, a key to the Maya hieroglyphics, a flood of new light may be thrown on the subject. Meanwhile, Mr. Spence has performed a valuable service by bringing together all the evidence from pre-Columbian America tending to prove his contention—that the Aurignacian, Egyptian and Mayan-Toltec Civilisations sprang from a common source in the lost Atlantis.

It is impossible in a brief review to summarise so vast a fund of evidence as Mr. Spence has gathered to buttress his thesis, but a few points out of hundreds may be instanced. He devotes many

streams, which condensed into very many millions of stars, one of which is the Sun.

Thus far, our story explains the creation of our galaxy. We must now account for the creation of the planets. For an inconceivably long space of time the Sun existed in space unaccompanied by any planets. Finally a star passed by accident quite close to the Sun—without actually colliding—and by its gravitational attraction it drew away from the Sun's face about one-tenth of one per cent of its whole substance. As it passed on by the Sun, it imparted to these separated particles a sidewise motion, setting them in revolution around the Sun. Subsequently the larger of them, acting as nuclei, swept up the rest, thus forming the planets. This is the Planetesimal Hypothesis, and it is now the most plausible theory in the field; while the Nebular Hypothesis (rings thrown from a revolving solar nebula) has been proved impossible, and science has accepted its demise.

Some time after the surface of the earth had cooled enough to solidify, life commenced. From primitive, one-celled types of life, every living thing on earth to-day is believed to have evolved. We have no space to tarry over the early geologic periods. We are chiefly interested in this brief account in putting our finger on some of the times when new and more significant types came into being.

The Permian Period is therefore full of significance, for in it the first of the warm-blooded, mammalian development may be traced. At this time, the reptiles themselves had not long since evolved from earlier form. Thus, early in the course of evolution of the reptiles, *one kind* of reptile began to differentiate in a peculiar and interesting manner, and a few million years later it had developed warm blood from cold blood. It had also acquired specialised teeth of the mammalian type, that is, teeth corresponding to molars, canines and incisors. These so-called "cynodont" or dog-toothed reptiles are extremely significant to us because they are the distant ancestors of all the mammals, including man. Let us regard them as progressive reptiles.

These cynodonts were plain, unspecialised and lizard-like, and we must not think, when we hear that the mammals evolved from the reptiles, that the great dinosaurian reptiles are meant. Instead, the dinosaurs were a later side branch which became utterly extinct, leaving no descendants.

Here let us stop to answer a question that has bothered many, particularly some of the present anti-evolutionists: "If these early animal forms long ago evolved into *other* forms," they ask, "how is it that we still have the earlier forms with us today?" What happened is this: At any given stage of evolution a *part*, only, of these types evolved into higher forms, because only a part were thrown into such environments that they received an urge to evolve. Many of the others have come down to our time as "living fossils," comparatively—though not entirely—unchanged.

At the close of the Age of Reptiles, the dinosaurs rapidly became extinct. They did not dwindle through long epochs, but some comparatively *rapid* event ended them—possibly within a few generations. Here the temptation to assign a sudden cataclysm is strong to those who have not examined the evidence of the rocks. Those who have examined the evidence see stratum on stratum, each containing many dinosaur fossils. Then with the next stratum these fossils are gone—absolutely gone. Had there been some catacylsm, however, would the strata lie so evenly bedded, just like the rest? It is a great enigma.

Although the dinosaurs were reptiles, there were, of course, other reptiles that were not dinosaurs. One kind, which early differentiated from the evolving dinosaur stem, has sent its descendants down to our time, as birds. In addition, we still have the lizards, snakes, turtles and crocodiles, reptiles whose ancestors survived the dinosaurian extinction.

With the dinosaurs extinct, we come once more to one of those interesting times when evolution was speeded up—for evolution is not a uniformly rapid process; its speed depends very decidedly upon environmental conditions. Sometimes it stagnates—then it leaps. The little mammals that had thus been evolving very slowly while the dinosaurs had thundered above them now found themselves unexpectedly in possession of a world, and they proceeded to make the best of it by increasing in bulk and by differentiating into several orders. These orders, different as the animals involved superficially seem, are all closely related.

Man came very recently, in a comparative sense, though in an absolute sense he is very ancient—doubtless more than a million years old. He differs from the remainder of the order of primates chiefly in the possession of a far superior brain.

Early man lived on for thousands of generations at very much the same level of culture. His advances were painfully slow.

What of Man's Future

Man's modern scientific and mechanical culture is only an infant—only a few hundred years old.

His mind has been unchained from blind control by custom for only a century or two. Before that, his acts were controlled largely by superstition. Superstition is simply the *in*-comprehension of how our world actually works.

At last we have come to see that the whole universe works on a *regular plan*, not in an accidental fashion. This realisation has given man more control of his environment in five generations than his human forebears, with their ignorance of the world in which they lived, were able to gain in 20,000 previous generations. This comprehension of the world's true nature is called Science.

There are two ways by which man's new and invaluable insight into nature may be injured. One is through wars between man and man. The other is more dangerous. Organised superstition opposes science and would destroy it by law if it could. This would cut off from our descendants precious stream of exact knowledge already gained by man after great labor and under the fire of constant opposition. If, on the contrary, ignorant estopping hands can be kept from science for a few more years, there is reason to think that man will learn the true meaning of the world he lives in and how to control his destiny himself, instead of allowing outside events to control it. Human life will then be more happy, more worthy, and vastly more significant.

That is why we have added to our chart in the lower right-hand corner, where the future is indicated, the hopeful words, "Science Reshaping Man's Environment".—*Scientific American*

Is the Honey-Bee an Impostor?

If a worker is said to have been as busy as a bee, should we infer that he has been very busy indeed, or ought we to conclude that he has loafed on the job? To phrase such a question is to flout tradition. But that, apparently, is no more than certain Government authorities have done, according to a writer in the New York *Commercial*, who tells us that the Department of Agriculture has announced the results of a study of the habits of the "much vaunted and industrious honey-bee," with the startling conclusion that the average "worker" bee makes only thirty-two honey-gathering trips during its entire life, and collects a total of only eight-tenths of a gram, or about twelve good-sized drops, of nectar. The editorial writer, seemingly disposed to give the bee the benefit of the doubt, yet open to conviction, comments further:

This information would surprize Langstroth, Quimby, Fabre, and all other patient investigators of the past who have credited the bee with a diligence and untiring industry that have no parallels in nature if we except the ant.

According to the experts of the Department, one pound of honey represents the entire life work of 567 bees.

The bee has, up to now, been credited with activities which wear her out and bring her to an untimely end. She has been pictured as ceaselessly making long trips from the hive to the distant flowers and back again, her toil lasting from the very break of day until near sunset. When the matter of gathering nectar has ended for the time being, she has been described as either feeding the larvæ, molding wax into cell-forms, undergoing the apparently fearful strain of excreting wax scales, acting as one of a company on the footboard of the hive to use her wings in fanning a cool and drying breeze through the galleries of the hive that the heat may not melt the wax and sour the uncapped nectar in the cells, or as officiating as a guard of honor to the queen, or to serve in the humble capacity of a scullion and creature of all work.

One and all the past close students of the activities of the hive have reported the unending energy of the worker bee. Fabre pictures her as finally dropping exhausted and dying from overwork among the flowers from which she has gathered her hitherto supposedly countless loads of sweet nectar.

Bee hunters have always been able to locate the wild swarm by sprinkling flour on the back of the vagrant honey-gatherer who has been attracted by the pungent anise extract to his box trap. Their testimony is to the effect that a bee loads up with honey and makes a trip of one or more miles to her home, unloads and comes back for another cargo within an hour, and it would be difficult to convince an old ginseng digger and bee hunter that thirty-two honey-gathering trips total the lifework of the average healthy bee in the bright months of summer, when the sun shines and the flowers are open.

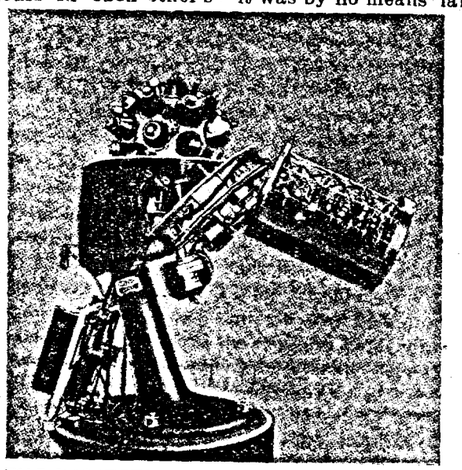
But science has often stepped in to confound the unscientific who have believed firmly that they know. Perhaps it is so this time. It will be interesting to learn what Dallas Lore Sharp has to say in the premises."

Heavens Built of Concrete

Ingenious Optical Devices Installed in Concrete Dome Are Used to Show the Motions of the Stars

BY G. H. MORISON

IN the guide book sold in the quaint old curiosity shops of the drowsy little town of Jena in Thuringia, one learns with amazement that its chief wonders include "a girls' high school, crematorium, electric tramway, domestic water supply, and sewerage". And Jena seems to value these proofs of its modernisation even more than the historical memories that cluster about its old streets and antiquated buildings. There is its ancient university where Schiller, Hegel and Fichte taught, and, nearby, the cottage where Goethe lived. Not far distant is the garden where Schiller and Goethe spent so many hours in each other's society. Nestling snugly on the banks of the River Saale, Jena looks up at the precipitous hills, from a peak of which Napoleon watched the battle going on about the town below.



THE PROJECTOR OF THE CONSTELLATIONS

Images of the constellations are projected by the battery of lenses at the top, those of the planets are moved across the heavens by lenses in the disks at the right.

Sky Built on the Roof

But to none of these historic wonders is due the fact that Jena to-day vibrates with unwonted life. Its tortuous streets and sleepy old market-place are enlivened by the shouts of crowds of gaily-capped schoolboys, and young men and women students from the universities of other cities, drawn to Jena by an attraction that dates only from yesterday. It is to be found on the roof of the Carl Zeiss Optical Works. From early morning till late at night a constant stream of eager visitors, mostly students from distant parts of Germany, jostle one another for places in the elevator going up to the roof of the Factory, where the Planetarium has been erected.

It was in 1906, when the new German Science Museum in Munich was being projected, that the Director, Dr. Oscar von Miller, hit on the idea of using the great dome placed by the architect in the centre of the building, for what he called a "Planetarium". His idea was that the ceiling of this dome should be a rotatable shell, representing the heavens, and that tiny electric lights should be fixed onto it to show the positions of the fixed stars. By some other undiscovered mechanism, he thought that the movements of the planets across the heavens might also be shown. The whole cupola would be made to rotate, so that those standing under the dome would obtain a fair representation of the appearance of the heavens on a clear night, and of the way the whole appears to move, as the earth turns on its axis.

The work of making this Planetarium was entrusted to the Zeiss Institute, but reflection showed that, in its original form, the idea was too crude. Though the dome was thirty-five feet in diameter it was by no means large enough to admit of the placing of such a vast number of tiny lights in such a way that a true picture of all the multitudes of stars visible to the naked eye would be given. And how were the moving planets to be depicted without using enormously complicated mechanism? For, as regards the planets, what was wanted was not a model showing their perfectly simple motions in closed circles round the sun. What Dr. von Miller asked the Zeiss Works to make was a model of the heavens showing the apparently complicated motions of the sun, moon and lanets, as they appear when viewed by an observer on the earth.

The true motions of all the heavenly bodies can be easily explained with a chart, showing the sun as the centre—a series of circles representing the paths of the planets around it. But because of the daily rotation of the earth on its axis, its yearly revolutions around the sun, and the fact that the planets are also moving at different speeds, the planets appear from the earth to have the most erratic courses, sometimes going forward, sometimes standing still, again going backward, then racing forward, sometimes approaching one another, sometimes flying apart.

The Mad Monk of Frauenburg

Thi was the mystery that puzzled the ancients and took countless centuries of pondering over before the key to the riddle was guessed and true science at last began to unfold. For nothing, of course, could have been more natural than that the ancients should assume the earth to be the centre of the whole planetary system, as the Ptolemaists assumed and taught. Nothing must have seemed more presumptuous and absurd than to teach, as did Copernicus, the Monk of Frauenburg, that the earth was a tiny speck that moved, while, in reality, the rising and setting sun always stood still.

It is difficult to realise to-day how cataclysmic this change of perspective must have been. But the persecution of Copernicus and of his greater successor, Galileo, and the controversy that raged for centuries afterwards proved how difficult it was to convey, even to thinking men of those days, the idea that the motions of the planets is a simple one, and not an abstrusely complicated one, as it seemed. But, had Galileo possessed the Planetarium now set up at Jena, his task of demonstrating the true motions of the planets would have been simple.

The outbreak of the War interrupted the work that Zeiss had taken in hand some years earlier, but in 1919, it was resumed with new zeal. It was decided not to solve the problem, as originally suggested, by mechanical means, but by optical means. The plan was to make a projection apparatus which could be placed in the centre of the cupola in the Museum at Munich, and which would project onto the ceiling a picture of the fixed stars, showing their exact relative positions and brightness. By revolving this projection apparatus, instead of rotating the dome, the whole heavens would then appear to move precisely as they seem to us to move on a clear night. Then, by a special series of ingenious devices, it was decided that the seven planets would be provided for, and their extremely complicated apparent paths among the fixed stars would be accurately traced.

Even the Milky Way

The difficulty of the work as regards the fixed stars lay in the fact that there are visible to the eye no less than 4,500 of them between the first and sixth magnitudes. Besides this, there is the Milky Way, consisting of myriads of bodies only visible as a starry mist. The Planetarium as now set up shows all of these, of the exact relative brightness as seen by the eye, the Milky Way being also represented with startling realism and looking as if made of luminous star dust. The accurate picture of the stars was obtained by photographing the heavens in sections and using the diapositives to project these photographs optically onto the ceiling of the cupola. To show the indistinct image of the Milky Way, eleven special projectors are used, the whole collection of projection lenses being illuminated by a centrally placed lamp of 200 candle-power.

When it came to showing the movements of the planets, however, the task was immensely more complicated, since, besides the rising and setting of the sun, the waxing and waning of the moon, and the wanderings of the planets, the designers of the Planetarium determined to include all those subsidiary motions of the earth and the planets that bring about summer and winter, the periodic change of climate over the earth, and the variation of appearance of the heavens over thousands of years—for instance, what astronomers call "the precession of the equinoxes". Once they had seriously begun their task, it was decided that the Planetarium should be no elaborate toy, but have a permanent scientific value, which even practical astronomers should find of use for their demonstrations. When used for the latter purpose, it is provided with an attachment by which the names of thirty of the largest constellations of fixed stars including all those of the Zodiac—the Lion, the Fishes, the Goat, and so on—can be flashed onto the screen sky so that the uninitiated may learn the names that astronomers use. One great departure from realism was purposely introduced—the sun is less brilliant than it appears in reality—because it is desirable that its motion by day, relative to the brightest fixed stars, should be evident.

Stars from a Porcupine's Back

From the illustration it will be seen that the whole projection apparatus is in two parts. One part looks something like a porcupine's back. At the end of each "quill" is a group of lenses. The function of this part is to project the above-mentioned photographs of the fixed stars. The other half consits of a large glass cylinder. Inside the latter are a series of rotating disks, one each in turn for the sun, moon, Mercury, Venus, Mars, Jupiter and Saturn. The planets Neptune and Uranus are not shown by the Planetarium, as they are not visible to the eye. Each of these disks revolves in a different way, corresponding to the motion of the body it represents, and moves the projection lens which throws the image of the planet onto the artificial sky.

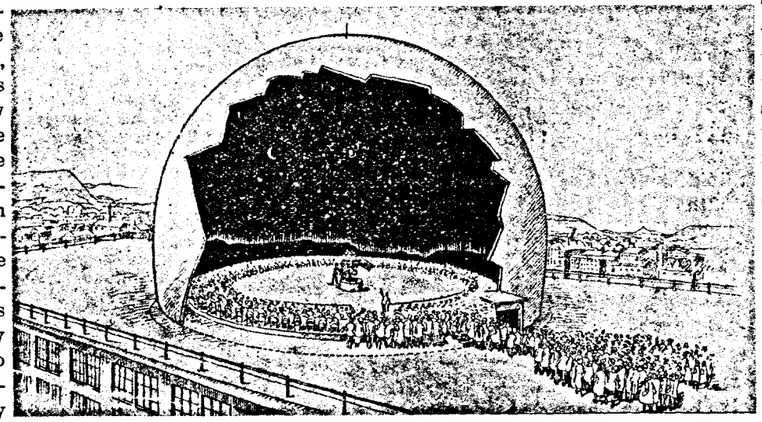
Two kinds of rotations are possible. One shows the motion of the heavens—for a complete day—executed in four and a half minutes or in two minutes or fifty seconds as happens to be desired. In this case, the sun and moon rise and set. The

other depicts the motions of the heavens for a whole year, and reviews all the changes in a period of four and a half minutes or of fifty seconds, as is most convenient for the purpose in hand. In the latter case, the daily motions of sun and moon are left out, the changes being depicted as though the earth did not rotate at all.

Star of Bethlehem Is Seen Again

On one side of the instrument is a date indicator, which tells the exact day on which the heavens have the appearance shown by the instrument at the given moment. It is possible by this means to show the heavens as they were at any time within the past thirteen thousand years or as they will appear at any moment within the next thirteen thousand years. We can see what Ptolemy, Copernicus or Galileo saw; we can see the heavens as they were in Homer's day. We can even see the conjunction of stars which formed the so-called Star of Bethlehem at the time of the Birth of Christ. More than that we can see the heavens as they will appear some thousands of years hence when, owing to precession, the Polar Star, the one apparently absolutely fixed point in our firmament, is no longer, as now, situated directly above the North Pole.

Not the least of all the difficulties that had to be overcome in the making of this wonder, was the building of the artificial sky to test the instrument in Jena, before sending it to Munich to the Deutsches Museum. This sky had to be a cupola with no internal stays or supports that would interfere with the projection. The accompanying illustration shows how this puzzle was solved. A fine net work of steel was set up and cement blown into the interstices and then allowed to set. Although, by comparison, the thickness of this steel-cement honey-comb is less than that of the shell of an egg, it possesses perfect rigidity. The absence of any objects inside this dome by which the eye could judge distance, produces a wonderful optical illusion. One cannot escape the feeling of looking at the infinitely distant real sky and at real stars.



THE ARTIFICIAL SKY

—Scientific American

Vegetable Ivory Resembles Elephant-Tusk Product

Vegetable ivory is one of nature's wonderful products that may be used, it has been discovered, for practically everything for which tusk ivory is used. It is derived from the nut or seed of a palm, that grows in Central and South America. The seeds grow in the fruit or head of the palm, which is about the size of a man's head and weighs from 25 to 30 pounds. Usually a head contains from 40 to 50 nuts.

The seeds are solid, white and hard and, when polished, scarcely can be distinguished from animal ivory. The unique product is used in the manufacture of door knobs, umbrella handles, and small ornaments, but its chief use is in making buttons. These ivory seeds form the chief industry of the interior of Colombia.

The United States imports more of this ivory than any other country.

Ant Legions Fight Savage Battle in a Zoo

BY CARL SHOUP

THEY staged a battle over in the London Zoo recently. The keepers turned a thousand or more animals loose, urged them to attack each other, and before the mêlée was over, several hundred had been killed and many others badly wounded. The London newspapers carried running accounts of the fight; excited spectators came to view it.

Why was such a thing allowed? Well, you see, all the "animals" were ants. That made it pretty safe for the human onlookers. But if you think that the battle was any less ferocious or deadly than a combat between tribes of wildcats or herds of elephants, you are mistaken. The ant, when properly aroused, can give any animal lessons in ruthlessness.

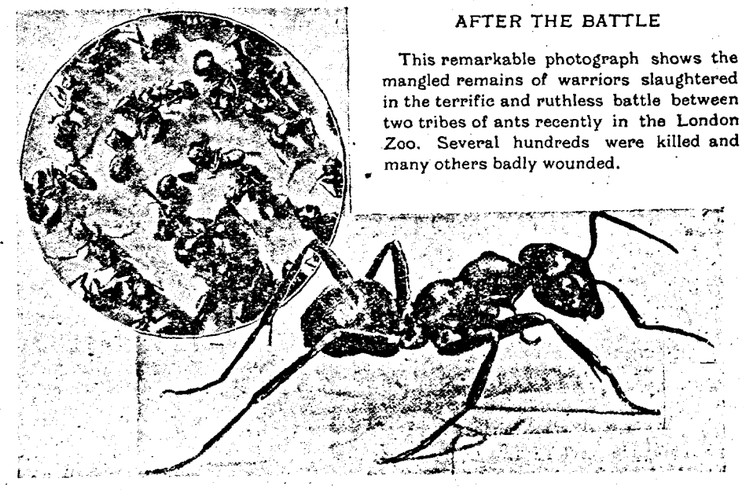
The most remarkable thing, however, was the way in which the opposing armies planned their campaigns and conducted their attacks. It was proof of that illuminating remark made by the great English naturalist, Sir John Lubbock, when he said: "Of all animals, the ant is nearest to man in all his actions." The remarkable intelligence of the ant, which makes him one of the most versatile creatures alive, has long aroused wonder; and here is a demonstration that he can use his brains in the heat of battle as well as in the calmer days of peace.

It all started on a bright Monday morning, when one of the keepers at the Zoo placed a little wooden chip, not on an ant's shoulder, but over the moat that separated two ant colonies—an old one that had been there for three years, and a new one just arrived. The chip served as a bridge, and for the first time made possible communication between the two nests.

A member of the old colony got curious. He sneaked across the bridge and penetrated into the new nest of ants. He never came back.

That meant war, the old ants decided. But they did not lose their heads and dash pell-mell across the bridge, only to be swallowed up in a possible ambush. Instead, they chose 10 of their best warriors and sent them out as scouts. These daring ants crawled across the chip of wood, with the muddy water of the moat menacing them from below, and crept cautiously into the enemy's territory.

They found nothing. All the new ants were hidden away in their nest, unaware of the catastrophe impending. The wise scouts went back home.



AFTER THE BATTLE

This remarkable photograph shows the mangled remains of warriors slaughtered in the terrific and ruthless battle between two tribes of ants recently in the London Zoo. Several hundreds were killed and many others badly wounded.

An excited council of war must have followed, for in a few minutes there issued from the old nest an imposing array of warriors, marching in ranks as orderly and well defined as the Macedonian Phalanx. A few scattered ants running alongside threw the white sand up into little mounds that could serve as fortifications in case "earthwork's" were needed for defence. Then the whole band, now greatly augmented, swarmed across the bridge.

A lone ant of the new colony was out taking the air when he saw the hostile band come pouring toward him. He was brave, but he also was wise. Therefore he hurried back to the nest to warn the others. In a few seconds all his comrades were streaming out to the attack.

The carnage that followed was terrific. It sounds almost unbelievable, but the fight lasted for four days and nights.

On one occasion an armistice was arranged, but it lasted only a few hours. Evidently the terms were broken by one side or the other, for the battle was resumed, and more wounded lay quivering on

the white sand or floating helplessly in the water beneath the bridge, while dead bodies lay strewn around everywhere. With their big mandibles, the warriors slashed at one another in individual combat. They tossed the weaker ones into the moat; or, failing this, cut off their opponents' limbs and left them helpless.

By Thursday afternoon the invaders from the old colony had been driven back across their bridge and practically annihilated. Their fortifications were useless, for the rout was complete. The new ants took some of their captives for slaves, killed the rest, and then went back home. The workers cleared the dead from the field, and all was peace.

The intelligence and power of organisation shown by the ant in time of war is no less marked in time of peace. This amazing little animal not only is an efficient warrior; he is also an architect, a mathematician, a perfect nursemaid, a professional strong man, a farmer, a doctor, and an undertaker of distinction. He displays teamwork and a force of will, equalled only by his fondness for gay life (including, alas! intoxication) and sports. Doctor Hermann Eidmann, famous entomologist, of Munich, Germany, assures us, too, that the ant can talk!

Consider, first, his skill as an architect. In East Africa may be found tall, slim towers of earth built up by the white ant, or termite. Some of these towers are 20 feet high. Imagine a creature only a quarter of an inch long, constructing a piece of architecture 20 feet in height! It is as if the ancient Egyptians had built 12 Pyramids, one on top of the other. And the Egyptians at least had primitive tools, while the ant works with nothing except the limbs that nature gave him.

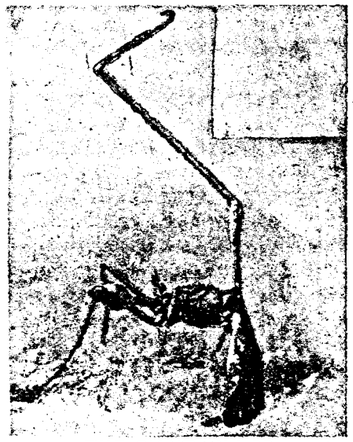
In the mountains of Pennsylvania are found some of the largest "ant cities" in the world. Most of them are built underground, and the biggest one covers 30 acres. Think of 30 acres of ants! Think of the bewildering complexity of the subterranean passageways, and you will wonder how an ant ever finds his way back to his starting-place. Yet he does, by some mysterious sense of direction.

The ant is the most efficient builder in the world, for he carries all his "tools" and material with him. For instance, he can make a sort of millboard for his home by chewing up certain vegetable matter and causing it to stick together by means of a glue secreted in his glands.

Perhaps the most striking demonstration of the ant's intelligence is afforded by the manner in which he builds a shelter among the branches of a tree by "sewing" leaves together. The full-grown ant can spin no "thread," but the larva can, for it has to make a cocoon. So the adults fetch up their larvæ, which have been spinning their silk cocoons. A number of worker ants pull the edge of two leaves together. An adult holds a larva in its mouth, pokes the latter's head down on the leaves, and the little larva begins to emit silk at a good rate. The ant holding it draws it back and forth across the two leaves, and since the silk sticks and hardens almost immediately, a large number of such contacts have the value of stitches, and the "sewing" process is soon finished.

The ant was the originator of the co-operative institution. He knows more about teamwork than any 40 football coaches combined.

Just for callous curiosity, take a spade some day, find an ant-hill, and cut it clean in two. Then notice what happens. For a few minutes the little



THE GIANT-KILLER

Above is seen an army ant of South America lifting the leg of a huge insect after severing it from the victim's body.

animals will run around in desperation, but soon, as if some mysterious voice were commanding them, they will stop their aimless scutterings and get down to work, each doing the task nearest at hand. One will pick up the pupæ, which cannot stand the light of day, and carry them into the deeper caverns; another will seize a grain of sand and start to repair the nearest breach; still another will carry away any debris that has fallen in the tunnels.

And the most peculiar thing about it all is that apparently no one ant directs the work. There is no leader, no boss. Yet they work like a machine.

This spirit of co-operation extends even to the fallen brothers, as exemplified in a rather laughable experiment once made by Sir John Lubbock

Sir John took a few unfortunates, made them drunk on hard liquor, and put them on a highway where sober ants were hurrying back and forth. The sober ones were quite excited at this disgraceful spectacle, and probably somewhat scandalised, but they picked up the drunken ants and took care of them, nevertheless. To be truthful, one thing must be noted: Some of the drunken ants were strangers, and these the sober rescuers ducked in a pool of water near by. Their friends they took home to safety. One must discriminate, of course.

THE STRENGTH OF AN ANT

In a laboratory test a little field ant held in its jaws a weight 3000 times heavier than itself. To equal that exploit a man would have to dangle from his jaws eight freight cars loaded with iron.

Did you ever think of the ant as a mathematician? Not that he delves into the intricacies of higher calculus; but he does seem to be able to count, and that is more than a lot of animals can do. For instance, Ormond Francis Williams, an ant expert of Bridgeport, Conn., tells how, on a walk in the woods one day, he kicked over a stone with his foot and uncovered numerous cocoons in which the pupæ were developing. He picked up a couple with a small twig to investigate them. Meanwhile the excited ants below began to carry their treasures off to the nest. They took away all the pupæ that remained on the ground. Then they came back and looked around. They could see nothing more to get, but still they hunted. The ants evidently had counted the pupæ and knew there were just two missing, for when the latter were put on the ground again they were seized and carried off.

The ant is the perfect nursemaid. As soon as the queen has laid her eggs, workers come scurrying to the spot. Each one seizes an egg in his mouth—holding it very gently—and carries it to a specially prepared chamber, warm and moist.

Once there, they classify the eggs according to sizes, and when the larvæ emerge, they are placed in a circle with their heads pointing away from the centre, so that the nurses can hurry around the outside and give them nourishment.

There is a species of ant in the tropical countries that takes its young outside on nice warm days, and parades them up and down, just like the nursemaid-baby-perambulator combination, so common in the human race. The ant nursemaids are even more insistent on cleanliness than are the human species. They keep in the nest a sort of moist sponge made out of various soft materials, and whenever a young ant gets its mandibles all dirty or splashes mud on its antennæ, the nurses hurry it to the sponge and wipe its face.

If we could find some way to make an ant unbosom himself and, speaking right out from the heart, tell us which of his various marvellous accomplishments makes him proudest, he would probably say: "My strength!" and then laugh at us condescendingly. For the ant is such a wonderful all-round athlete for his size and weight that he makes the most powerful man on earth appear a weakling.

Here is one of his lesser feats, as described by the naturalist, A. D. Du Bois: An ant was observed carrying a pebble from the bottom to the top of a mound. The ant and pebble were weighed, and the height of the mound was measured. For a man to do an equivalent piece of work in proportion to his size, he would have to carry a trunk weighing half a ton up 25 flights of stairs.

If that seems marvellous, consider this: A little field ant, in a carefully arranged laboratory test, held in his jaws a weight 3000 times heavier than itself, without difficulty. For you or me to equal

that, we would have to be able to stand calmly on the edge of some convenient precipice while eight freight cars loaded with iron dangled from a chain passed over our lower jaw.

A well-known entomologist has asserted that if any man weighing 150 pounds had the same strength in proportion to his weight as the ant has, he easily could hoist two of the largest modern locomotives on his back and walk away with them, without even staggering.

There is a species of ant in Africa called the "bulldog" which, Professor Wroughton tells us, can travel along in great leaps a foot long. If modern man wishes to emulate this achievement, he will have to increase the present broad-jump record from slightly over 25 feet to 144 feet.

The ant is a farmer. It may sound unbelievable, but he has his own gardens that he cultivates, and in which he raises special foods found nowhere else; and he has "stables" wherein he keeps "cows," which he "milks".

Consider, for instance, the ants called the "leaf-cutters". They slash off leaves from trees with their sharp mandibles, carry the leaves down into the nest, and there chew them up into a fine paste that they spread on the floor. Meanwhile other ants have been hunting mush-room slips, which they now carry in and plant in the prepared "soil". The result is a fungous growth that seems to be one of the favorite ant foods.

A HERD OF "COWS" ON THE DAIRY FARM

Carpenter ants tending their "cows"—the aphids or plant lice—from which the ants learned to obtain sweet "milk" by stroking them with their antennae.

The ant's "cow" is the aphid, the green-fly of our gardens. The ant seizes these little creatures, takes them to the nest, and there shelters them and feeds them. In return for this, the aphids give off a honey-dew "milk" when stroked by the ant's antennæ, and this honey-dew is the ultimate in beverages for the ant.

Did you ever think of the ant as a surgeon? He is, though his operations are rather heroic. Among the Brazillian leaf-cutters the following technic is employed: When a patient is brought in suffering from a bad wound, the ant surgeons catch a few huge soldiers who won't be missed and, holding the edges of the wound close together, induce a soldier to close its jaws in them. The unfortunate soldier then is decapitated. A number of these "stitches" are put in, according to the length of the wound, and they remain firmly locked and the wound is healed fully. One well may question whether the disease is worth the cure.

Finally, we may note that the ant has that trait so extremely rare among animals—he buries his dead in a cemetery, and with a regular funeral procession. Members of the colony lift the dead body with their mandibles, and, others following in solemn line, they go outside the nest to the little plot of ground where they bury their corpses.

There is much more that this marvellous little creature, such a wonder worker for his size, can do. In the rôles in which we have considered him we have seen him versatile beyond all belief. As to what other wonders he would make known to us if only he could talk, we can but guess.—AN AMERICAN PAPER.

A Mountain Coming Downhill

MOVING EIGHT INCHES A YEAR

The mountains in the high Alps sometimes play awkward pranks on the neighboring villages, for now and again they begin to move.

Not long ago a mountain in Savoy was giving trouble, and now news comes that Monte Arbedo, 6000 feet high and in the Swiss Canton of Ticino, is moving downhill on a front of nearly three-quarters of a mile at the rate of eight inches a year. This does not seem much, but thirty years ago the movement was only three-quarters of an inch a year, so the danger is growing. The whole mountain is said to be moving.

In the Alps, of course, the valleys are very important, for they contain the railways, roads and villages, so that an encroaching mountain spells grave trouble. After carefully noting this one, the Swiss Government has seen that all precautions are taken against accidents.

What is a Criminal

BY BURTON C. BROWN

A CRIMINAL is a savage, latent and expressive. Covered over with a thin veneer that tends to hide him, but doesn't, he is swept asunder by the surging tides of evolution. He is justifiable to himself and all beneath him, but must answer in full to all above him. He is out of line with proper action and has a tendency to disturb the peace of society. To establish equilibrium, punishment is measured back to him.

The criminal seeks to evade justice and, for selfish ends, tears down all obstacles that obstruct his path. Society, to protect herself, sets up a counter action.

Anything that departs from justice is a crime, and may be committed against oneself as well as others.

The criminal may pass for a gentleman in high office. Nero was no less a criminal for his position, and should have been censured as firmly as his lowest subject. The criminal does not realise that great reward is the result of great and efficient service; that the lofty pinnacle of fame is unstable and shifting when secured and held by oppression and greed.

The criminal lacks order. He is deficient in culture and refinement in its higher sense. He is immoral, devoid of virtue, and is his own worst enemy. He lives in a fool's paradise that changes overnight to a haunted house where the ghosts of the past eternally obsess him. Nowhere can he turn for security unless it is to a realisation of his own folly.

The criminal is morally and mentally insane. He strips Virtue and Love of their beauty, leaving them cold and miserable in their nakedness. He likes the darkness, for his methods are always covered up. He employs subtle wit, poses as a good fellow and protests vehemently of his good intentions. But to the observing, the hidden dagger is ever apparent.

The suave, oily criminal is to be found in every phase of human life. Occasionally he has to be torn down from the pulpit, and the judge's bench does not escape the scrutiny of Wisdom, who knows the wolf in spite of his sheep's clothing.

Crime and Honesty have been at war through the ages. The battle is ever a close one, with Honesty having the better of it. He is working for order, for balance, for peace and happiness, while his opponent creates misery and disordered conditions.

The lamentable fact is that the criminal considers himself wise; that his superior craftiness will bring him wealth and power. What a travesty on the truth!

Education as a Remedy

Moses, in *The Old Testament*, warned the Israelites not to kill. Nowhere is capital punishment justified. The remedy for crime is education, not elimination. Let us realise that it is only a step from the sublime to the ridiculous, from constructive to destructive action. The tribunal functions on the assumption that one crime justifies another one. The truth is that crime is stimulated by conditions outside the consciousness of the individual. More favorable environment and an atmosphere of love, virtue and the higher attributes would easily awaken that "something" known as soul, and instead of the criminal, we would have the worthy citizen, radiating his inner light.

Neglect of duty rests heavily upon the shoulders of the law-makers, who find it more convenient to destroy than to build. They are the master-criminals hiding behind the cloak of officialdom, with the blood of their brothers staining their record for fair dealing.

When shall we awaken to the folly of destructive action and its aftermath of tears? When shall we see crime in its true light, and know that the oppressed, driven by poverty and the glamor of material riches, is not the real criminal? He is merely a pawn in the game, driven relentlessly by circumstances to disaster, often against his will and to his utter dismay. Breaking him on the wheel of destiny accomplishes nothing of merit. The conditions that dragged him down still obtain, with crime rampant in the human heart, evolving more human wreckage for the mailed fist of the law.

A legend pictures many children playing on a sunny slope leading upward to the brow of a cliff which overlooked jagged rocks in the valley below. Often the children ventured too close to the cliff's edge, and a mangled body would be hurried away in an ambulance provided for just such emergencies. Threats and warnings by the mothers proved to be of no avail; the accidents continued with alarming frequency. One of the mothers finally suggested that a high picket-fence along the ridge would be an effective remedy. "Let's protect our children from danger."

The mother's advice could well be applied in the present instance. Constructive education that teaches "service" as the true fundamental of success would do more to eliminate crime than all the agencies employed to mete out Capital Punishment as a remedy for social evils.—*Boston Ideas*

They Can See with Their Skin

Blindfolded French Girls Read Books to Prove Amazing Power

By G. B. SEYBOLD

MANY times there had come to the attention of Jean Labadie, noted French scientist, the cases of men and women who claimed the uncanny ability of seeing while blindfolded; and in each case the claimant had proved to be a fraud. So it was with two grains of salt that he read the report of a young woman of Paris who demonstrated the strange power that scientists call "paroptic vision".

In this case, however, a group of doctors in the Paris Hospital had testified that the young woman, Mademoiselle C——, actually was able to read through the skin of her face, with her eyes covered. If she were a fraud, she must be clever, Labadie decided, so he got permission to test her himself.

He took the utmost precautions to close her eyes Then he went into a dark room and with his hands in a black box, tore off at random a sheet of a calendar pad. Without seeing this himself (for he wanted to do away with the possibility of unconscious telepathy) he showed it to the young woman.

"What do you see?" he asked.

"It is a sheet of calendar," she said. "It is the twenty-ninth of July."

Labadie looked at the paper. To his amazement, she had "read" correctly.

Then he took a small wooden box and removed the lower half of one side. On the lid he attached an electric light so that it illumined a playing-card laid flat on the bottom of the box.

He held this box before the young woman so that her bandaged eyes were on a level with the bottom of the box. Any light rays from the card could not possibly reach her eyes in a direct line.

"Do you see anything now?" Labadie queried.

"Yes, it is a playing-card—the three of diamonds."

Once more she was right. Seemingly the only explanation was that she had seen the card through the skin of her forehead.

Now, profoundly interested, Labadie applied similar tests to three little girls living in Nay, in Southern France, 11, 13, and 14 years old, who were reported to have even more remarkable powers. He found they could read pages of books opened at random, thread needles, and detect colors of cloth without using their eyes.

In some of the tests a picture or other object was fastened to a rack in front of the child, while an ingenious shielding device shut out all rays of light from the object to be identified. Yet in every case the object was described accurately.

How was it done? Labadie does not pretend to know, but gives some interesting observations.

Aside from the eyes, the most sensitive part of the body for seeing, he says, is the skin of the face, especially the forehead.

The girls he tested took considerable time to identify objects, and could retain the vision only with the utmost concentration. The whole process was an exhausting mental strain.

A surprising thing was that the line of vision seemed to differ from that of ordinary sight. When the subject tried to pick up an object seen through the forehead or chin, she put her hand to one side of the object, indicating that it was not "seen" in its true direction.

Labadie does not believe there is, necessarily, a special organ of paroptic vision in the skin. It is merely some peculiar sensitiveness of the skin nerves, which receives impressions of light and conveys them to the brain in the form of definite images. M. Labadie believes sincerely that he precluded the possibility of trickery in the cases that he studied, but awaits further investigation to find a scientific explanation of the phenomenon.

We Thank Thee

For flowers that bloom about our feet;
For tender grass so fresh and sweet;
For song of bird and hum of bee;
For all things fair we hear or see—
Father in heaven, we thank Thee!

For blue of stream and blue of sky;
For pleasant shade of branches high;
For fragrant air and cooling breeze;
For beauty of the blooming trees—
Father in heaven, we thank Thee!

—*The School Paper* (Melbourne)

Emotions in Men and Women

NO very pronounced differences in the emotional natures of the sexes are found by Donald A. Laird and Thomas McClumpha of Colgate University, in recent tests in the Psychological Laboratory of that institution, as reported by them recently in *Science* (New York). We read:

Before reliable measures of intelligence existed it had been generally assumed that women were less intelligent than men. When these alleged differences are measured, however, they have been found on the whole to be practically negligible, if indeed there be any differences.

Recent development has made it possible to make similar measures of the emotional natures of the sexes. We have recently compared about six hundred college men with about four hundred college women on the Colgate mental hygiene tests. These are tests of indirect emotional outlets which are indicative of mental or emotional instability.

College women we find much more introvert than college men, the average woman appearing to be about 10 per cent more introvert. This means that women tend—or may be forced—to live their emotions largely within their own mental sphere, while the men live their emotions more in associating with others.

Women are more inclined toward spurious mental fatigue, being on the average about 20 per cent more psychasthenic than the men.

Neurasthenia is tested in twenty-two items of the tests. Again we find the women with an excess of these indirect emotional outlets.

In signs of hysteria there have been no demonstrable differences. The unfavorable showing of women on these tests may be due in part to some selective influence rather than to any inherent differences by and large. Can it be that emotionally unstable women are attracted to college?

In 1910, which is the last year with available figures, one out of every 1,416 men from twenty to twenty-four years of age and one out of every 1,815 women of the same age range were admitted to a State hospital as a mental patient. Among twenty-five thousand college students in 1923-24 the ratio was one man per 1,079 and one woman per 876. Among the general population the incidence of extreme emotional instability is greater among men. Among the college population, however, the incidence is greater among women. This may be due to the age group from the general population being slightly older than the college population. Or, it may be due to the woman inclined toward emotional instability entering college.

In practically every instance statistics record an excess of male over female psychoses, both in absolute numbers and in ratio to the general population. Typical figures from twelve States showed one male from each 1,105 of the total male population and one female from each 1,199 of the general population admitted to a State hospital during the year. This shows a slight and perhaps insignificant predominance of psychoses among men.

Some psychoses are the product of physical forces in the environment rather than of indirect emotional outlets. Eight times as many men, for instance, were confined because of traumatic mental disorder. Five times as many men suffered general paralysis, caused by social disease. On the other hand, over three times as many women had mental disorder associated with pellagra. These psychoses due to exogenous influences should be eliminated in comparing the inherent emotional differences of the sexes. When these are eliminated, the ratio is one out of 1,444 men and one out of 1,355 women. When the psychoses due fairly directly to environmental factors are excluded the balance shifts in favor of the male. This may confirm the findings on the mental hygiene tests and indicate that the college incidence rate of psychoses fairly represents the true conditions with the sexes under somewhat more similar environmental stresses than exist outside of the cloistered seats of education.

Granting, however, that when environmental stresses are equalised among students there is a preponderance of undesirable emotional outlets among women, we have yet to demonstrate that the difference is inherent in sex. From earliest childhood the restraints and training of the sexes differ. Our data cannot be interpreted as showing that there are innate differences; the differences may be acquired. The trend of opinion is that the emotional outlets such as we are testing are acquired. Data are being gathered which bear on this point. The very practical problem of an effective difference remains, regardless of its origin.

Emotions Due to Colors

The emotional effects of color are discussed by M. Luckiesh, Director of the Lighting Research Laboratory of the General Electric Company, in *Save the Surface Magazine* (Philadelphia). In our uses of color for decorative purposes, he tells us, the emotional effect is intricately interwoven. Colors have such physical properties as brightness, richness, delicacy, irregularity, dulness and purity. When we observe these properties we are thinking of the colors themselves and their expressiveness. Also, a color may be agreeable, unpleasant, pleasing, sickening, stimulating, neutral, subduing, depressing, warm, cold, weak, or cheerful. Also:

The physiological and psychological powers of colors are proportional to the purity of the colors. That is, if we dilute a color with white, or subdue it with black, the resulting tint or shade is not so powerful in emotional value.

Red, orange and yellow are exciting or stimulating, with the maximum effect for scarlet or

orange-red; and yellow-green, green, blue-green, and greenish blue are neutral or quieting, with the maximum of neutrality for green. Blue, violet and purple are subduing or even depressing, with the maximum effect for violet. These are effects which are obtained for all persons when the colors are viewed just as colors; that is, not as a part of any color scheme. If an entire room and all the objects therein were painted a single pure color the effect upon any normal person would be as indicated in the foregoing. Just as in the case of color preference, the environment of a color or its relation to other colors in a decorative scheme modifies its emotional effect. Nevertheless, we cannot understand color or utilise its powers without systematically analysing its various phases.

Red may be exciting, loud, passionate. It may suggest rage, blood, or valor. When it is a deep red it may be subduing. When it is yellowish it may be hot.

Orange is stimulating, warm, and, therefore, may be comforting or irritating, depending on whether or not we desire stimulation or warmth.

Yellow arouses cheerfulness and warmth. If it is a greenish yellow it may be sickening and may arouse various associations such as jealousy, sickness, and cowardice.

Green is neutral and may make us feel peaceful. It is neither sad nor cheerful.

Blue is cooling, sobering, subduing. When it borders on violet it may become depressing.

Violet is likely to be hard as well as gloomy and depressing.

Purple has some of the characteristics of violet. It is generally a subduing color.

It may be interesting for the reader to add to these effects out of his own experience.—*Literary Digest*

The World's Biggest Telescope

It is probable that the giant reflecting telescope now in use at Mount Wilson in California will soon lose its place as the biggest telescope in the world. Plans are being made for the erection of a still bigger one on Mount Salève, near Geneva, at an altitude of over four thousand feet.

Two American scientists are experimenting near Paris with the very difficult business of casting a great disc of glass for the mirror, and they hope eventually to make a disc twice as big as that at Mount Wilson, or nearly seventeen feet across. Such a mirror would weigh several tons, and would have to be carried up the mountain side by a specially constructed tractor.

Workmen are already engaged in making a road up the side of Mount Salève, and work on the Observatory itself will begin as soon as the [illegible] mirror has been determined.

A meteorological station will be built on the mountain, as well as a wireless receiving station, sufficiently powerful to keep in touch with weather conditions all over the world.

The success of the new telescope will depend almost entirely on the atmospheric conditions prevailing on Mount Salève, and these will have to be at least as good as, if not better than, those on Mount Wilson if the new instrument is to compete seriously with the present hundred-inch. But if the conditions are good the new telescope is certain to show many millions of stars that are beyond the reach of the present instruments.

Eyes and No Eyes

How did man became more intelligent than the reptile or the fish or the general run of lower animals? Professor Elliot Smith says that he began by learning to see better.

Anybody who will look at a chameleon or a mackerel will perceive that the eyes of these animals are on either side of the head. They revolve in opposite directions. Ours revolve in the same direction. It is one of the puzzles of evolution to imagine how, when this change came about in living things, the brain accommodated itself to the altered condition.

The great change that came about when the eyes became Eyes Front was that their fields of vision overlapped one another, a fact which we can prove to ourselves by holding a finger close to our faces. But the fact of which we are unconscious is that the consequence of their overlapping is to give us stereoscopic sight, and make us perceive things not "in the flat" but "in the round," or, if more technical words be used, in three dimensions.

As man, advancing in intelligence, began to see things better, he began to enquire about their shape, their color, their texture. His eyesight made him curious, and it was his curiosity that made him wise.—*Children's Newspaper*

How Fast Can You Think?

An expert tells how to score your mental ability by useful and fascinating tests that you can try on yourself.

BY DONALD A. LAIRD, Ph.D.

JUST how bright are you? I don't mean, "How much do you know?"—because there is a difference. A filled fountain pen contains more liquid than an empty hogshed, but its capacity is not the same. How is your capacity for knowledge—your native intelligence that you have inherited from your parents, as opposed to the store of facts that your brain contains as a result of your schooling, your work, your reading, and your association with your fellows?

I am going to show you how you can test yourself, and see.

The tests you will find here are the kind given to college students to determine their mental abilities. They are an accurate measure of general intelligence—a quality that no amount of study will supply; a quality that the laborer, the mechanic, or the clerk who has not been through high school, or even grammar school, is quite as likely to possess as the man who has earned a college degree.

To know the measure of your own intelligence is highly important to you, and highly useful. It may show you, for example, that you are in the wrong job; that you are wasting your time in some occupation below your abilities, or that you are attempting to make your way in a business or profession that is beyond your powers.

How logical is your thinking? The word *elbow* indicates a part of the arm; *chimney* is a part of a house. Of what is a *speedometer* a part? While some one times you, call out the thing of which each of the words listed below is a part. Take the words in their order, skipping none.

Are you being timed? Ready. Go!

leaf	afternoon	Germany
nail	floor	week
quart	tooth	chimes
board	casters	Chicago
tyre	beak	paper

If you completed this test in 23 seconds, you are up to the average of college students. If you did it in less, you are brighter than the average college student.

It may seem strange to you that a simple test such as this—taking which is an exercise quite as fascinating as working the cross-word puzzles that are so popular now—should supply a reliable index to your intellectual powers. These tests, though, are not so simple as they may seem. They were devised by leading psychologists—by Dr. Alfred Binet in France, and by Dr. Henry H. Goddard, Dr. J. McKeen Cattell, and others in America, after long study of intelligent, dull and superior persons, to find out what they really could do.

Now try a test of completion—that is, the ability of your mind to fill out an incompleted idea. With a pen or pencil fill in the blanks in this narrative, while some one keeps a record of the time it takes you to do this:

It—sometimes said——women are more honest than—. It may be—are more honest—long run, but there—instances in which great—has been found in some—. Such,—, was the case—the recent criminal—which has received newspaper—. We are assured—honesty of the man in this particular—, but the honesty of the—is open to serious —.

A college student will fill in these blanks in three minutes. Many persons who have never been to college, or even to high school, can better this time. For example, the members of a medical society in a Middle Western city were given a series of tests of genetal mental ability, such as you are taking on these pages. The same tests also were given to the employees of a contractor who wanted to use them in selecting the best workers.

Among a gang of pick-and-shovel laborers was found a man who got a higher score on the tests than the average physician had made! He was promptly transferred to a higher position that had been difficult to fill. Here the man was happier, because his new work permitted him to use more of his abilities, and because he no longer had to fool around at work that was not the right kind for him.

What is your range of information? Put a cross before each of the words in this list that you understand:

assay	Beelzebub	keel
assuage	Bessemer	nullify
astrology	blather	Othello
Audubon	Hauptmann	paunch
auk	hypothesis	revile
Bancroft	ichnography	scup
Mendel	incubus	Sudan
mammal	incognito	terrapin

A college student will have 16 crosses.

Some of the funniest things imaginable are written in these tests at times. One college student, for example, said that Mark Twain was a steam-

boat; another that a revenue cutter was used on a milling-machine. Another was working on a test in which the problem was to draw in with a pencil the missing parts of several pictures. One of the pictures was a pig, with the tail missing, and the student drew horns on the pig's head! I have found other students who were unable to detect that the eye was missing in a picture of a woman's face.

All of which is only another indication of what I said before—that going to college does not supply brains. Abraham Linclon and Edison never went to college, but that they possessed intelligence nobody would deny.

How are you on numbers? Maybe accounting or some similar line of work is your *forte*. Try the following test, to see whether you have a natural aptitude for figures. While some one times you, check each group that contains a number 6. The average college student can do this in 40 seconds. If you can better this time appreciably, it is a sign that you probably have a "good head for figures".

867314	739548	382145	672539	378652
963458	371629	596743	784623	358472
345962	294736	198537	916483	635819
612589	389254	259671	123874	329418
312876	427395	561487	593182	247153
934612	759431	281937	461289	579361
954178	718254	296851	524617	731825
719325	486592	215367	714529	956142
594231	156843	436978	851763	513647
349716	182653	286415	164985	768914
714932	427163	825749	983567	682917
649752	587436	268794	179428	145389
462758	843216	853624	985273	672841
981374	529817	862934	875126	319546
941258	639187	871596	294378	237465
346521	196235	762491	957641	495867
853926	138962	435781	297568	

How rapidly do you learn? Below is a simple code, in which each letter of the alphabet is represented by a number. The word "and" would be written 2-13-10. In this test you are to write the code number for each letter just above it, as fast as you can, while some one times you. A college student can translate 90 letters into numbers in five minutes.

CODE

q	a	y	p	z	u	r	s	
1	2	3	4	5	6	7	8	
j	d	l	g	n	h	w	e	x
9	10	11	12	13	14	15	16	17
t	m	b	k	i	f	o	v	c
18	19	20	21	22	23	24	25	26

Translate these letters into their corresponding numbers:

L	a	t	h	o	t	t	s	r	o	s	c	i
f	o	g	a	t	h	o	s	d	a	n	g	s
o	n	i	t	h	t	a	h	t	o	h	a	d
h	h	e	d	a	r	n	i	h	t	o		
f	o	t	e	r	o	n	o	n	w	c	e	m	a	c
g	r	n	i	o	w	d	o	p	n	u	s	h
i	r	n	e	o	c	o	i	l	e	l	e	t	h
e	t	n	i	w	o	g	h	r	t	g	a	r
d	k	e	r	h	e	t	s	t				
a	r	s	s	d	e	m	e	o	c	o	t	s
n	i	k	d	r	e	p	e	c	n	i	h	t
o	s	y	k	d	a	n	d	i	g	r	w	n

If you can pass these tests, you have mental capacity to spare for most of life's activities.

Remember, too, that those who make the most of their ability are the hardest workers. So work hard with your abilities if you would be successful.

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 yon have personality.—*Trade Compositor*

Rovering

ROVERING is Scouting in practice. For Rovers constitute the senior branch of the Boy Scout Movement—young men of over seventeen years of age. Ordinarily, a Rover should have passed through the stages of Cubbing and Scouting. But many of them step into the movement for the first time when they are of Rover age. Because of this and of the fact that it is a training in manliness, an equipment for life's struggle, a Rover's training is more strenuous and the discipline governing it harder.

The backwoods, says Baden-Powell, is the best school for man-making. "We have splendid material, and results show what men can be if they are only brought up to be manly; and we have on the other side the evidence to show what curs they can be if left to drift among drink shops rotten surroundings." Town life enervates eteriorates. "Go out into the bush of Australhe veld of South Africa or the backwoods of Canada," he says, "and you find a different breed .....In those lands man has to fend for himself. If he cannot track the spoor of animals or read signs from the flight of birds, he is going to die of thirst or hunger..... Water isn't laid on in the desert, nor is there a baker's round the corner. To light his fire and to kill, clean and cook his food for himself is his everyday job. He has to stand up to the lion or the wolf with the same readiness that he would use to catch a train or to step on to a tramcar at home. With his axe he does all his carpentry, from sharpening a pencil to felling trees and notching them to interlock in a weather proof loghouse." He narrates an incident "away back in Canada" of a call going round the district that a lady had come to settle there, of forty cow punchers, lumber-men and others turning up in response and riding off, two days later, "their different ways leaving a fine log-house standing, a free gift and ready for the *Marm's* occupation".

In that magnificent book of his, *Rovering to Success*, the Chief Scout summarises his advice to young men thus: "You want to make a success of your life. Success does not consist so much in gaining money and power as in happiness. From being *passive* be *active*. Don't drift. Take your own line. Paddle your own canoe. Only mind the rocks! Avoid them by cultivating other qualities." The rocks on which young men are usually wrecked "through herd temptation" are *Ho[illegible]s*, *i.e.*, gambling at the betting ring on the race co[illegible]se and looking on at false sport; *wine* and c[illegible]r forms of self-indulgence; *women*, *i.e.*, a wrong attitude towards them; extremism in politics, irreligion and so on. These rocks can be rounded only through individual effort, by *active hobbies* and earning money, by self-control and character, by *chivalry* and a healthy state of mind and body and, above all, by *service* to our fellow-men and to God. The last great quality of *service* is pre-eminently the mother of all the other virtues.

"Rovers are a Brotherhood of the *Open Air* and *Service*. They are Hikers on the Open Road and Campers of the woods, able to shift for themselves, but equally able and ready to be of some service to others..... ...The Rover Brotherhood...is...a *jolly* brotherhood, with its camp comradeship, its badges, its secret signs, its uniform, and its 'dens' or meeting places all the world over." It is a Brotherhood of wanderers, a member of which can extend his travels to foreign countries and there make friendships with Brother Rovers of other Nationalities. This side of the Movement "is not only interesting and educative, but is going to make a real ste[illegible]ensuring the future peace of the world through mutual good will".

Here is an incident related by Sir Robert Baden-Powell which shows how a Rover trains himself. "There is, camping in my garden.....a hefty Rover Scout, about seventeen years of age, that is a fellow training to be a man. He has tramped from a distance with his pack upon his back, in which were his light tent, his blanket, cooking-pot and food. He carries on him his axe and lariat. In his hand a serviceable staff with a weirdly carved head, his own handiwork. In addition to this load he carries a still more important thing—a happy smile on his weather-tanned face. He slept out last night in bitter wind and rain, although I gave him the choice of living under a roof. He merely remarked with a laugh that it had been a hot summer, and a little cold wind was a change and would do him good. He loved the open. He cooked his own meal, and made himself all snug with all the resourcefulness of an old campaigner. To-day he has been showing our local Scouts how to use the axe with best effects, and he proved to them that he could *rope* his man unerringly with his lasso. He knew the trees by their bark and the birds by their note. And he could climb any tree or crag that he came across..... As he admitted to me, he is in his ordinary life an apprentice in some engineering [illegible] University. He enjoyed getting out into the open not merely because it was

a relief from his work, for his work interested him, but because it took him out of the filthy talk and foul language that was supposed by his fellow-workers to be the manly thing to carry on. He told me he had got a *thick ear* more than once for not taking part in it, and he had managed to deal out a *thick ear* or two on his part in urging cleaner thought." This is what Rovering makes of townies.

"There is no pleasure that comes near to that of preparing your own meal over your little fire of wood embers at the end of the day, and no scent like the smell of that fire.. There is no view like that from your lair on the woodland hill side. And there is no sleep like that in the open with a warm blanket or a good thickness of paper beneath you.....the sounds of night and the companionship of the beasts and the birds make you feel a comrade of them all in the Brothership of Nature."

"There is nobody under thirty," says Robert Louis Stevenson, "so dead but his heart will stir at the sight of a gypsy camp..... There is some life in humanity yet, and youth will now and again find a brave word to say in dispraise of riches, throw up a situation to go strolling with a knapsack."

C. VASUDEVAYYA

Disarm the Mind

Of the fifty-five States in the League of Nations, the smallest but one is Haiti, the Negro Republic of the West Indies. Actually the smallest in the League is Salvador, in Central America, which counts, like Haiti and all the others, one vote in the Assembly, as do the big countries. The area of [illegible] is rather smaller than that of Belgium, and Chicago has a larger population.

When the Haiti delegate got up to speak the other day, in the Assembly of the League at Geneva, some people wondered what this little Negro State (which, very disrespectfully, they call Hi-tiddledy-hiti) could possibly have to say to the representatives of mighty Empires, great ambassadors, and princes. But Mr. Frederick Doret, the delegate for Haiti, who has been Minister of Public Education in that country, had something to say which has not been said in the Assembly before.

The Fault of History Books

He thought it was necessary to rewrite history books. Some American history books he had examined devoted 70 out of every 100 of their pages to describing battles and circumstances of war. Probably Mr. Doret has not seen *The Children's Encyclopadia*, which shows how many fine things there are about our country, and about other countries, too, apart from military history.

Mr. Doret said also he thought the League of Nations should not regard itself as being too big or dignified to pay attention to children's toys. The small boy, he said, probably received among his first playthings a bugle and a drum, and later he got hold of a toy gun, so that almost from his cradle his thoughts were turned to things of war.

What Moral Disarmament Means

And it was Haiti which took up a phrase often used in this last Assembly Moral Disarmament, which means that it is not enough to agree to reduce Armies and Navies, to turn swords into ploughshares and spears into pruning-hooks, but people must think of neighboring peoples, not as future enemies but as present friends. If this can be done, then material disarmament will follow, as summer follows spring.

Little Haiti's delegate moved a resolution inviting all the countries in the League to undertake the revision of their school history books in order to diminish the number of pages devoted to war.

The Assembly received the resolution favorably, and it was passed on to one of the Permanent Committtees which will consider the ways and means whereby it can be carried out.

Teachers and the League

It is worth noting that in Austria the Ministry of Education has laid down that school history books must contain suitable references to the League of Nations, and the subject of the League has also been introduced into the history books of France, Denmark, Latvia, Czecho-Slovakia, Rumania, China, and Japan. In India, a pamphlet containing an account of the League of Nations is circulated in all English schools in the United Provinces. In Britain, the decision as to what subjects shall be taught in schools is not a matter for the Government, but for the Local Authorities; but teachers are greatly interested in the League, and most of them make references to the League in giving their history lessons.

It will be a fine thing to study history books in a few years' time. Many thanks to little Haiti!—*Children's Newspaper*

In His Name

BY A. R. JAYALAXMI

SUDDEN fits of coughing shook his whole frame, and he fell back on his bed moaning bitterly. As though to shut out his misery, he shut his eyes, while tears streamed down his wasted face and fell on the clasped hands of his beloved wife, Nila. She knelt at the head of the cot. When the tears fell on her hand, she started as though waking from sleep, then hid her face again in her hands. Her slender body shook as though torn by bitter sobs, but not a tear fell.

The dying man, opening his eyes, saw his wife. With the strength of the dying energy he jumped out of his bed and held out his hands to Nila, saying softly: "My wife, my sweet wife."

Nila looked at him, standing tall, erect, and oh! so beautiful, with that pale beauty, like the full-moon—beautiful but not dazzling. She gently forced him back to his bed as she knew that he was ug[illegible]. She ran to his mother to call her. The mother and wife came hand in hand. The former already had the traces of sorrow, but the latter was new to this bitter anguish. In her beautiful young face were blended the innocence of childhood and the sorrow of coming widowhood. But this mingling made her look like some one lost to happiness as well as to sorrow. Nila stood respectfully far from the bed while the mother rushed to her son, who saw her only and never glanced at his wife. Where is there a husband or a wife who would think of himself or herself in the presence of an elder? His duty was first to his mother, the giver of life, then to his wife, the partner of it.

The dying man whispered: "Mother, my own sweet mother! I am cursed. I cannot live to serve you in your state of helplessness as you served me in my infancy. My mother, be a mother to Nila, as you have been to me. Take care of her, cherish her. God knows she would follow me through death. But do not let her. Let her have her share of happiness. She will never be happy without me. But, my mother, you will make her so by the strength of your love. She will die like a flower uncomplainingly, without love. Love her! Love her, mother."

"I love your life, my child. Nila is a part of your life. Nay, not only of your life but of mine too, for it was I who gave you life. Surely, my son, I will take care of her and cherish her." So saying, the mother beckoned to Nila, who came near.

He took her hand and looked at her. Then he spoke slowly but distinctly: "Nila, you have been a loving wife, and may you ever be a fai daughter to my aged mother." He sudd dropped her hand and a sigh escaped his lips a muttered: "She will not survive me, she c[illegible] live without me." He turned to his mother sayin "Mother, bless me before I die."

The mother, blessing him, fell to the grou sobbing bitterly. Nila did not go to assist her. S seemed to be rooted to the ground where she [illegible] Her husband put his hand on her bent head a he said, "May the Gods' blessings be on you, spirit fled.

All the women moved round Nila with slow silent steps. The men were gathered round body of the departed soul, which was covered w a costly covering and fragrant flowers. All w silent as they saw the mother coming. Int[illegible]tively they knew they ought not to stay th witness their sorrow, so they silently depart[illegible]

The mother threw herself on her dead so. wept. Recollection after recollection threat her very life. Then the thought of her being a overpowered all other feeling. The word "alo seemed to be a phantom dancing before her e. When she looked at Nila in her widow's garme her face changed color. She suddenly came know a horrible truth. Nila's look and bear denoted some great resolution. Nila's face wa pale, but she was looking almost divine and happy. She did not seem to think she was separated for ever from her husband. What could all this mean but that she would join him by performing *sati*? She would go through fire to her husband. The mother looked at her with loving concern. Nila's look of childhood's innocence was gone, but in its palce were the firm lines of experience. The mother longed to save her. She remembered her son's words: "Love her! Love her, mother!" Nila's iron self-control would fail her at the last moment and she might die of a broken heart. She had not as yet given vent to her anguish.

The mother went to Nila, and, gently placing her head on her shoulder, said, with a tremor in her voice: "Take your farewell, my child, and come away."

"Not just yet," Nila murmured.

The men returned to carry the body to the burning-ground, but Nila calmly said to them "Wait, I too am coming."

went in and came back in a bridal dress. mockery of fate was this? The people whis- to each other that she ought not to come to urning-ground, and with that dress! But no ad the heart to tell her that she was now no a bride, but a widow. The burning-ground eached and, after a long ceremony, the pyre s lighted. The flames curled round and round though to grasp some thing more to consume. la bent down and touched her mother's feet. e mother was in a dull stupor and did not realise necessity for action. The crowd of mourners ally left the ground, for who could witness the of one so beautiful and young? Nila slowly near the burning pyre, and knelt there ing.

ien in a sweet rich voice she cried aloud: "I oming."

efore she could rise, the mother stood before ith such great sorrow and dignity that she lled obedience.

", as the mother of your husband, I ask you to come home," she said in a gentle voice.

"But, mother, I am going home to my husband," remonstrated Nila sweetly but with firmness.

The mother tried to think of some plan by which she could prevent this *sati*, the dying with the husband. She could not. Her self-control gave place to heart-rending weeping.

She spoke with gentle sorrow: "My God! am I cursed that I should see my children die before me? Nila! Nila! my child! Do you desert me in my sorrow? Will you not be the stay and support of me, now that my son is dead? My daughter! It is a coward's act to run away from sorrow. Face the temptation of death and live for the living. I lived for the sake of my son. Will you not live for the sake of his mother? My life will be a curse to me. Will you not make it a blessing, by your love? Your love wound round my son like a creeper. Now I am the creeper, will you not be my support?

"Mother, I will live for you, and I will di- you, in his name."

How to Test Your Ability

the making of many intelligence tests there is nd; but the tests most exploited require the peration of trained psychologists or efficiency perts. It remained for the Kansas City Teachers' ollege to devise a kind of rule-of-thumb test that each individual may apply to himself or herself, without the embarrassment of publicity. The method, as published in the Kansas City *Star Magazine*, consists of answering a series of simple questions, or groups of questions, ten in number, giving a grade of three for each group if you are above the average; two, if you are average; and one, if you are below the average. Thirty would therefore be a perfect score, and twenty an average score. The cogent objection might be made that one's self-analysis may be vitiated by egotism or by undue modesty. We do not see ourselves as others see us. It might be helpful, after one has answered the questions, to have some intimate check the answers. Here are the questions:

1. Neatness—Are my habits of personal cleanliness the best? Do I dress suitably? Do I keep my personal effects orderly?

2. Broad-mindedness—Am I ready to recognise worth in others? Have I respect for the opinions and beliefs of others? Have I the ability to consider both sides of a question?

3. Courtesy—Do I try to manifest a real spirit of thoughtful, kindly helpfulness? Do I avoid practices that make me conspicuous?

4. Dependability—Am I punctual in meeting all engagements and agreements? Am I trustworthy about meeting obligations to the best of my ability?

5. Loyalty—Have I a sense of responsibility for the welfare of the business with which I am connected? Do I make my personal interests secondary to my business interests? Have I a real respect for my occupation?

6. Co-operation—Have I an ability and willingness to work with others? Have I a real desire to be helpful in all situations?

7. Leadership—Have I the ability to plan and carry out projects of various sorts? Have I the ability to win the allegiance and co-operation of others?

8. Honesty and Sincerity—Have I the strength to be honest under all circumstances? Am I straightforward and unaffected?

9. Perseverance—Have I the ability to stay with a task until it is finished? Have I a tenacity of purpose, even against great odds?

10. Self-Control—Have I the ability to hold the mastery of myself under trying circumstances? Have I the ability to be pleasant and considerate, even whe ntho others are unfair or irritable?

AMERICAN PAPER.

Dumb Heroes

A Wiltshire reader who has had long experience in America sends us these two stories of animals in cont with our great mechanical giants. Both stories show that the motherly instinct in animals can lift them to heights of heroism.

WHEN riding on a street car in Kingston, Jamaica, I noticed that a hen with her chickens had found something to pick up in the middle of the car line. As our car approached she saw the danger and clucked to her chicks.

Though she had not the intelligence needed to rescue them, she had bravery enough to seek to shelter them as best she could. She spread out her wings and sat down covering them in the centre of the track between the rails.

The driver of the car, a kindly-disposed Negro, at once brought the car to a standstill. It was not till he had quietly used the iron with which the points of the rails are turned that he could shoo the mother and her chicks out of his way.

The Jungle Railway

Another incident occurred on the old Panama Railway line, where it is now submerged by the Canal. The railway track ran through jungle, with bamboo thickets on either side. There, just as the thunder of a heavy freight train drawn by two great American locomotives could be heard approaching, a sow with nine or ten young pigs was feeding on the line.

Accustomed to such warnings, the sow instantly called to her young to follow her as she started to run down the embankment; but all her efforts were unavailing, though she twice turned and frantically tried to get them to follow her. At last, when the train was almost on them, she turned in despair and deliberately charged the approaching engine. It was, of course, a vain though noble sacrifice. Both she and her litter, except two, were cut to pieces.

Dying To Make Life Safer

The last of the three brave pioneers of X-rays in the London Hospital, Reginald Blackall, has died.

X-rays were discovered in 1895. In 1899, Reginald Blackall and his colleagues, Harnack and Wilson, started their work at the hospital as lay operators. In two years the first symptoms of the disease called X-ray Dermatitis showed themselves. Within five years Harnack and Wilson were compelled to retire. Wilson soon died; Harnack lost both his arms, and died of his injuries.

It was plain to Blackall what was before him, yet he stuck to his post. First his nails, then his fingers, began to go; then he lost one hand. B not till both hands had gone, after 23 years devoted service, did he give up. Ultimately h lost both his arms. He had to undergo fiftee operations, and the closing months of his herc life were one long agony.

Yet a friend declares that he never once hea Blackall complain. On the contrary, he seemed make a special point of being as jolly as possibl Only a week before he died he was "talking radio graphy" with all his old enthusiasm, and told of letter he cherished from a little girl whom his wo had saved.

As long as he could get about he went to t hospital to watch the progress of the new scien and to help with his advice. He founded a s of radiographers, and would have been if he had lived. His work helped to m the work of those who came after him was to him an abundant reward.

Two Heroes at Sea

The King has just sent a bronze medal for g try at sea to two men for their actions not lon in the Eastern Seas. One of them was G Henry White, second engineer, and the othe Hau, a Chinese fireman. Both were on the ste ship *Paul Beau*.

The vessel was going from Hong Kong to Can an ordinary little voyage she had made ma times. Suddenly, without any warning, a tu blew out in the starboard boiler, and a mass boiling water and steam hissed out. It came wit tremendous force and flung itself out in a strean 35 feet long into the boiler-room.

On this ship the boiler-room and the engine-room are in one, and thus the men at the boilers and the engines were at the mercy of the scalding water-spout. One of the boiler men, Hau Foong, was immediately overcome by the steam, and fell helpless. His brave comrade, So Hau, could easily have made his way out on deck, but he rushed to the man lying there and dragged him to a spot out of reach of the water. Then, feeling the steam overpowering him, he staggered to the ladder and step by step dragged himself up. As soon as he turned the topmost rung he fell faint. Two oth men in the engine-room had darted to safety.

In the meantime the second engineer, on deck, saw a cloud of steam rising to the level of the pro

nade deck. He guessed what had happened, I knew that unless something was done imdiately the men below would be trapped in a rrible death. He wrapped his face in wet welling and went below on one of the most ngerous errands imaginable. He knew quite well iat he might never come up again.

SCALDING FOG

The boiler-room was thick with a scalding fog in which a man could not breathe for many minutes. r. White groped his way along the top of the oilers, blinded by his towels. He did not know he direction of the boiling water-spout. Had he met it it would have been instant death.

Step by step the engineer groped along, and his heart gave a mighty bound of relief when he reached the valves connecting the boilers and engines. When these were shut off the danger was over.

Mr. White staggered back on deck, too thankful to care that his hands and legs were badly scalded. In a few minutes the boiler-room was clear of steam. The deck hands went below for their unconscious mates and a cheer went up when it was discovered that they were still alive, and before long *The Paul Beau* was making good speed on its way to Canton.—*The Children's News*

Precious Stones

Where They Come From

BY A JEWELLER

It is curious how few people know where precious ones come from. It is also a surprise to many to arn that of all the various stones used in jewellery are only six which can be accounted as ones". The six are the diamond, ruby, re, which belong to the corundum group, emerald, aquamarine, and morganite, of beryl" group. All other stones must be regarded emi-precious," however disappointing that ification may be to their owners.

e diamond comes from India, Brazil and h Africa. Although the diamond is nearly ys water-clear in color, there are blue, green, yellow stones. As distinct from a white topaz, ch is always quite water-clear in color, a yellow mond has just a faint yellow tinge in it. The cient Greeks knew the stone, and because it uld not be cut and carved in those days like other ones, on account of its hardness, they gave it the ame of adamas.

The ruby, which is next in hardness, and was used so lavishly in the crown jewels and regalia of the King of Burma, now in the Indian Section of the Victoria and Albert Museum, South Kensington, comes from Burma, Ceylon, Mandalay, Afghanistan and Siam. There are also ruby mines in Australia. The spinel, which is distinct from the ruby proper, is clear bright red in color, whereas the ruby proper is red with a bluish tone. The choicest rubies are those of the color of pigeons' blood, which come from Burma. The Indian ruby is lighter in color than those from other places. Weight for weight, he perfect ruby is of much higher value than the iamond, but the stone is so full of flaws that it cannot be cut to the same advantage as the diamond.

The sapphire, which is of such [illegible] comes from Burma, Ceylon Borneo, and Australia. It is also found in Europe in the Rhine valley. The star sapphire, which is rather lighter in color, comes from Brazil, as does also the white sapphire. A perfect white sapphire is clearer in color gives a longer flash of light than does a diamond, but the flash has not the same amount of fire and color as the diamond flash has. The supphire is mentioned in *The Bible*, but it is thought to be the lapis lazuli that is meant and not the supphire we know.

The emerald is the most valuable of the "beryl" group, and comes from Colombia in South America, India, New South Wales, Serbia, and parts of Egypt. The earliest emeralds we know of were those that came from Cleopatra's mines in Egypt. The first are those from Columbia, whence the wonderful emeralds which so dazzled the Spaniards on their conquest of Mexico were afterwards found to have come; they have more flash and are of a richer and deeper color than those from other countries. An emerald is shown to best advantage mounted on platinum and unaccompanied by other stones. Like the ruby, it is of higher value, weight for weight, than the diamond, but it also is so full of flaws that a flawless emerald of any size at all is very rare indeed.

The aquamarine comes from the Ural Mountains in Russia and also from Brazil; in color, it ranges from a pale sea-green to a bluey tinge. The morganite is more commonly known as the pink "beryl" and comes from Madagascar; at its finest it is of a pinky-mauve orchid tint. It was given the name of "morganite" on the occasion of the late Mr. J. Pierpont Morgan giving to the Nation the largest known specimen of it, which is now in the Mineral Gallery of the Natural History Museum, South Kensington.—*Daily Telegraph*