

## How to SEE YOURSELF As YOU REALLY Are

THE remark of a bystander as he stood watching the members of an "awkward squad" stumbling through their military manoeuvres on a college campus that "it is a pity the soldiers-in-making cannot see themselves as others see them," set an ingenious mind at work to develop some sort of a device that would help drill sergeants to impress rookies with a sense of their deficiencies, physical and otherwise. The result was a "posture machine," or the "schematograph," as it is technically called.

This device is the invention of Clella Duell Mosher of the department of physical education for women at Leland Stanford University and was perfected by her in collaboration with Prof.

## The FUEL of the FUTURE

AT no distant day an entirely new system of fuel utilization will be adopted in this country," says Dr. Joseph E. Fogue of the Smithsonian Institution. "The entire coal supply of each city or town will be delivered to a central municipal plant, which will attend to the business of its distribution.

"But nobody will get any raw." All of it will be put through a process by which the fuelstuff that it contains will be separated out, for subsequent delivery to householders and other consumers, while certain valuable by-products are saved. "Anthracite will soon be regarded as a luxury for the rich. It will go up and up in price. Ordinary folks will have to content themselves with soft coal. The latter is an excellent fuel, but dirty. It gives off a dense black smoke that dirties the home, pollutes the atmosphere and menaces health.

"This is the one great disadvantage of bituminous coal. But it will be wholly done away with under the system that must be before very long arrive. Either the fuelstuff that is in it will be converted into a smokeless artificial anthracite or an equivalent result will be attained by extracting all of this fuelstuff in the form of gas, for delivery to consumers through pipes.

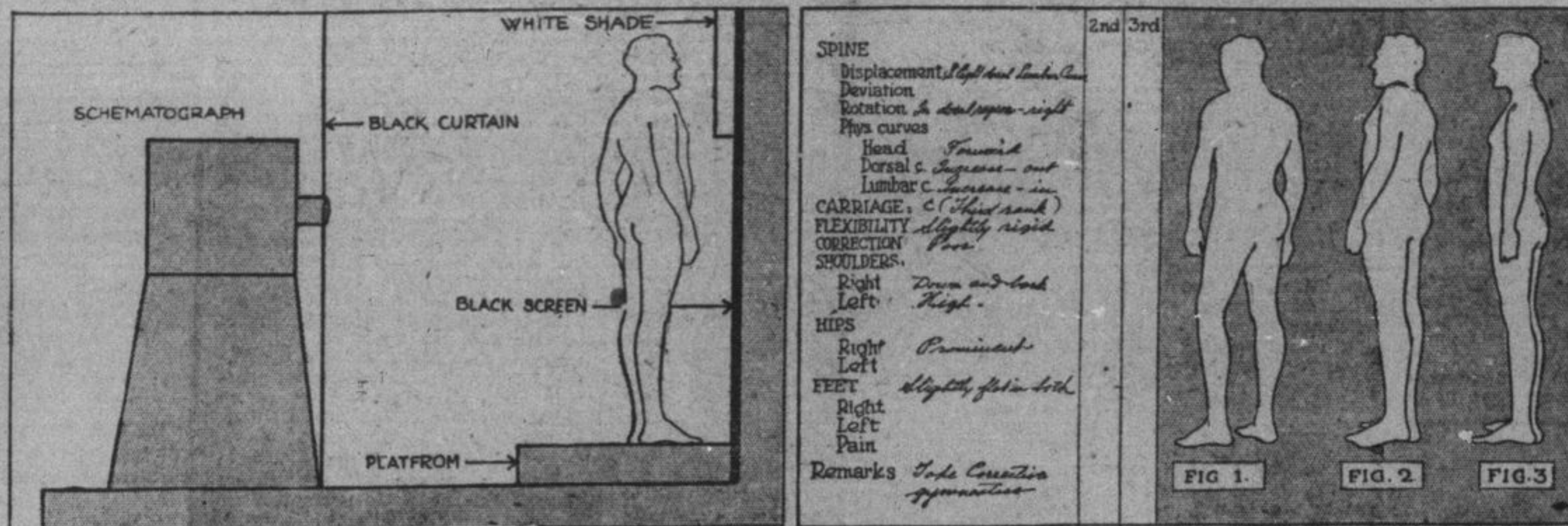
"We object to the black smoke of bituminous coal, and no wonder. But what in reality is this smoke? Of what is it composed? The answer is that it contains most of the valuable ingredients of the coal. They pass off into the air and are lost forever. "Any city gas plant (taken over by the municipality) may at a future time be converted into and expanded into an establishment that will supply all the fuel the community consumes—partly in the form of gas, partly in the shape of artificial anthracite. Its mains and much of its other equipment will be retained, but by a new system of coal distillation, all of the precious by-products will be saved."

## STRANGE African DISEASES Due to PARASITES

FROM earliest times the "dark continent" has been known as the home of peculiar men and beasts. Modern science, especially medical science, now teaches us that the minute, even microscopic, life of Africa is no less individual and remarkable, especially its parasitic life, while the symptoms these parasites produce in the unfortunate human beings infested, by them are equally weird and generally extraordinarily unpleasant. Many of the diseases produced by these microscopic parasites have been known to physicians—at least as far as their symptoms were concerned—for many years, but only lately have the wider settlement of Africa and the progress of medical science, with the establishment of schools of tropical medicine like those at Liverpool and Harvard University, made the nature of these diseases clear.

When we travel in the tropics, especially in Africa, and see—as one often does—a person with enormous enlargement of one arm and hand or one leg and foot, we may be quite sure that it is a case of filariasis, and that there is a colony, as above described, living in the stump or groin. These cases occur also in other countries, indeed in all

## The SCHEMATOGRAPH Vividly REVEALS Bodily DEFECTS Due to INCORRECT POSTURE



How the "Schematograph" Reveals Bodily Defects and Indicates What Corrective Exercises Should Be Taken.

E. P. Lesley of the department of engineering of the same institution.

For the past year the schematograph has been widely used at the University of Wisconsin where, it is said, remarkable results have been secured.

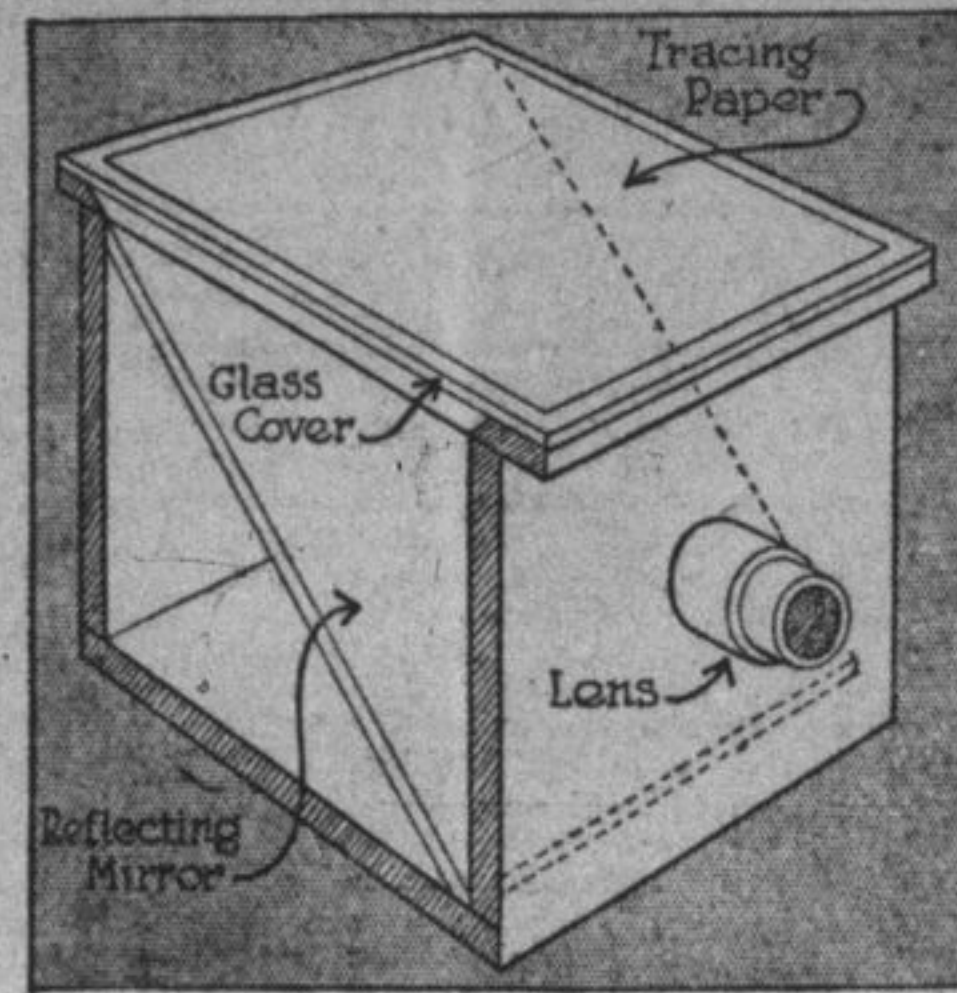
The schematograph, as described in the Illustrated World, is a means of registering in outline form the natural figure in various poses, all calculated to show the ordinary defects coming from faulty posture. The whole idea of the machine is to show the subject, graphically, the physical defects as indicated by his or her posture.

The device is an oblong box, about the size of a large camera and is mounted on a table placed in a small room which is lighted only at one end. The bottom, sides and ends are of wood, but the top has a sliding cover made of ground glass. A triple lens is mounted in the front.

Inside the box, at the end opposite the lens, a reflecting mirror is mounted at an angle of 45 degrees, the purpose of which is to catch the rays from the image on the lens and reflect them to the ground glass cover above, where they can be observed by the operator.

The schematograph "operating room" at the University of Wisconsin is long and narrow. A black screen about seven feet high stands against the wall at one end. Some 12 feet from the screen hangs a thick black curtain. Behind this the operator is posted, only the lens of the camera protruding through the curtain. This arrangement serves the double purpose of shutting off all rays of light and insuring complete privacy to the subject.

To make a schematograph, as the tracing is called, the subject undresses and mounts a minia-



All Defects Are Reflected by the Mirror onto the Glass Cover Where Tracing Paper Is Used to Record Them.

ture model's throne in front of the screen. The operator focuses the machine with the lens directed about at the subject's waistline. Just above and in front of the subject two powerful electric lights are switched on to make the outline as clear as possible.

On the ground glass at the top of the machine is clearly visible the image of the white figure, standing out against the dark screen. If the image is satisfactory the operator lays a thin sheet of paper over the glass and traces the outline.

"We take three poses," explains Miss Alice Brownell of the university's department of phys-

"Schematogram" Showing the Subject's Incorrect Posture and Suggesting the Remedy.

cal training for women, as she ran through a filing cabinet for some typical "cases." "Here you see the results," she held up a thin sheet of paper, approximately five by eight inches. "In the first pose, you observe, the girl stands with her back to the machine and we trace a back view to see whether there is any lateral curvature. In other words, we want to know whether the spine is normal or curved to the right or left.

"See that drooping right shoulder?" she went on, pointing to the schematogram of this first pose. "That convinces the girl more than any lectures of ours ever could that her spine is abnormal. You should hear the girls when we show them their charts. 'Oh, I never dreamed I looked like that!'"

The second pose is made in profile. The subject is asked to stand in her ordinary posture, slouching or erect, as the case may be. From this pose the anterior-posterior curve is traced. Here the instructor finds cases of round shoulders, forward head, hollow back and protruding abdomen.

"The third pose is another profile, the same as the second, except that the girl is told to stand as nearly erect as possible," the instructor continued. "This gives us a chance to determine how near she can come to correcting her faults in posture when she consciously tries."

When asked if all this was intended as a beauty aid, Miss Brownell said:

"It is small wonder the girls stand so incorrectly when so few mature persons realize the effect that improper posture has on the health. They seem not to realize that forward shoulders mean a flat chest with decreased lung capacity. And

decreased lung capacity means less oxygen to purify the blood, with a consequent lowering of vitality and a strong tubercular tendency.

"The lateral curve," Miss Brownell continued, "means not merely an ungraceful body, though the chart in your hand tells its own story as to that. On the side affected by the curve, all the internal organs will be smaller, because they are compressed and dwarfed. Naturally they cannot function properly. On the opposite side the organs will be stretched out of their proper position, and will also function abnormally.

"The hollow back, with the consequent protruding abdomen, tilts all the abdominal organs forward, and the resultant relaxing of the abdominal wall serves to increase the trouble. This is a fruitful cause of stomach disorder. We want our girls to be beautiful, of course, but first they must be healthy.

"Look at that second pose," she directed, holding out another chart. "Do you see the slant at which that girl is standing? Her head and shoulders are thrown so far back that her entire body is thrown off its centre of gravity and the weight is not poised over the feet as it should be. Suppose that were a soldier! Load him with a 70-pound pack and you can imagine how far he could march with his weight so improperly distributed.

"Here is a specimen of our record filed with the schematogram," added Miss Brownell, holding out a sheet of cardboard.

On one side, one ruled column contained the date, with age, weight and physical measurements of the subject. Another column held the personal history record, giving an account of the parents and a record of the subject's health. The reverse of the card showed the record obtained from the schematogram.

## The FLY in the WINTER

THE United States bureau of entomology has recently investigated the question of how the house fly spends the winter, and while the conclusions are to a certain extent purely negative, it is established that they may do so in either of two ways. There may be continual breeding throughout the winter in warm places where both food and refuse material for oviposition are available; or survival from season to season may be in the larval and pupal stages, in or under large manure heaps.

"There is no evidence to show that the house fly can or does persist as an adult from November to April, either outdoors, in protected stables, in attics, or in heated buildings. Temperatures of 12 and 15 degrees Fahrenheit are quickly fatal, and there is reason to believe that anything below freezing is fatal if continued long enough. But individual longevity is not adequate to reaching over the winter in any event.

If flies find access in the autumn to heated buildings where both food and media for deposition are available, such as animal houses or restaurants in which attention is not given to the disposal of kitchen and garbage wastes, they will continue breeding throughout the winter. In such cases the flies present in March and April are the descendants, not the survivors, of those which found their way to the place the preceding fall.

It is suggested that this method of over-wintering is far more widespread than is realized, especially in cities where the hordes of flies that appear late in May indicate the presence of several such foci. Which method of over-wintering is the more common cannot be definitely stated; but it appears certain that only a small percentage of the larvae which are present in manure heaps in the autumn live through the winter and give rise to adults in the spring.

## Six-Foot LIZARDS That FURNISH Delicious STEAKS

MOST persons would say unthinkable that we could not eat the flesh of a reptile; yet this is untrue, for who would refuse turtle soup or terrapin? Prof. A. M. Reese of the University of West Virginia, admits that no American would knowingly eat a snake, but he thinks that lizards are among our possibilities, and he especially recommends some of the large ones. Alligators, too, he says make fine eating, and but for silly prejudices would make a voluminous contribution to the supply of flesh food.

"Lizards are important to mankind chiefly as destroyers of insects," writes Prof. Reese in the Scientific Monthly, "but a few of them are used as food in tropical and semi-tropical lands. Of these—the giant iguanas, reaching a length of six feet or more, are the most important. The flesh of these lizards is said to be of a delicious flavor, resembling chicken. In the Bahamas the lizards were formerly one of the most important articles of food; they were hunted with dogs, and kept in captivity until wanted.

"The eggs of the larger lizards are also used as food in some countries.

"Though snakes are esteemed as food in many lands, it is not likely that they will ever be an important article of diet in this country, both because of the almost universal repugnance with which they are regarded and because of the comparative scarcity of large serpents within our borders. Our larger black snakes, though reaching a considerable length, are so slender that the

animal that is to be used for food in order that the flesh be not tainted with the muck. It may be a lack of care in preparation that has given rise to the impression that alligator meat is too strong to be pleasant.

"In many parts of tropical America the various species of crocodiles and caymans are said to be very abundant, so that if a means could be devised to preserve the flesh near the place where the animals are killed, a large supply of meat might be obtained."



The Iguana, Better to Eat Than to Look at.

amount of flesh in their bodies is not great, and there is probably hardly one person in ten thousand who would knowingly eat a snake.

"With the crocodile the matter of size cannot be raised as an objection, since the largest members of this order may reach a length of 30 feet and a weight of many hundreds of pounds. Of course, neither an alligator nor a crocodile is a very attractive-looking animal, but when skinned and dismembered the body looks no more repulsive than any other carcass that may be seen in any butcher's shop, and the flesh is as white and attractive looking as the best beef or pork.

"The eggs of the crocodile, which are usually about as large as those of a goose, are often eaten by the natives of the tropics. Never having eaten an alligator egg, I cannot speak from personal experience of its flavor; but it has always seemed strange to me that more use is not made of the flesh of the alligator. This flesh is often said to have too strong a flavor to be palatable; I have eaten it, and it had no such rank taste, but was decidedly agreeable, being, as might perhaps be expected of so amphibious an animal, somewhat like both fish and flesh, yet not exactly like either. Perhaps greater care should be taken in skinning

## Medley of LEGEND and FACT About CHRISTMAS

AN abundance of berried holly is said to be taken a hard and long winter.

Bethlehem, Christ's birthplace, means "The House of Bread."

An old belief is that a Christmas bride will be fond of novelty and excitement.

The Christmas "rose" is supposed to divine the events of the year if steeped in water on Christmas Eve.

Churches used to be decorated at Christmas with rosemary, in special honor of the Virgin Mary.

"Peace on earth; goodwill among men!" should, correctly translated, be, "Peace on earth among men of goodwill."

Christmas feasting arose from a literal observance of the fact that Christmas Day, ecclesiastically, is a great "fast" day.

In the days when Christianity could enforce its will on people and princes, fighting was forbidden during Christmas.

The "Wise Men" from the East who visited Christ, guided by a star, are stated to have been kings, and their names Melchior, Balthasar, and Caspar.

It is a very old tradition that it is extremely lucky to be born on Christmas Day.

Food experts state that there is more nutrition in the Christmas plum pudding than in three times its weight of prime meat.

The Scriptural record that Christ was "laid in a manger" is corroborated by the fact that mangers to this day are used as cradles in the East.

One of the oldest names for Christmas Day in western christendom was "The Feast of Lights," hundreds of tapers and candles being lighted in the churches.

A picturesque medieval custom was to hang a wooden hoop with candles in the chancel of churches at Christmas, in memory of the Star of Bethlehem.

As late as 1790, Ripon Cathedral choristers brought, at Christmas, baskets of apples, each stuck with a rosemary sprig, to be presented to the congregation.

The Chinese have preserved in their astronomical tables the appearance of a new star which, chronologically, fits in with the appearance of the star to the Wise Men.

## TREES From Which Many MEDICINES Are MADE

ASK any physician, "What is the most useful and most used stimulant to the heart and nervous system?" and he will answer "Strychnia."

Strychnia is an alkaloid found originally in the seed of the strychnos nux-vomica, the poison nut tree, found in India, Burma and Siam and growing also in Cochinchina and Australia.

It is of moderate size and has a fruit the size of a small orange, with a hard shell and a bitter pulp enclosing one to five seeds, less than one inch in diameter and one-fourth inch thick and shaped like disks. It is the bitterest substance known, and when one has heart failure, or nervous exhaustion, or is run down or needs a tonic, some doctor is sure to give him the alkaloid from one of these peculiar Indian trees.

Textbooks on medicine frequently refer to "emergency heart stimulants," meaning by this drugs used, by hypodermic injection to produce prompt stimulation of a weakened heart. Some of the most valuable heart stimulants require a

good deal of time after being given to produce their effects, hence the need of emergency heart stimulants. Strychnine, we know, is a splendid emergency heart stimulant.

A tree which has various species—several hundred, in fact—throughout the world, and is of some medical interest, is the acacia. The acacia senegal is the type of tree which furnishes gum acacia, or gum arabic. While acacia is not possessed of any marked curative properties of itself, it is a constituent of many important preparations in pharmacy, as, for instance, in the making of emulsions, where its heavy mucilaginous qualities make it a valuable vehicle for oily and resinous substances. It is also widely used in the preparation of pills and troches.

Gum catechu, a substance containing tannic acid and used in dyeing, which was at one time extensively used as a remedy in colitis and dysentery, comes from the acacia catechu and acacia sumatra, both native to India.

## The HOLY LAND as a PARADISE for the BIRDS

SWARMS of European birds visit Palestine in winter, and many breed there. The cranes, as in Dante's fine line, still pass in winter "trailing their long-drawn line across the sky," and in the spring the voice of the turtle is heard in the land.

The Holy Land is appropriately a stronghold of the pigeon family; turtle-doves are found, the wood-pigeon comes in myriads in winter, and the common pigeon, the true dove of Scripture, is still abundant, both wild and tame, throughout the country. As a contrast to these, "every raven after his kind," the crow tribe of several species, is in abundance, and birds of prey, from the great griffin vulture, the "eagle" of Scripture, to the sparrow-hawk, are a feature of the country.

In the deep tropical Jordan valley we find a sort of aviary of real tropical birds, which found there a refuge from the hot glacial epoch—the lovely little sunbird, or "ferocious humming-bird," the land-freedom white-breasted kingfisher, and a species of gregarious thrush.

On the coast is found the great Indian fishing

owl, and among the rocks of Marasba the monks have half-tamed the orange-winged blackbird, which is really a stalling of African type, as much out of his latitude as the hyrax. One of the birds peculiar to Palestine, the pretty little pigmy, Muscivora sparrow, which lives in reed-beds, and is one of the rarest birds in the world.

Reptiles abound, and even the Nile crocodile, the levitation of the Bible, lingered long enough to give Tristram the chance of obtaining a specimen nearly 12 feet long, while, in addition to the African cobra, we find the grass-snake among the harmless species, and the wicked little horned viper lies in wait, as in olden times, to bite the heels of the horses.

As for the fish, they are as abundant and varied as ever, and it is interesting to note that the Sea of Galilee is still packed with them, and that the commonest kinds are of an African family, an interesting illustration of the scientific interest which unites with the religious to make Palestine among the most interesting of all countries.