

## BEES WELCOME THE SUN

### Watching the Insects at Work

#### WHY A BEE FANS WITH ITS WINGS

By Our Country Correspondent

The bees have been leaving the hives for short flights on sunny days recently.

To keep bees is not only a very profitable business but a most interesting and enjoyable hobby, and there are few creatures more worth while watching than the common hive bee, now beginning to be seen again on the wing. Yet how few know much about the bee except that it lives in a hive, visits the flowers, has a comb, and makes honey.

Books on the bee are always interesting, but much more fascinating is it to gather our knowledge at first hand by watching the bees for ourselves.

When the bee wakes from its winter sleep the crocus is in blossom, then a week or two later comes the daffodil and other wild flowers, and these are followed in quick succession by an ever-increasing number of flowers until June, when the bees gather a rich harvest from the masses of blossom in the orchards.

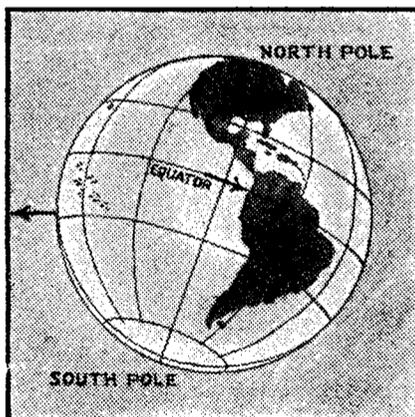
This useful creature carries out two great works. It makes honey from the nectar that it collects, and it fertilises the flowers while gathering the nectar. Entering one flower, the bee becomes more or less covered with the pollen, and then when it enters another flower much of the pollen is rubbed off and so the flower is fertilised.

Wherever there are flowers in any quantity there the bee may be found, not only in the country, but in cities and towns that are furnished with public and private gardens. Several successful hives are kept on the roofs of tall buildings in the heart of the City of London, and in the summer months the Editor's office is visited by an occasional bee.

The bee moves its wings very quickly, making 190 vibrations a second, and the stationary bees outside a hive entrance moving their wings in this way on a warm day are really engaged in fanning and ventilating the hive.

There is no end to the interesting things we may learn about the honey bee, which is one of the two hundred different kinds of British bees, if we only set about studying for ourselves.

## THE EARTH SEEN FROM THE SUN



The earth at 6 p.m. on any day in February as it would be seen through a telescope from the sun. The lines of latitude and longitude are put in to show the tilt. The arrows show the way the earth is travelling and rotating.

## Newspaper Notes and Queries

**What does N.U.T. mean?** National Union of Teachers.

**What is a Daimyo?** This was the title given to territorial lords or barons of feudal Japan.

**Who was Mirza?** An imaginary character whose vision of the bridge of life is described in an allegory by Addison in No. 159 of the Spectator.

**What is a Hartal?** A day of mourning, such as is observed from time to time in India by the Gandhist Party, who wish to have self-government

## MAGIC OF COLOUR

### SCIENTIFIC WONDER IN THE THEATRES

#### A New Kind of Transformation Scene

#### SCENES CHANGED WHILE YOU LOOK

By a Scientific Expert

One of the latest wonders of the stage is the scenery which suddenly alters as if by magic, by means of a changing colour in the lights.

The stage is illuminated by red light, and you see men and women in some quaint costumes walking among the mountains; the red light is changed to blue, and you see instead the interior of a palace, with the same men and women quite differently clothed.

This is how it is done. It is an old and very well-known principle of the science of light which two different Russian men have now applied to the stage, one in America and one in London.

If you were to lay a blue cornflower and a dandelion side by side on the table and look at them through a piece of blue glass, the cornflower would look almost white and the dandelion black. Now look at them through a piece of orange-coloured glass; the cornflower appears black and the dandelion nearly white.

#### Sorting Out the Colours

It is the effect of what are known as complementary colours. Green is complementary to crimson, violet to yellow, blue to orange. Look at a green thing through a crimson glass, and it will appear black; look at a crimson thing through a green glass, and it will appear black, and so on.

Now imagine two different scenes painted on the wings and background of a stage—a castle painted in green, and, side by side with it, a woodland valley painted in crimson. If you flood the stage with green limelight you will see nothing but the "black" woodland scene, while if you change the limelight to crimson the castle will stand out black.

In this way, by very carefully choosing suitable complementary colours and selecting the right-coloured tinting glasses for screening the powerful electric arc lamps which flood the stage with light, these wonderful changes have become possible, and, with a swiftness never dreamed of in old transformation scenes, we see one scene turned into another and the very costumes of the actors transformed.

#### Studying the Science of Light

A simple bit of science, wielded by an artist of imagination, has given us stage effects which appear almost miraculous to the audience, changes of scene which are wonderfully beautiful, as all who have seen them must agree.

A young Russian refugee, Nicholas de Lipsky, has applied these effects to a ballet, while Mr. Samoiloff has done the thing still more elaborately at the London Hippodrome.

An artist at heart, Mr. de Lipsky, when he realised the possibilities of these effects of complementary colours, went to the Polytechnic in Petrograd to study the science of light. Both inventors have a full knowledge of the science of the spectrum, which, applied to stage-lighting, is as simple as it is effective.

#### PARENTS GO TO SCHOOL

The London County Council has arranged for children to do their homework at school where it is difficult for them to do it at home. In some cases fathers have accompanied their boys to school, and watched while the lessons are going on.

## C.N. QUESTION BOX

### Little Puzzles in Natural History

Answered by Our Natural Historian

All questions must be asked on postcards, and not more than one question on each card.

#### Does the Red Spider Make a Web?

No; because it is not really a spider, but one of the numerous family of mites.

#### How Does a Cat Purr?

The purring sound is produced by the vocal organs of the cat, as is the growl of the dog.

#### How Long Does it Take to Hatch a Bee?

From the time that the queen bee lays the egg until the fully-equipped worker bee emerges three weeks elapse.

#### Do Gulls Fly at Night?

The gulls of our coasts fly by day and in the twilight, but when migrating they may also fly by night.

#### How Can a Lizard Be Kept Through the Winter?

Such things as worms and cockroaches should be available, and mealworms can always be bought from a livestock dealer.

#### How Deep Do Tree Roots Go?

Nobody knows the full limit, but it is a fact that in sandy, hot regions a tree sends its roots 20 feet deep to tap underground water supplies.

#### Is 24 Years a Record Age for a Cat?

It is the greatest age known to the writer, who, however, has no authentic information on the subject. Other readers may possess still better figures.

#### Do Yellowhammers often Build in Haystacks?

They generally prefer wilder, rougher situations than those in which haystacks are placed, but, like other birds, they vary in habits according to circumstances.

#### Which is the Biggest Breed of Dogs?

Taking an entire breed and not exceptional animals, the St. Bernard is the biggest. Examples of this breed 35 inches high at the shoulder and weighing nearly 220 pounds have been known.

#### Why Does a Hen Lay Soft-Shell Eggs?

The reason is, as a rule, that the hen has not had sufficient lime to build up a shell. Hens should have ample supplies of crushed mortar, crushed oyster shell, and even powdered egg-shells.

#### Do Canaries Get Influenza?

Yes. Influenza seems capable of infecting most warm-blooded creatures, and as birds are subject to catarrh, bronchitis, inflammation of the lungs, and so forth, we must keep them from rooms in which influenza patients are being nursed.

#### Why Does a Hen Cackle?

Several readers have sent us an alternative explanation to that of our Natural Historian as to why a hen cackles when she lays an egg.

We give two of these explanations, to the same effect but differently expressed. The first is from a Monmouthshire reader, and the second from a Kentish reader. We may add that Mr. W. H. Hudson, in one of his books on the birds of Argentina, gives a somewhat similar explanation.

In the days of long ago, when fowls wandered freely from place to place, the hen would seek a sheltered spot in which to lay her eggs, while the male bird would wander on. As soon as the egg was laid the hen would cackle to let the male bird know. He would then crow, and the hen bird would run toward the place from which the sound came.

A professor lecturing some time ago declared that the hen's cackle was an arranged call to her mate to make known her whereabouts. Before fowls were domesticated the hen would lay her eggs in a bush. The professor imagined the hen saying to her mate before they parted company: "Now, Mr. Rooster, I am going to lay an egg. You keep as far away as you can, or your bright feathers will betray my whereabouts. I'll call out when I am ready, so that you will know where I am."

Her cackle, according to this theory, is the survival of this ancient call.

## THE GIANT CRAB

### STAR THAT IS REALLY A SOLAR SYSTEM

#### Great Suns Revolving Round Each Other

#### THE ASSES AND THE MANGER

By Our Astronomical Correspondent

The absence of the Moon from the evening sky next week will enable us to get a glimpse of some of the marvels hidden in its starry depths.

Cancer, the Crab, is the fourth constellation of the Zodiac, but its stars are faint, none being above fourth magnitude. But our star map, which includes the bright stars Castor and Pollux of Gemini to act as guides, will help us to identify them.

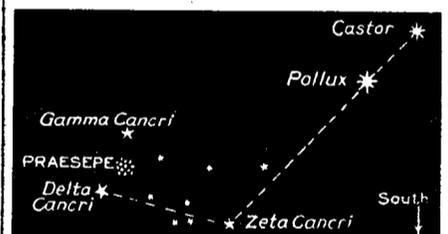
These stars, described in the C.N. a fortnight ago, point directly to one of Cancer's marvels. It appears but a tiny star, to the south-east of Pollux and about two and a half times as far from him as he is from Castor; being in a direct line it cannot be missed. This tiny star, known as Zeta Cancri, is actually a glorious multiple solar system, comprising three great suns and a giant dark world.

#### Enormous Dark World

The suns are known as A, B, and C. Now, A and B are much the nearest together; they revolve around a point somewhere between them, known as the centre of gravity, once in 58 years. The sun C, hundreds of millions of miles from the other two, revolves around them in between 600 and 700 years.

In addition, this sun C has an enormous dark world that revolves round it in 17½ years. Though it cannot be seen, owing to its lack of light, its presence is known, and we have some idea of its size and distance in consequence of its gravitational pull upon the sun C, which it causes to go round in a small orbit.

It must be a very large world to be able to do this, and, as there is evidence that the sun C is much larger than our



How to find the Chief Stars in Cancer

own, this great planet revolving around it must be a world near our Sun in size.

The faintness of this system of Zeta Cancri is due to its great distance, which most recent investigation at Mount Wilson Observatory has shown to be 86 light years, or 5,600,000 times as far away as our Sun.

Some way to the left of Zeta, past some other small stars which are shown on our map, will be found one a little brighter. This is Delta Cancri, and above it, about six times the Moon's width away, is Gamma Cancri.

#### Small Stars That are Large Suns

Both appear as small, fourth-magnitude stars, though actually they are very large suns. Delta Cancri's distance has been found by parallax to be 180 light years, while its spectrum suggests 160 light years; so it gives at least 50 times as much light as our Sun, or it would not be as bright as it appears.

These two stars, Gamma and Delta, are also known as the Asses, and between them, slightly to the right, will be seen a faint, misty patch of light—the famous Praesepe, or the Manger. This fanciful title was given long before its actual nature was known. Now, even small magnifying power will show it as stars, some 30 appearing through field glasses, though upwards of 150 may be counted with much higher power. G. F. M.