



Science News-Letter

The Weekly Summary of Current Science

Reg. U. S. Pat. Off.



A Science Service Publication

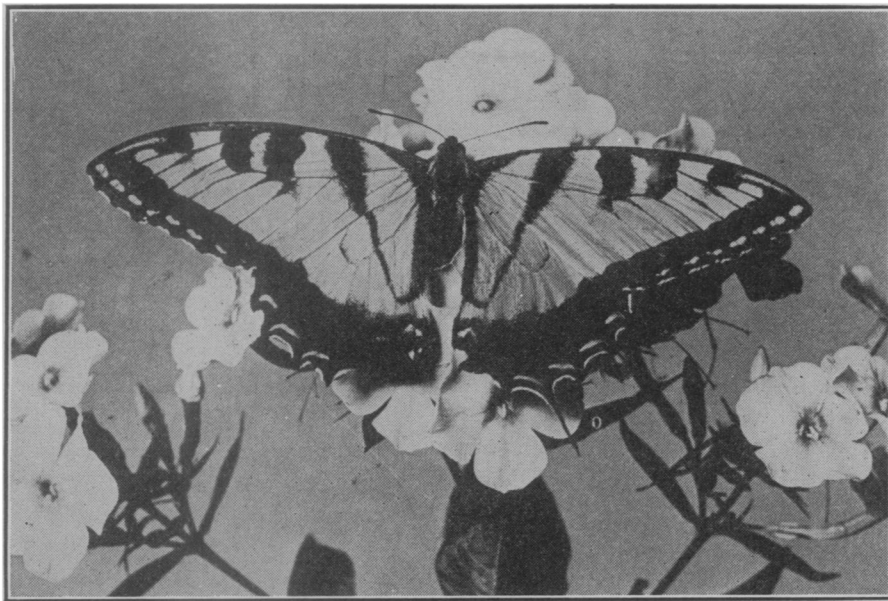
Edited by Watson Davis
Vol. XI No. 320



10¢ a copy \$5 a year
May 28, 1927

ENTOMOLOGY

Insects Enjoy Keenest Sense of Smell



A BUTTERFLY BOUQUET! Like a rose in a bunch of violets, the yellow swallow-tail is a finishing touch to the old fashioned phlox

By MARJORIE MACDILL,

We all know how the proper order of things is reversed in the bird world: how the gentlemen and not the ladies have all the gay costumes. The cardinal and the oriole are concrete examples of flashily dressed husbands with plainly attired wives, but male butterflies go a step further and not only wear the brightest colors, but use scent!

Dr. Austin Clark, of the Smithsonian Institution, has pointed out in considerable detail perfumes exuded by the Beau Brummels of Butterflydom. Patches of scales and hairs on the lower wings and sometimes on the hindmost legs secrete various smells, all the way from the flavor of nabisco wafers to the perfume of jasmine flowers. When for instance, the *Pinacopteryx charina* of South Africa would a-wooing go, he pirouettes and glides, dips and flutters, displaying to best advantage the pat-

terns on his handsome wings, and attempts to register a knock-out by enveloping his coy lady in an atmosphere of mignonette.

Fragrant Butterflies

Some exotic species from Ceylon give off scents ranging from chocolate candy to faint jasmine and vanilla biscuits to meadowsweets. Another group from South Africa smell like the blossoms of sweet peas and clover, while some of the butterfly exquisites of Jamaica exhale odorous perfumes of clove pink and syringa. From Assam we hear of one having a heavy flavor of musk and another of sweet briar.

Smell is an extremely important factor among insects, playing in many cases the part that light does with us, since they all have very poorly developed eyes. Many of them can perform olfactory stunts that leave us poor humans way out of the running.

The big June night moths trace the presence of the female for miles, bees can recognize members of their own hive, and queen ants are able to distinguish their own offspring, just by smelling. In addition, many species have complicated scent producing organs as well.

Among the fragrant butterflies in our own country, a large and handsome sub-tropical variety that occurs occasionally in Florida gives off the flower smell of chrysanthemums. The beautifully mottled brown fritillaries, which many of us remember as children as the butterflies whose wings were covered with "money spots," have an aromatic smell in some species resembling sandalwood. The common black and orange milkweed butterfly has, instead of the usual patches of scent scales, an extensible brush of hairs on the last segment of his body which can be extended to radiate in all directions when he wishes to perform like an atomizer. The bouquet, so to speak, of this Monarch butterfly, has been described as resembling the faint smell of red clover blossoms. A large yellow butterfly of the South uses different scents in different regions: in the southern states, where it is very common, it smells like a violet, but when collected in Brazil, has a mild flavor of musk. The beautiful *Hypolimnas missipus*, introduced in Florida from Africa, has a faint aroma like coffee. Another of the scented butterflies is the common little sulphur-colored *Colias philodice*, which smells like sweet grass or new mown hay. It is hard to imagine it, but one of the relatives of the cabbage butterflies, so well known to everyone, has a perfume like lemon verbena. Whether there is any connection between these insect gay Lotharios and the nectar of the flowers on which they feed apparently has not been established.

(Just turn the page)

INDEX TO THIS ISSUE

Allen, Frederick M.	338	Earthworm, The	347	Lake, G. C.	337	Rhinoceros, New	347
Anemia, Beef Liver for	337	Eclipse Observations	341	Lodge, Oliver	345	Richards, Polk	339
Anniversaries of Science	347	Emotions, Health and	338	Life, Stream of	345	Rosenow, R. C.	338
Automobiles and Lung Cancer	338	Fisher, Willard J.	341	Macht, David I.	338	Roses, Brown Canker Disease of	347
Bacteriophage	337	Flower, Our National	335	Malta Fever	337	Science, Pioneers of	345
Beef Liver for Anemia	337	Franklin, Benjamin	347	McIndoo, N. E.	334	Sleeping Sickness	338
Bragg, William	345	Freeman, Walter F.	338	McLester, James S.	338	Snake Fear Not Inborn	341
Brewster, E. T.	345	Gerty, F. J.	338	Minot, George R.	337	Star, Size of	343
Caldwell, George T.	337	Hall, George W.	338	Mole Philosophy	345	Summers, Montague	345
Caldwell, Janet A.	337	Huxley, J. S.	345	Murphy, William P.	337	Thayer, William Snyder	338
Cancer, Lead Compound for	338	Imhotep, Tomb of	343	Myrtilin for Diabetes	338	Trachoma Germ Found	339
Cohn, E. J.	337	Insect Sense of Smell	333	Nature Ramblings	343	Trout, Food for	341
Clark, Austin	333	Jackson, Chevalier	338	Nephritis Produced	338	Ullman, Henry J.	338
Cosmetics, Medical Attack on	337	Jenkins, Anna E.	347	Noguchi, Hideyo	335	Ultraviolet Light for Anemia	338
Creation	345	Keeble, Frederick	345	Norlin, George	345	Vageler, P.	347
Creative Knowledge	345	Keyser, Cassius J.	345	Paresis, Malaria Cures	338	Watkins, W. Warner	337
d'Herrelle	337	Kunde, M. M.	338	Park, William N.	337	Wherry, Edgar T.	335
Diabetes, New Remedy for	338			Pasteur	347	Wiant, J. Stewart	345
Dragon-Flies	343			Piesse, Septimus	339	Wiley, Mrs. G. A.	341
				Pines Saved	345	Witchcraft, Geography of	345
				Plants, Life of	345	X-Rays Produce Nephritis	338
				Pneumonia, Serum for	337		
				Proctor, F. I.	339		

Insect Sense of Smell

(Continued from page 333)

In connection with the fact that scientists tell us that our own sense of smell is fast degenerating and disappearing, it is interesting to note that Dr. Clark makes an acknowledgment to his two young sons for their assistance in detecting the various odors of his specimens. He says that the youngsters distinguish ever so many different scents that he himself finds imperceptible. So do our olfactory cells become blunted as we grow older.

Occasionally, individuals, by nature or cultivation, or both, develop a very keen sense of smell. Dr. N. E. McIndoo, of the United States Bureau of Entomology, maintains that he has been able to train his own nose sufficiently to recognize, after working with them several months, the three classes of bees, queens, workers, and drones, merely by smelling them.

He cites various experiments on the social insects to show what an astonishingly important part smell plays in their complex organization. It has been found that all the members of a particular hive of bees have their own hive odor that acts as a sort of sign by which they all know each other at home or abroad. Just imagine the hard fate of an interloper with the wrong smell, detected in an alien hive! This peculiar hive odor also acts as a password for the worker bees when they approach the guards stationed at the entrance of the hive on their return from the field loaded with nectar and pollen.

How Smells Are Smelled

The popular belief that insects smell with their antennae or "feelers" has been completely disproved. By many experiments it has been ascertained that the insect means of smelling is simply a tiny pore in its "skin"

(Continued on page 339)

News-Letter Features

Born over four years ago of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

Into the pages of the NEWS-LETTER are fed the cream of *Science Service's* output directed at the newspapers of the world. To this is added material especially prepared.

Turn the pages and note:

It is a *separable magazine*. You can clip or tear out any article without losing or damaging another article on the other side.

Each article is automatically *indexed* by the key word printed above its heading. Articles can thus be filed easily into any system of classification.

Each article is automatically *dated* by its last line.

The current *news* of science, reported for *Science Service* by its own staff and correspondents throughout the world is presented and commented upon in each issue.

Books are *reviewed in brief* as they are received from the publishers.

The classics of science and striking passages from current books, addresses and periodicals are carefully selected and published.

Important *anniversaries* of science are appropriately noted week by week in a special department.

Regular articles tell of the happenings in the *skies* and in the great *outdoors*.

Photographs aid in the telling of the week's science.

Great care is taken to keep its editorial content not only *interesting* but *accurate* as to fact and implication.

The Science News-Letter is *copyrighted* and is sold with the understanding that it is for *personal, school, club or library use only*. Publication of any portion is strictly prohibited.



SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeograph form March 13, 1922. Title registered as trade-mark, U. S. Patent Office.

Subscription rate—\$5.00 a year postpaid. 10 cents a copy. Ten or more copies to same address, 6 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

Copyright, 1927, by Science Service, Inc. Republication of any portion of the SCIENCE NEWS-LETTER is strictly prohibited since it is distributed for personal, school, club or library use only. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service, details and samples of which will be gladly sent on request.

Staff of Science Service—Director, Edwin E. Slosson; Managing Editor, Watson Davis; Staff Writers, Frank Thone, James Stokley, Emily C. Davis, Marjorie MacDill; Sales and Advertising Manager, Hallie Jenkins.

Board of Trustees of Science Service—Representing the American Association for the Advancement of Science, J. McKeen Cattell, *Treasurer*, Editor, Science, Garrison, N. Y.; D. T. MacDougal, Director, Desert Laboratory, Tucson, Ariz.; M. I. Pupin, Professor of Electromechanics, Columbia University, New York City. Representing the National Academy of Sciences, John C. Merriam, President, Carnegie Institution of Washington; R. A. Millikan, Director, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif.; Dr. David White, Chairman of the Division of Geology and Geography, National Research Council; Representing National Research Council, Vernon Kellogg, *Vice-President and Chairman of Executive Committee*, Permanent Secretary, National Research Council, Washington, D. C.; C. G. Abbot, Director, Astro-Physical Observatory, Smithsonian Institution, Washington, D. C.; Victor C. Vaughan, Professor Emeritus of Hygiene, University of Michigan. Representing Journalistic Profession, John H. Finley, Associate Editor, New York Times; Mark Sullivan, Writer, Washington, D. C.; Marlen E. Pew, Editor of Editor and Publisher, New York City; Representing E. W. Scripps Estate, W. E. Ritter, *President*, University of California; Robert P. Scripps, Scripps-Howard Newspapers, West Chester, Ohio; Thomas L. Sidlo, Cleveland, Ohio.

Trachoma Germ Found

Once more modern science scores against disease. The isolation of a small bacillus, believed to be responsible for trachoma, the disease that has blinded thousands of Indians, has just been announced by Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research, New York.

Five Indians with trachoma from the Albuquerque Indian School, whose eyes had been operated on, furnished the cultures with which the Japanese scientist was able to produce the disease in monkeys. From these he recovered the germ and inoculated other chimpanzees that in turn developed the characteristic inflammation of the eye. This is considered rather conclusive proof that the guilty organism has been found. A preventive vaccine and curative serum have not developed but this is the next logical step in the investigation of the disease.

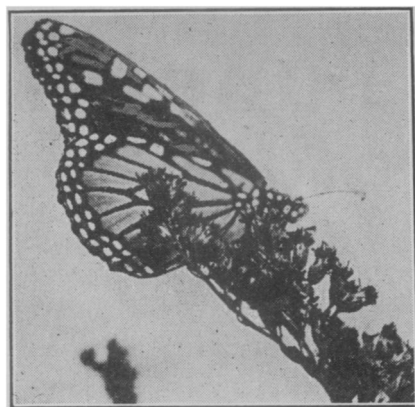
Dr. Noguchi became interested in the trachoma problem through the instigation of Dr. F. I. Proctor, of Boston, and began his research with the cooperation of Dr. Polk Richards, of the U. S. Office of Indian Affairs, less than a year ago.

Trachoma is a disease of unhygienic living, widely prevalent in Egypt, Asia and among the Indians of this country. It is one of the few diseases that absolutely prohibit an immigrant from entering the United States. Of 38,111 Indians in the Southwest examined for trachoma in the fiscal year ending June 30, 1925, 7236 were found to be suffering from it and among these it was found necessary to operate on 4,285. About 19 per cent. of the Indians of the Southwest, it has been estimated, are afflicted with the disease.

This first step in the conquest of trachoma was hailed as a major medical achievement by doctors and scientists at the recent meeting of the American Medical Association. Dr. Noguchi already has several disease germs to his credit, having isolated and cultivated the causative organism of yellow fever and made important contributions to the subduing of syphilis, smallpox, rabies and oroya fever.

Science News-Letter, May 28, 1927

Doctors at the University of California are studying otosclerosis, a little understood disease of the ear causing deafness, to see whether diet affects the ear bones.



THE FAMILIAR MONARCH BUTTERFLY, known to everybody raised in the country. He has an extensible brush of hairs on the last segment of his body that act like an atomizer instead of the usual patches of scent scales on the hind wings.

Insect Sense of Smell

(Continued from page 334)

through which a nerve passes. These olfactory pores are located all over the body, but chiefly on the legs and mouth parts. With so many hundreds of delicate sense organs no wonder these small creatures can put us to shame.

The human device for smelling is more localized and complicated, but nowhere as effective. It consists of a small saddle-shaped membrane lining the roof and sides of each nasal cavity. It is covered with a single layer of cells and tiny glands. The real terminal olfactory organs are long narrow cells packed in between the others, which send up to the surface delicate rod-like filaments and connect at their lower ends with the main olfactory nerve running to the brain. The little glands are simple moisture-producing affairs which serve to keep the whole tract moist, for if the olfactory membrane is dry its smelling capacity is much impaired. We can't smell when we have a cold because this surface is covered with a layer of mucous which prevents the odors from reaching the olfactory cells. Their ability to sustain sensation is very brief. The first moment of contact with a new odor is the most acute and the sense is quickly blunted or, as the psychologists say, fatigue sets in. Chemistry students, for instance, never seem to realize the unpleasantness of the characteristic odors of the laboratory that always raise loud protest from the uninitiated.

Due to centuries of living under artificial conditions man has come to depend very little on his nose. As he has used it less it has become more

and more ineffectual, and very little has been done to classify even the odors that he can smell!

The Triangle of Odors

According to one theory, Henning's system of olfactory qualities, odors are arranged in a qualitative continuum similar to the spectrum, except that a triangular prism is the basis of the arrangement. That is to say, in plain English, that every smell can be arranged with respect to its similarity to other smells on an imaginary prism at the corners of one end of which we have fragrant, ethereal and putrid, and at the corresponding corners on the other end, spicy, resinous and burned. These six odors may be likened to the six primary colors. Since this is a chemical theory the character of an odor is thought to depend on the structure of the molecule of the stimulus, though it is likewise dependent on the nature of the elements of which it is made up. The whole thing has not been completely worked out, and is not a particularly satisfactory classification, some of the primary or simplex, odors, as Henning calls them, being too nearly alike, as ethereal and spicy.

A Musical Scale of Smells

Dr. Septimus Piesse, a French chemist, has worked out an idea much more appealing to the popular fancy. He advocates a scale of odors corresponding to a musical scale, the heavy odors being the low notes and the sharp pungent ones the high notes. Harmonically speaking, we should only have bouquets that do not discord.

When we want an ideally blended bouquet we should consult the musical scale of smells and select, for example, the "do" combination of sandalwood, geranium, cassia, orange flowers and camphor. Doesn't that intrigue the senses? What a tip for the perfumers! The big companies should all maintain experimental psychologists to work out their problems scientifically. In such case we would never get the olfactory clashes that arise ad nauseam in offices, movies, street cars, etc., when the youth and beauty of the nation takes out its lipstick and compact.

Perfumes of Antiquity

In earlier days it would almost seem as if men took in more sensuous joy through their olfactories than do we of the present age. The ancients were keenly appreciative of the pleasures of the nose. Don't we all remember myrrh, frankincense, and nard as the

(Just turn the page)

Have You A Few Friends

who do not know the
SCIENCE NEWS-LETTER?

As a subscriber to the most unusual scientific magazine of the hour you are, we hope, enthusiastic. We know you appreciate obtaining scientific news months before it can possibly be printed in book form.

The tastes of your friends harmonize with your own—send us the names of several men and women who will be interested in obtaining scientific NEWS.

We shall be glad to send, free to your intimates, a copy of the weekly **SCIENCE NEWS-LETTER**.

(Kindly state whether you wish your name mentioned in the sending of sample copies.)

M _____

M _____

M _____

SCIENCE SERVICE

21st and B Sts.
Washington, D. C.

Insect Sense of Smell

(Continued from page 339)

most precious gifts of the Magi? Down through medieval times spices and heavy perfumes were very highly treasured. Clouds of fragrant incense wreathing up around the arches and the rose window of a great cathedral over the bent forms of the worshippers must have exercised a powerful pull on the senses.

Cleopatra, the serpent of old Nile, is always pictured as nonchalantly reclining amid jars of precious unguents, ointments and essences. And certainly Cleo should have known the value of such sources of charm if anybody did. The use of scents to enhance personal charm has not, however, always been a feminine prerogative. The dandies of the Restoration copiously perfumed their lovelocks and ribbons and rosettes as well as their more intimate gear of fine Holland linen. Down to our Colonial days the technique of handling a lace-bordered square of cambric, well flavored with musk or ambergris, with due regard for the gesture of wafting its aroma delicately before the nostrils, was a social grace necessary to every gentleman who was anybody.

We really should not consider the scented butterfly exquisites so unique after all when we stop to consider these fops of the Georgian era; but they had an appreciation of some of the good things of this life that we might do well not to forget. So here's hoping for a more general stimulation of our poor old olfactories, always consulting first Dr. Piesse's odorous harmonic scale.

Science News-Letter, May 28, 1927

A human hair examined under the microscope is a mark of a person's identity, somewhat as his finger prints are.

Some Indians in Maine buried their chiefs standing, but the warriors were usually placed in a sitting position.

Electric lamps under water have been found a good method of reducing accidents in swimming pools at night.

In 1923, Greece had a population of 5,000,000 people; since then 1,400,000 refugees have poured into the country.

An agricultural explorer has brought from Manchuria a hardy apricot tree which may prove useful in northern states.

Tune In On Our Science Radio Talks!

In cooperation with leading broadcasting stations, Science Service presents a weekly radio talk on
"SCIENCE NEWS OF THE WEEK"

These are given from the following stations:

- KOAC Oregon Agricultural College, Corvallis, Oregon.
- KUOK University of Arkansas, Fayetteville, Ark.
- WABC Atlantic Broadcasting Corp., New York, N. Y.
- WEAO Ohio State University, Columbus, Ohio.
- WBAO James Millikin University, Decatur, Ill.
- WBET Boston Evening Transcript, Boston, Mass.
- WCAD St. Lawrence Univ., Canton, N. Y.
- WDBO Rollins College, Winter Park, Fla.
- WDOD Chattanooga Radio Company, Chattanooga, Tenn.
- WEBW Beloit College, Beloit, Wisc.
- WHAS The Courier-Journal, Louisville, Ky.
- WHAZ Rennselaer Poly. Inst., Troy, N. Y.
- WMAL The Washington Radio Forum, Washington, D. C.
- WMAQ Chicago Daily News, Chicago, Ill.
- WOO John Wanamaker, Philadelphia, Pa.
- WRAV Antioch College, Yellow Springs, Ohio.

Watch the program of the station nearest you to see what time these talks are given. If no station near you gives them, write us, suggesting any station that you think might give them.

SCIENCE SERVICE

21st & B Sts.
Washington, D. C.