

chemicals of large-ring type, the du Pont research has aimed to make this discovery practically available. "Muscone" and "civetone" are the only known examples of such chemicals found in the animal world, the chemists declared.

Lower grade perfumes have long been made synthetically and there are also synthetic imitations of musk. In

fine perfumes the function of musk, although unpleasant in large quantities, is to blend the various odors into a single fragrance as well as to confer permanence on odors otherwise fugitive.

The new chemical research has the possibility of bringing to the boudoir new synthetic odors that nature has not imagined.

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ASTRONOMY

Great Hydrogen Outburst on Sun Preceded Radio Fading

A SUDDEN outburst of hydrogen from the sun preceded the diminution in radio intensity on the earth observed on Oct. 24, R. S. Richardson, of the Carnegie Institution's Mt. Wilson Observatory, reported to the American Astronomical Society.

Mr. Richardson's work followed announcement of such fadeouts by Dr. J. H. Dellinger, chief of the radio section of the National Bureau of Standards. Another such eruption of hydrogen occurred on Aug. 30 when a sudden and mysterious fading of short wave radio transmission was noticed for about fifteen minutes by scientists at the National Bureau of Standards. Fadeouts also occurred on March 20, May 12 and July 6, the interval between them being just about twice the period that the sun takes to rotate.

Dr. Dellinger suggested that they might be associated with some sort of solar eruption, and the Oct. 24 photographs were taken as a result of his request that careful observations be made of the sun at the time of the next expected occurrence. Earlier observations were studied as well.

It was found that an eruption, probably rather small, was recorded in July, but no unusual activity was noticed at the time of the first two dates. However, no observations had been made at the exact time of the fading.

Such a hydrogen eruption is called a flocculus, and Mr. Richardson reported that "when the sun is observed for half an hour each day at this phase of the solar cycle we may expect to photograph about ten such flocculi in one year."

Beginning Oct. 21, photographs of the sun were made by the spectroheliograph, which records the light from a single element, hydrogen in this case, at

intervals not greater than ten minutes wherever possible. Between that date and Oct. 25 a total of 323 exposures were made, an average of one every eight minutes during observing hours. A small flocculus was photographed on the first two days without any sign of great activity, until the time of one exposure made on the 24th.

"On the next image, taken twenty-one minutes later," said Mr. Richardson, "the flocculus had increased in intensity until it was the most conspicuous object on the disk seen in a hydrogen spectroheliogram. It was stronger than the one photographed on July 6, but never reached the intensity of the one on Aug. 30."

Until this date there had been a general improvement in radio transmission in the short wave bands and it had reached the highest value ever recorded at the Bureau of Standards on Oct. 24. There was no sudden fadeout such as those noticed before, but the upper limit of frequency dropped to half of the value on the preceding day, and on the following days returned to the previous high value.

Earlier observations were examined, as well as records of magnetic storms. One very brilliant cloud of hydrogen appeared on June 5, 1925, while the number of sunspots was low, and a magnetic storm followed four days later. An equally brilliant eruption appeared on Dec. 28 and 29, 1928, when the spots were numerous.

"The magnetic character of the day was calm during the eruption and was very calm and at most only slightly disturbed for a week afterwards," it was stated. "Other examples like these might be cited to show the difficulties encountered in attempting to correlate solar and terrestrial phenomena.

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MEDICINE

Breathing Exercises Help Sufferers From Asthma

ASTHMA sufferers at King's College Hospital are being helped by a relatively simple but promising remedy, Dr. Marjorie Gillespie of Glasgow has reported. (*Lancet*, Sept. 28, 1935)

The remedy consists of individually prescribed breathing exercises. Of 75 patients treated by this method, only eleven failed to be helped, Dr. Gillespie reports. These eleven seemed incapable of mastering control of the diaphragm for proper breathing. Older patients were as likely to benefit as younger ones but the length of time the patient had had asthma had much more to do with the results of the treatment. Those who had suffered longer were less likely to be helped.

The theory of these exercises upon which the treatment is based is that asthmatic patients are found to have during attacks congested and narrowed bronchioles through which air could be drawn but could not escape. The aim is to empty the lungs as far as possible, to reeducate the automatic diaphragmatic movements and to diminish chest breathing. When done properly, the exercises tend to relax contracting muscles and make ribs and chest walls more mobile.

Various types of exercises are used to suit individual patients, since some were found who could do one kind but could not be taught to do a different kind. The patients had with few exceptions been taking various drugs, but as their confidence in the treatment warranted it the drugs were gradually withdrawn, which was usually between four and eight weeks. Besides attending the special classes in breathing twice a week, they were urged to use the exercises whenever an attack seemed imminent.

The doctors at the clinic think the good results may be partly psychological. The nervous tension is reduced whenever a patient feels that he can relieve an impending attack by his own efforts.

Women recovered more quickly than men. About one-half of the patients claimed that they could check almost all but the most severe attacks if they began their exercises at the first suggestion of troublesome breathing.

In Germany Dr. D. K. Schütz has also been treating patients by a similar method. He has added to the breathing exercises a few physical exercises. He reports that two-thirds of his patients have been relieved of their symptoms.

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