SPREADING AND REVERSAL OF SPECTRAL LINES.

WANNER, Wied. Ann. 68, p. 143, 1899, describes the change of the sodium spectrum when the light from the flame is repeatedly reflected back and forth through the flame. He finds a spreading of the D lines, accompanied by a sharply defined reversal, and a weak continuous spectrum in their neighborhood.

W. Voigt, Wied. Ann. 68, p. 604, shows that this observation of Wanner is in qualitative accord with his theory of the emission of a layer of gas, which theory shows that in the radiation from a thin layer the wave-length which would be most absorbed would be of maximum intensity; while the radiation from a very thick layer would give a continuous spectrum with a dark absorption line; that is, a reversal of the original spectral line.

LECTURE EXPERIMENTS WITH THE WEHNELT INTERRUPTER.

E. LECHER, Wied. Ann. 68, p. 623, 1899, describes some very beautiful experiments showing the action of a magnetic field upon the electric discharge from an induction coil using a Wehnelt interrupter. The experiments illustrate the well-known sidewise movement of the spark (arc) across the magnetic field. The high frequency obtained with the Wehnelt interrupter, together with the fact that the discharge approaches the character of an arc, makes the effect of the magnetic field most striking in appearance; and the author describes several arrangements of the apparatus well suited to lecture-room demonstration.

VELOCITY OF ELECTRIC WAVES IN AIR.

MR. G. V. MACLEAN describes, in *Phil. Mag.*, July, 1899, a very successful application of the coherer in the location of the modes and antinodes of a stationary electric wave train reflected from a metal sheet. Mr. MacLean's object was to determine the velocity of the waves from the observed wave-length and the periodic time of the oscillator.

The coherers used consisted essentially of two platinum globules which were adjusted to delicate contact, and a milliamperemeter in circuit with the coherer and a battery gave the indications. The coherer gave no response at all at the nodes, and the readings over more than a whole wave of the stationary train were remarkably regular considering the erratic space action of the ordinary form of the coherer.

W. S. F.

NOTES ON INORGANIC CHEMISTRY.

THE great problem in obtaining argon from the atmosphere is to remove the nitrogen. In the earlier experiments, as in that of Cavendish, the electric discharge was passed through air confined over potash, whereby the nitrogen is gradually oxidized and absorbed. Later it was found that nitrogen was absorbed directly by various metals with different degrees of rapidity. Magnesium was first used by Ramsay, and somewhat later Ouvrard used lithium, while more recently Maquenne's mixture of magnesium with lime has been found practically most efficient. A very thorough study of the different absorbents has been made by Hempel, in the *Zeitschrift für anorganische Chemie*. He finds that lithium is five times as efficient as magnesium, the magnesium-lime mixture eight times, while if to a mixture of one part magnesium dust with five parts lime a quarter part of sodium is added, this absorbent is no less than twenty times as rapid in its action as magnesium alone.

THE early experiments of Professor Berthelot on the absorption of argon by organic compounds under the prolonged action of the silent discharge have now been very largely extended, and are described in the *Comptes Rendus*. With quite a large number of compounds of the fatty series, such as ethylene, aldehyde, acetone, propionitril, the result was negative. On the other hand, with benzene, turpentine, phenol, benzaldehyde, benzonitril and quite a number of other compounds of the benzene series from one to six per cent. of argon was absorbed, and at the same time there was a fluorescence of greenish color and with a characteristic spectrum.

IN the same number of the *Comptes Rendus* there is an interesting observation by M. Chesnan to the effect that chromous salts, like ferrous, have the property of absorbing nitric oxid. The compound formed, however, is

much more stable than the ferrous, for it does not give off the gas on heating nor in a vacuum.

The experiments of Weinland and Lauenstein have shown that in the alkali iodates an atom of oxygen can be replaced by two atoms of fluorin. Further researches on these fluorin salts have been carried out by Weinland and Alfa and are described in the *Zeitschrift für anorganische Chemie*. Quite a series of fluophosphates, fluo-sulfates, fluo-selenates, fluotellurates and fluo-dithionates have been formed. In all of these the fluorin does not directly replace the oxygen, but the P=O, S=O, etc., groups appear to be converted into $P<^{OH}_{F}$, $S<^{OH}_{F}$, etc. Most of these compounds crystallize well and their crystallographic characteristics are described by H. Zirngiebl.

IN the *Zeitschrift für angewandte Chemie* the subject of a substitute for gasoline and benzine for many technical purposes is discussed by A. Ganswindt. The great danger from fire and explosion, ignition being caused even by the electric spark, is well known. The use of various chlorinated hydrocarbons is suggested, as carbon tetra-chlorid, which is, indeed, already used to some extent in this country. It is also possible that some of the chlorination products of acetylene may prove of real value along this line.

J. L. H.

RETURN OF THE WELLMANN EXPEDITION.

REUTER'S Agency announces that the steamship *Capella* arrived at Tromsö on August 18th from Franz Josef Land. The vessel brought with her Mr. Wellmann's expedition, with which she fell in at Cape Tegetheff. It is reported that the expedition reached the 82d parallel of north latitude. The party bring with them the following remarkable story: In the autumn of 1898 an outpost called Fort McKinley was established in latitude 81, and a house was built of rocks and roofed over with walrus hides. During the voyage of the *Fram* two Norwegians named Paul Bjoervig and Bernt Bentzen remained there. The main party wintered in a canvas-covered hut at Cape Tegethoff, in latitude 80. In the middle of February, before the rise of the sun and in the depth of winter, Mr. Wellmann, with three Norwegians and 45 dogs, started north, this being the earliest sledge journey on record in such a high altitude. On reaching Fort McKinley they found the two men who had been with Nansen. Bentzen had died, and Bjoervig, in accordance with a promise he had made, kept his companion's body in the house, sleeping beside it through two months of Arctic darkness.

Pushing northward through rough ice, with severe storms and, for ten days, a continuous temperature of 40 to 50 degrees below zero, the party discovered men in lands north of the Freeden Islands, where Nansen landed in 1895. In the middle of March, when all hands were confident of reaching latitude 87 or 88, if not the pole itself, Mr. Wellmann, while leading the party, fell into a snow-covered crevasse, seriously injuring his leg, and the party, was therefore, compelled to retreat. Two days later they were roused at midnight by an earthquake, and in a few moments many dogs were crushed and sledges destroyed. The men narrowly escaped with their lives, saving their precious sleeping bags and some dogs and provisions. Mr. Wellmann's condition became alarming on account of inflammation, but his companions dragged him on a sledge, making forced marches for nearly 200 miles to the headquarters of the expedition, where they arrived early in April. Mr. Wellmann was still unable to walk, and he is probably permanently crippled. In subsequent sledge journeys the expedition explored unknown regions, and important scientific work was done by Dr. Hofna, Lieutenant Baldwin, and Mr. Hanlan. The expedition killed 103 walruses and eight bears. No trace of the Andrée expedition was found. The *Capella* picked up the expedition on July 27th and sailed homeward on August 10th. On the 6th inst. the *Stella Polare*, with the party of explorers headed by the Duke of the Abruzzi on board, was sighted in Broejenz Sound, 80° 20′ north latitude. All were well on board.

SCIENTIFIC NOTES AND NEWS.

WE are able to publish as a frontispiece to this issue a portrait of Dr. Edward Orton, President of the American Association for the Advancement of Science, through the courtesy of