

CYPHERS INCUBATORS.

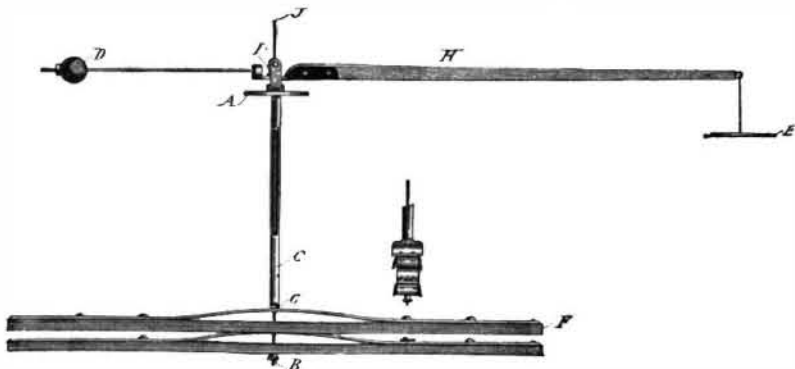
In all methods of incubation, the prime requisites are effective means for the regulation of heat and for the supply of fresh air. Heat by its action arouses life in an egg; pure air furnishes the oxygen by means of which necessary chemical changes are produced.

In natural incubation the bird, under normal condi-



A CYPHERS INCUBATOR.

tions, maintains in the eggs the constant temperature required in hatching out the chicks. When this temperature loses its uniformity and the eggs are subjected to extremes of heat and cold, the embryo dies. The conditions under which a bird can successfully hatch are therefore limited. In endeavoring to effect by artificial means what a bird accomplishes by natural means, it is of the utmost importance to provide some mechanical device by means of which a reasonably uniform temperature can be automatically maintained. It is furthermore essential that the heat be uniformly distributed and that proper means of ventilation be



THE REGULATOR.

provided. These exacting conditions seem to be most satisfactorily fulfilled in an incubator made by the Cyphers Incubator Company, of Wayland, N. Y.

The first requirement—the provision of an automatic heat-regulating device—is met in the Cyphers incubator by a positively acting, sensitive thermostat, composed of aluminium and steel. Referring to our illustrations, it will be observed that the thermostat, *F*, is connected by means of a rod, *J*, inclosed within a brass tube, *C*, and passing through a cast head, *A*, with a lever, *H*, mounted on knife-edge bearings. A counterpoise, *D*, is adjustably secured to one end of the

and assumes the bow-like form indicated in the illustration. The expansive force of the metal being transmitted to the connecting rod, *J*, causes the lever, *H*, to operate the disk, *E*, so that the heat may be regulated to conform with the required temperature.

In order that the second condition—the uniform distribution of the heat—may be fulfilled, the manufacturers of the Cyphers incubator have devised a system according to which the warm air coming from the heater is first passed over and through a diaphragm into the hatching chamber, thence to be conveyed downwardly around the eggs and through a double porous diaphragm placed above a shallow chamber in the bottom of the incubator. After passing through the second diaphragm, the warm air, now impregnated with poisonous gases thrown off by the eggs, is conducted out of the incubator. The fresh, warm air, it will be observed, is evenly distributed over the whole area of the hatching chamber before entering. The downward movement is slow and positive, thus permitting the use of a larger volume of air than is employed in most incubators.

By means of the system of diffusive ventilation employed in the Cyphers incubators, the use of supplied moisture is rendered unnecessary. The Cyphers incubators provide their own moisture.

The old systems of incubation requiring supplied moisture cause many chicks to die in the shell—a feature that has proved to be very annoying to old and new breeders alike. The system of diffusive ventilation employed in the Cyphers incubator, however, and the absence of the necessity of using supplied moisture, overcomes this perplexing problem. Chicks and ducklings break their shells properly and come out strong and active, making hardy birds that will live and thrive.

Below the egg trays is located the nursery, in which the chicks or ducklings are deposited after having been hatched out. By disposing the hatched chicks in this manner, those not yet clear of the shells are permitted to continue their development undisturbed.

The Coast Signal Service.

The interesting report on the operation of the United States Coast Signal Service during the war, by Capt. John R. Bartlett, U. S. N., has been recently published. The plan of the work was laid out by a board appointed last year, but the exigencies of the service caused rapid changes. Eighteen stations were established on the coast from Massachusetts to Louisiana. These stations were manned by a total of 310 men. Each station was furnished with a 90-foot mast and 40-foot yard. Flags and other signal devices, telephones, torches, and lights were furnished. The value of the service was greatly increased by the co-

operation of the crews in the life saving stations and the lighthouse keepers. The Weather Bureau observers also assisted; 1,443 life saving crews, 850 lighthouse keepers, and 33 Weather Bureau observers kept watch over the coast. Ordinarily, life saving crews are laid off usually in June and July, but a bill was passed to keep the majority of the stations open the whole year. All of the stations were connected with the telegraph system, and immediate right of way was arranged for in case of an emergency. Repeated tests were made which showed that the whole system could be put in communication with the Washington office in half an hour. Extensive preparations were made for notifying adjacent auxiliary naval forces, forts, and batteries directly from the stations. Lamp signals were particularly interesting, because of the use of acetylene gas. Pigeons were not used, but a trained service of this kind is recommended.

The results of all the work are summed up by Capt. Bartlett as follows: From the practical operation of the Coast Signal Service for three months he is confident that it would have served the use for which it was established—to observe and report the approach of the enemy's vessels. It frequently served an excellent purpose in keeping the Navy Department advised of the movements of the United States vessels, and was particularly serviceable in several stations, such as reporting to and putting the department in direct communication with the "Oregon" after her long run from the Pacific,

while the whole country was anxious for news of her, also when the "San Francisco" needed assistance and quick correspondence with Washington. It was also useful in keeping the various navy yards advised of the approach of the vessels, thus giving them

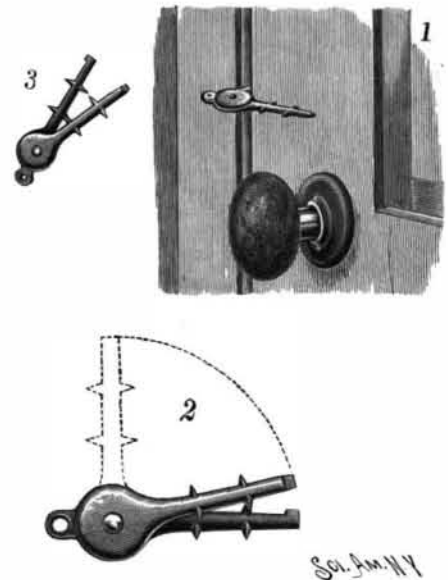
advance notice of their arrival, and in many cases this information was given so as to enable them to make extensive preparation for the reception of these vessels. Some of the stations were also able to render valuable assistance to the quartermaster's department of the army in keeping them in close touch with the hospital and supply ships and the transports, and by sending messages to them when they were in the offing. Capt. Bartlett is of the opinion that the Coast Signal Service should be an integral part of a naval coast defense system, as it is most intimately connected with it and should be in closer relation than that of an allied branch, also that the personnel of this service can be entirely furnished by the men who have been trained in the State naval militias. They have proved in their recent experiment to be well disciplined, trustworthy, competent, and zealous. Another valuable result of the experiments has been to demonstrate the great usefulness of the life-saving stations for the purpose of observation and international code signaling, and to show that the lighthouses are almost instantly convertible in an emergency into quarters and signal towers. The cost of the work done from April 22 to September 30, inclusive, is \$73,198.

A KEY WHICH WILL LOCK ANY DOOR.

In the accompanying illustration we present a novel key made by the White Manufacturing Company, of Ithaca, N. Y., which key is so constructed that with its aid any door, window, or transom can be securely locked.

As shown in Fig. 3, the key comprises two levers pivoted on each other. Formed at right angles to the shanks of the levers are tapered lugs lying in the plane of the levers.

In order to lock any door by means of this key, it is necessary merely to arrange the levers perpendicularly to each other in the manner shown by dotted lines in Fig. 2. The shank of one lever having been inserted between the door and the jamb with the lugs extending in a vertical direction, the other lever is given a quar-



A KEY WHICH WILL LOCK ANY DOOR.

ter turn in order to force the lugs horizontally into the jamb and into the door. Thus applied, the key will lock any door as effectually as a strong lock.

A key of this pattern will be found of use to those who are frequently compelled to occupy sleeping rooms the doors, transoms, and windows of which cannot be securely locked.

The key is but 2 1/4 inches long, weighs less than one ounce, and can be carried on the key ring or in the pocket-book.

A Pyro Developer and a Toning Solution.

Mr. T. Hopper sends the following formulas:

Water.....	12 ounces by weight.
Sodium carbonate.....	1 " " "
Sodium sulphite.....	2 " " "

Keep the above solution in a well stoppered bottle. To develop take:

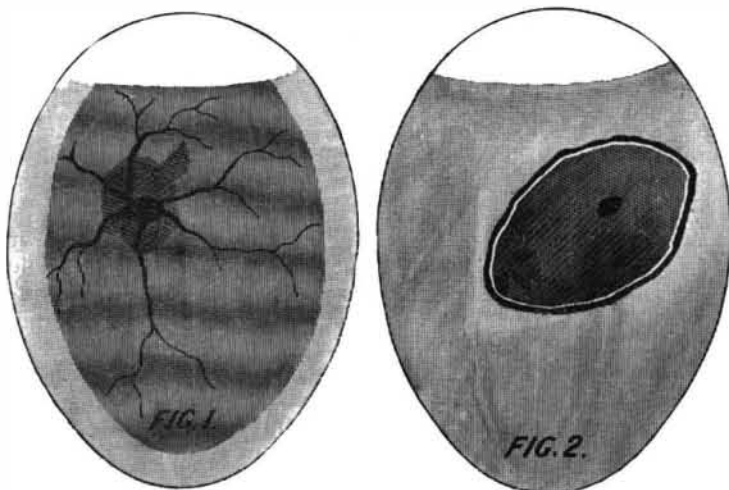
Water.....	3 to 4 oz.
The above solution.....	1 "
Dry pyrogallie acid.....	8 grs.

It is very convenient to have the pyrogallie acid done up in powders of 8 grs. each. These must be kept in a wide mouthed bottle which is well stoppered. The following is a cheap toning solution which can be used for toning proofs, etc.:

Soda hyposulphite.....	1 part.
Vinegar.....	1 "
Water.....	4 "

When toned to the desired shade, drop into salt water for five minutes and wash thoroughly.

An international exhibition of postal cards was held in Zurich, Switzerland, during September, 1898. More than two thousand different cards with views of Switzerland were exhibited.—Uhländ's Wochenschrift.



A FERTILE EGG AFTER THE SIXTH DAY.

A DEAD GERM.

lever, and a disk, *E*, is attached to the other end of the lever and hung over the heater. As the temperature within the incubator rises above the degree desired, the aluminium, expanding more than the steel, is thrown toward the center by the use of sliding rivets,