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NEW YORK. SATURDAY, NOVEMBER 30, 1895.

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- PAGE I. BACTERIELOGY.-Recent Advances in Bacteriology, with Special Reference to Food.-By M. V. BALL, M.D.-An interest-ing lecture delivered before the Franklin Institute.....
- CHEMISTRY.—The Synthesis of Proteids
- 16612 1IL. 1660
- 16608 tions..... mba Walay

THE BOTTLE THAT CANNOT BE REFILLED.

tion, such as that above mentioned, namely, a bottle tidal observations fully agree. which, after the contents have been extracted, cannot be again refilled. The article we alluded to stated that distillers suffer great losses from the refilling of their bottles by unauthorized persons, who imitate E., in a paper recently read at the annual convention both bottles and trade marks of standard makers with out detection.

of reward to any reliable source and think it doubtful the taking of readings at any considerable depth has if it was ever positively made. But there is no doubt been rendered difficult and tedious on account of the the invention is needed and would command a hand- unsuitability of the ordinary mercurial thermometer some figure, if all the conditions could be realized and for such work. The invention of the thermaphone a non-refillable bottle could be produced adapted to by Messrs. H. E. Warren and O. C. Whipple enables the general wants of the trade. As an evidence of this the observer to take in a few minutes a more accuwe give an extract of a letter recently received by us rate reading than was formerly possible after an from the proprietors of one of the largest whisk y es-, hour's careful work. tablishments in the country. This letter reached us | The thermaphone is based upon the principle of the during the progress of our search to find the offerers Wheatstone bridge, and it enables the temperature of the alleged great reward :

have been in the market for years for a bottle that sired depth. The two arms which complete the circould not absolutely be refilled; but we have come to cuit at the surface are connected with a telephone the conclusion that we cannot obtain such a bottle; which takes the place of the customary galvanometer. for if a bottle was made so perfect that you could The theory of this very sensitive and accurate instrunot refill same through the neck of the bottle, the bot- ment is based upon the fact that different metals have tle could be drilled or cut, and then refilled and closed different electrical temperature coefficients. Λ circu so as to avoid detection."

LATITUDE NOT FIXED, BUT VARIABLE.

latitude.

childhood's "geography lesson" that abides ever with the radial contact arm is moved back and forth over us, it is this: that "the earth turns upon its axis." And now we are told that it does not, and that, as a consequence, it is literally true that the parallels of latitude are perpetually shifting—not much, it is true; but sufficiently to make it comically possible, as was at which the sound ceases altogether. The reading at once suggested, that certain dwellers in the proximity this point indicates the temperature of the distant coil. of the Canadian border line never know for more than six months together in which country they be depended upon to much less than 0.1° F., and a live.

the axis of the earth's figure, is an imaginary line, point observed." passing through the center of the earth, and terminating at its two flattest points, known as the North and South Poles. Up to the year 1888, it was sup- in the spring, the temperature of the water under the posed that the earth rotated about this axis. If this had been true, the latitude of any given spot, as de- to 72° F. in the middle of June. From that time to the termined by observation, should have been invaria- middle of August it varies between 73° and 78°, and ble. As a matter of fact, it had been noticed, even as far back as the last century, that there was a slight, but perceptible, variation. The latitude of a given spot, as shown by two observations taken at different times, would be found to vary.

dler gathered together all the observations that had observations were taken in connection with the Boston from time to time been made, and, after a careful water works at Lake Cochituate. analysis, was able to prove that these variations are | The point of maximum density of fresh water is

circles about this vertical line. The motion of any at exactly the same temperature throughout the long

with the period of revolution as mentioned above. We published not long ago a quotation from one of Newcomb had pointed out that if the theory of the our city papers, in which the statement was made revolution of the axis of rotation were true, low tide that a large reward had been offered by wealthy dis- at any spot should occur when the pole of rotation lay tillers and brewers for the production of a new inven- nearest that spot-a suggestion with which the above

THE TEMPERATURE OF LAKES.

According to Desmond Fitz Gerald, M. Am. Soc. C. of the society, the observation of the temperature of the water in lakes and reservoirs is attended with We have been unable to trace up the alleged offer more difficulty than is generally supposed. Hitherto

to be read at the surface of the water, the two met-"In reply to your favor, we beg to state that we als which form the circuit being suspended at the delar slide wire is connected to the two coils of dissimilar metal, which are lowered to the desired depth by means of two leading wires. This slide wire is wound It will now and again happen to the seeker after around the edge of a disk, which carries a dial, gradknowledge that he will have to unlearn as well as to uated in degrees of temperature. A leading wire conlearn; but it will be a rare experience for him to nected with the junction of the two metal coils conhave to call in question such a supposedly funda- nects with a telephone receiver and terminates in a mental truth as that of the invariability of the earth's radial contact arm, which travels upon the above mentioned disk. The ends of the slide wire are put in If there is one fragment more than another of our circuit with a battery. In reading the temperature, the dial, and the telephone is held to the ear.

> The buzzing sound in the telephone increases or decreases as the hand passes a certain point on the dial. By continually moving the hand, a point will be found "This instrument is so accurate that its results can

series of temperatures throughout the vertical can be The axis of the earth, or, to speak more accurately, taken with an allowance of about a minute for each

Surface Temperatures.-During the winter, from the latter part of December to the breaking up of the ice ice is 32° F. The water then warms at a uniform rate then falls regularly to 37° in the middle of December. Bottom Temperature.-In a pond less than 25 feet deep the bottom temperature varies very little from that at the surface. In the deeper lakes very interesting phenomena occur, which have an important bear-Between the years 1884 and 1888, Dr. S. C. Chan- ing upon the question of domestic water supply. The

accounted for by the fact that the earth does not 39.2° F. This is about the temperature of the bottom rotate about its axis of figure, as above described, but of the lake when the surface freezes. "The several about another axis, which he called the axis of rotal strata lie in their order of density, decreasing gradually tion. This axis of rotation bisects the axis of figure until within a few feet of the surface, when they sudat its center, and always preserves the same direction denly fall to the freezing point adjoining the ice." in space; but its poles slowly describe a circle about The body of water remains unchanged throughout the poles of the axis of figure. From this considera- the winter. At the breaking up of the ice, the surface tion it is evident that the parallels of latitude do water warms up to the temperature of the bottom not preserve the same planes relative to space; but layers; the whole body is thrown into "unstable equihave an oscillatory motion. Hence the variation. __librium," and circulation takes place from top to bot-The motion is fairly well illustrated by a spinning tom. As soon as the surface is 5° F. warmer than the top, whose center of gravity remains in the same ver- bottom, circulation ceases. Although the temperature tical line, while the peg and the head describe two of the surface continues to rise, "the bottom remains

-This article describes the ascent of Kilauea and gives details of		at exactly the same temperature throughout the long
the present condition of the crater 16601	parallel lines on the top will roughly approximate to	period of stagnation," covering about seven months,
VI. HOROLOGYA New Keyless WatchA simple winding and setting arrangement devised by a Brazilian1 illustration 16606	-	during which time it varies only a few tenths of a
VII. MECHANICAL ENGINEERINGHydraulic EjectorA de- scription of the new hydraulic ejector or water jet pump1 illus	earth's surface. The above illustration will only ap-	degree. From this it is evident (1) that the agitation set
tration	proximately show this motion of the earth, for the	up by the winds at the surface does not penetrate
heavy work	reason that the latter is complex, being made up of	very deep (experience shows fifteen feet to be about
VIII. MEDICINE AND SURGERYThe Treatment of Fevers Witnout Food, Antipyretics or Alcohol-With Records of Vari-	two superposed motions. The pole of rotation moves	the limit); (2) that there are no convectional currents
GUS CASES. By A. MONAE LESSER, M.D	in a small circle which is itself moving around the	at work to effect a change of temperature; and (3)
M.D This article gives details of the modern advances in deal- ing with diseases and maif@rmations of the eve	pole of the earth's figure.	that water is such a poor conductor of heat that the
The Physiological Action of AcetyleneBy Dr. W. H. BIRCH- MOREThis paper gives the results of many experiments on the	The period of the smaller circle is between 423	hottest sun's rays are not perceptible at the depth of
new illuminant 16614	and 434 days; that of the larger between 361 and	sixty-five feet.
IX. MISCELLANEOUSHorse Ranching in Queensland-Breaking in Warrigals (Wild Horses)Spirited engravings, showing the	369½ days.	Weekly observations of temperature in Lake Cochi-
methods employed -4 illustrations	The radius of the smaller circle is 14 feet. The	tuate for a period of four years show that the surface
STEBBING.—The second installment of this interesting subject 1660	center of the circle itself travels in an ellipse, the	agitation by the wind keeps the water at an even tem-
XI. PHOTOGRAPHYThe Photographic Decoration of Glass and PorcelainFull directions for producing a hard waterproof	major axis of which is about 25 feet, and the minor	perature for the first ten feet of depth, and that be-
enameled picture on glass or porcelain 16608	about 8 feet.	low fifteen feet the effect is very slight.
XII. SCIENCETbe Sun's HeatAn interesting article by Sir ROBERT BALL	A remarkable verification of Dr. Chandler's dis-	The Effects of StagnationThe deeper, quiescent
of some interesting studies on the science and civilizat. on of the ancient Chinese	covery was afforded by a series of tidal observations	layers of water gather the organic matter from the
XIII. TECHNOLOGY -A Visit to the Holyoke Paper MillsDe-	extending over 35 years, two of which were taken on	waters above, and "decay goes on until the oxygen is
scribes a visit made to the mills by the members of the American Chemical Society	the Pacific Coast and one on the Atlantic. These	used up." The water becomes dark in color and ac-
XIV. T GAVEL AND EXPLORATION.—The Massacres in Armenia.	show a mean time of oscillation of the sea's level of	quires a disagreeable smell.
-A description of Trebizond, where 500 Armenians were recently massacred1 illustration	431 plus or minus 4 days, which agrees remarkably	Commenting upon these facts, Mr. F. P. Stearns