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GOVERNMENT INVESTIGATION OF THE BELL PATENTS.

The Bell telephone patents seem to be peculiarly favored by fortune. After adverse action by the circuit courts, their opponents sought the aid of the government, endeavoring to make it assume the role of public prosecutor, so as to decide the validity of the patents finally on their merits. The Attorney-General's department was manifestly the proper one to prosecute the case. But on reference to him, it was found that he owned some outside telephone stock, was therefore interested in the defeat of the Bell patents, and so could not properly act as prosecuting officer. Hence a suit that had been begun by his subordinates, and which was started on such a basis as would, if anything has that power, insure the full trial of the case, had to be discontinued. Their fortune did not desert the Bell Company. The most menacing suit ever instituted against them was stopped.

It is of imperative necessity to the public that these patents be impartially investigated by a competent tribunal. The suit just discontinued was a public need. What the Attorney-General's duty is in the matter is hard to say. It would seem asking too much to suggest his resignation. If, while owning stock in an adverse company, he was to prosecute the suit, public opinion would be clamorous against him, would make him waver in his action, and would unquestionably bias the mind of the court strongly against him. He might sell his stock, but even if he did so, he would still appear as one working for the cause of his friends. The ownership by the public prosecutor of a few shares of telephone stock has become lifted into the dignity of a national misfortune.

The rejection of Morse's claims to the transmission of signals by electricity is historic. He was trying to patent a natural force. The patentee of the telephone has in effect done this very thing. His claim as construed by the circuit courts covers the transmission of articulate speech by electricity. His lawyers, with wonderful ingenuity, have captured the minds of the judges. They have evolved a theory of an undulatory current, and of corresponding movements of the two telephone diaphragms, that they can stretch to cover any electric telephone. A point of such abstract theory as this is made one of the central features of their defense. The probability that there is no such thing as an electric current, the incapacity of an induction coil for generating a continuous current in any sense, the probable inoperativeness of any undulatory feature that may be accidentally present in telephone currents, are all lost sight of, or cleverly evaded, and the fiction of an undulatory current is kept up. A number of suits have been decided on final hearing by the circuit courts, and always with the same result, a victory for the patents. But just as inevitable as the result was an incompleteness in the issue as presented. The defendants always made admission of some of the points of attack. Infringement was admitted in one case, claims of other inventors were left out in others. The question of validity never yet came to trial upon its merits. At last, in the western district of Pennsylvania, such a case came up on motion for preliminary injunction. Every effort was made to meet the motion by a full defense. All the points that could be raised against the Bell patents were to be used. Even a series of Reis and other telephones were prepared for exhibition, and personal auricular trial by the court to prove anticipation.

The case was opened by the patentee's counsel, in an elaborate address, lasting several days. After the opening had been only commenced by the defendants, the judge announced that he should in any case be guided in his decision by what his brethren of the circuit courts had already done, and should grant the injunction. This action was taken in the face of the fact that a new set of issues, because a complete set, were open for the judge's consideration. Of course in the normal course of things the suit will come eventually to a final hearing, but the treatment of the elaborate and full resistance to a preliminary injunction is a good illustration of the remarkable prestige held by the owners of the Bell patents. From the character of the counsel and capitalists engaged and interested in this suit, much may yet be hoped for from it

Distinct allegations of fraud in the granting of the Bell patents bring them within the province of action of the Attorney-General. He could have tried the case in the circuit and eventually in the Supreme Courts, as no one else could. The action would come from such a new quarter that the circuit court judges would be to a greater or less extent free from the influence of former decisions. A way seemed to have been found in which to try the case *de novo*, upon its merits, unaffected by decisions in other cases. Unfortunately, it had to be abandoned.

The natural tendency would be to look to the Supreme Court for the remedy. The Bell patents have never appeared before that tribunal. When they do, in the natural order of the different suits, the first decisions will be rendered upon incomplete issues. Before a full presentation of the case is made, the Bell Company in every probability will have secured several Supreme Court decisions. Each of such decisions will make the ground of attack doubly hard for the next suitor. Thus it appears that there is little chance for a decision that will be satisfactory, because a complete one, for many months; and when the time for such action arrives, the court will quite probably have behind it and be guided by a series of decisions in the patent's favor. All this shows how well the case has been engineered by the eminent counsel retained by the Bell Company. The patent, in itself, is far from being the basis of the prosperity of its owners. It has not merit enough in it to give it that position. But a combination of great business with great legal talent has made it the cornerstone for an unprecedented structure. One hundred millions of dollars at the time of the hearing of the Drawbaugh suit was commonly assigned as the value of the interest. Since that period it has certainly increased in value and in apparent stability. This immense monopoly rests on and is based on the theory that in all telephone systems speech is reproduced by "an undulatory current of electricity." A more slender basis, owing to the absence of a rational theory of electricity, could not be imagined.

The Department of the Interior has at last taken cognizance of the state of affairs. Secretary Lamar and Commissioner Montgomery are to have the counsel and representatives of several telephone companies appear before them for the consideration of the following questions: 1. Has the government a right to institute proceedings to set aside the Bell patents? and 2. If so, are the facts such as would warrant the bringing of such an action? If the questions are decided in the affirmative, and the Attorney-General is requested to prosecute, he will do it more gracefully than before, bnt still will be overshadowed by his ownership of telephone stock. The courts will be influenced in favor of the Bell patents by it, just as was feared in the discontinued suits.

"THE DOLLAR MEDICAL SHOP."

Expenses for medical services form an important item in the family account of the artisan and the workingman. A growing family has many aches and ailments, which, not being understood, seem the more serious—hence the physician and his bill.

There is reason to believe that not once in five times when the physician is called to attend one of these families is his presence required. A simple remedy that the more intelligent would quickly have bethought themselves of is prescribed by the physician, and the pain is stopped. But his bill goes on. The items increase and multiply, and his services, like good seeds sown in the ground, bring forth their fruits in their season, his crop ripening at the end of the year. Unhappily, the physician has no regular system of prices. Sometimes a poor family is charged only two dollars for a single visit, but usually three, and operations, even of the most simple description, are often charged for according to what the patient is supposed to be able to pay. The apothecary may also be regarded as an unknown quantity. The wind, we are told, is tempered to the shorn lamb, but the apothecary knows no such merciful rule. He gets what he can, and in the getting has little regard apparently to what the article costs him. Those familiar with the market price of drugs and simples have often been pained and surprised to see him charge sixty cents and even a dollar for what could scarcely have cost him so much as a shilling.

This indefinite system of charge is a serious matter to the workingman with a family. If a rash breaks out on the baby, it costs him three dollars for a physician, and perhaps sixty or eighty cents for medicine; and if Mary Jane be suddenly taken with chills, several visits and prescriptions are presumably required, which between physician and druggist mayhap cost the poor man a week's earnings.

Attempts have been made to protect the workingman with a family from these impositions. Some of the workingmen's clubs connected with the churches employ skillful and reputable physicians, who give their services to members at nominal prices. The most successful attempt thus far to protect poor families is perhaps that of the directors of the New York Hospital, who have established an out-patient dispensary, where, for a fee of only one dollar a month, a poor family may have twelve consultations during the same period; the prescriptions that are made up costing from ten to twenty cents extra. The physicians employed at the hospital, where all consultations take place, are, in all cases, the most skillful practitioners in the city, the medicines and drugs are the best, and the prescriptions carefully compounded.

Experience has shown that this system is much to be preferred to that of the public dispensary, because the dollar a month fee keeps away the malingerer and the tramp, and, better still, does much to remove the feeling of alms-taking, which it has been found is so repugnant to many worthy and deserving people as to keep them away from the public dispensary.

It is much to be regretted that this out-patient department of the New York Hospital has excited the open hostility among a certain class of the medical

profession, who, forgetting the advantages it offers to the poor, seem inclined to look only to the fees which are lost to the physician.

In a recent editorial in the *Medical Record* on "The Dollar Medical Shop," a writer says: "As is learned from the annual report of the year 1884 (of the New York Hospital), 5,169 persons availed themselves of this imposition during that year, and the total number of visits was 27,565. . . . *No encouragement should be given to this class, who seek to evade their dues to physicians.*"

The italics are ours.

This is assuredly an extraordinary view of the matter. Is there any class of the community which is under obligation to pay over a certain amount in "dues" to physicians? And is it an injustice to these physicians if a certain number of possible patients combine together to protect themselves against extortion and malpractice? Certainly not.

If the writer of this article in the *Record* had shown that the subscribers to this dispensary were not properly treated and could not be properly treated under the conditions, then surely he would have done something to make out a case. But as it is, he argues only for dollars and cents, and against the interests of the poor patient. Continuing, he says: "If the present abuse be not soon checked, it may be that each physician will have his own dispensary, that is, treat people free at his own office during certain hours. In that case, the dispensaries would soon find their occupation gone, and their spheres of usefulness properly narrowed."

Now, if physicians should treat the poor free at certain hours as suggested, they would be doing no more than many eminent French physicians like Ricard and German physicians like Trubmann have done before them; and should such a condition of things come to pass, and the public dispensary, as the writer prophesies, find its occupation gone, the projectors of these admirable institutions will at least have the satisfaction of knowing that they brought about a very desirable change in the treatment of the poor sick.

The Soil as a Filter.

The conclusions from experiments made by the National Board of Health of New York, and conducted by Raphael Pumpelly, corroborate the opinion of every sanitarian in this country, that though natural soil is an excellent filter for impure air that may pass through it, it is a poor filter for infected water. The experimenters say: "From these results it appears that sand interposes absolutely no barrier between wells and the bacterial infection from cesspools, cemeteries, etc., lying even at great distances in the lower wet stratum of sand. And it appears probable that a dry gravel or possibly a dry very coarse sand interposes no barrier to the free entrance into houses built upon them of these organisms, which swarm in the ground air around leaky drains," etc. Other experiments have shown that ground air will take up infectious germs from water that is disturbed.

The Ticking of the Clock.

Slight though the ticking of a clock may be, says a writer, its sudden cessation has a wonderful influence upon the inmates of a room in which the time keeper is located. A dim realization of something wrong steals over the senses—a feeling as if something of value had been lost, or a friend had gone away perhaps never to return, or as if some of the children were sick, until suddenly one looks up and exclaims, "Why, the clock's stopped!" And immediately the ill-defined forebodings dissipate, the little shadow of gloom melts away, and as the winding-up process is completed and the cheery ticking recommences, the family circle regains its wonted buoyancy of spirits, and the members wonder what it was that made them feel so gloomy a few moments before.

Improvement of the Ohio River.

The Davis Island Dam was formally opened on October 8. This dam, on the Ohio, six miles below Pittsburg, Pa., designed to maintain a navigable stage of water at that city the year round, was begun August 18, 1878, and since then, with many interruptions and delays, the national government has spent nearly $1,000,000 on the structure. The dam's distinctive feature is its movability. It is in reality 300 little dams, each so hinged that it can lie prone upon the river bed. This line of movable dams, or "wickets," extends the entire distance across the river, 1,223 feet. Of this distance, 559 feet only is the navigable pass or pathway for all craft when the lock is not used. The rest of the dam is designated as "weirs," of which there are three, divided by solid piers of masonry. To raise the wickets of the navigable pass, a "maneuvering boat" is used; to raise the "weir" wickets, a "surface bridge" is called into play.

Like the wickets, this bridge lies upon the bed of the river when not in use, and is raised and joined section by section. To raise the wickets and tilt them into position, where they are retained by a prop, calls into play an ingenious device, the Pasqueau "hurter." A deft pull upon the prop dislodges it, and permits the wicket to recline upon the bed wrested from the river. Between each wicket is a space of an inch or two, which can be batted if desired, but which will probably be left open to permit the passage of surplus water.

The monster gates of the lock are closed by force generated in a turbine wheel fed by water stored in huge tanks. Each gate rolls upon its track, and when in position they form the upper and lower extremes of a lock 110 feet wide and 600 feet long; a space sufficient to accommodate a tow boat and average tow of canal boats and barges. To fill the lock requires but four minutes' time; to empty it, the same.

The great dam is experimental in that, should its success be assured, others will follow, and a series of pools will render the Ohio steadily navigable, as has been the case on the Monongahela.

FROM experiments performed by Prof. Bauschinger, of Munich, it was found that of all the materials used in columns for supporting portions of buildings, cast iron and cement concrete best endured the test of great heat, as in fires and sudden cooling with water. Wrought iron columns failed much more quickly. Brick pillars showed great resistance, but granite, limestone, and sandstone were not fireproof.

NIGHT SKY—OCTOBER AND NOVEMBER.

BY RICHARD A. PROCTOR.

The Dipper lies low, the pointers a little east of north. Between the pointers and Pole Star lies the tip of the Dragon's Tail. Sweeping around the Little Bear (*Ursa Minor*) we find the stars of the Dragon (*Draco*) curving back by the star δ to the Dragon's Head with the two bright eyes, γ and β. Above is the inconspicuous constellation Cepheus; and somewhat higher, the stars of Cassiopeia, α and β, marking the top rail of the Seated Lady's Chair.

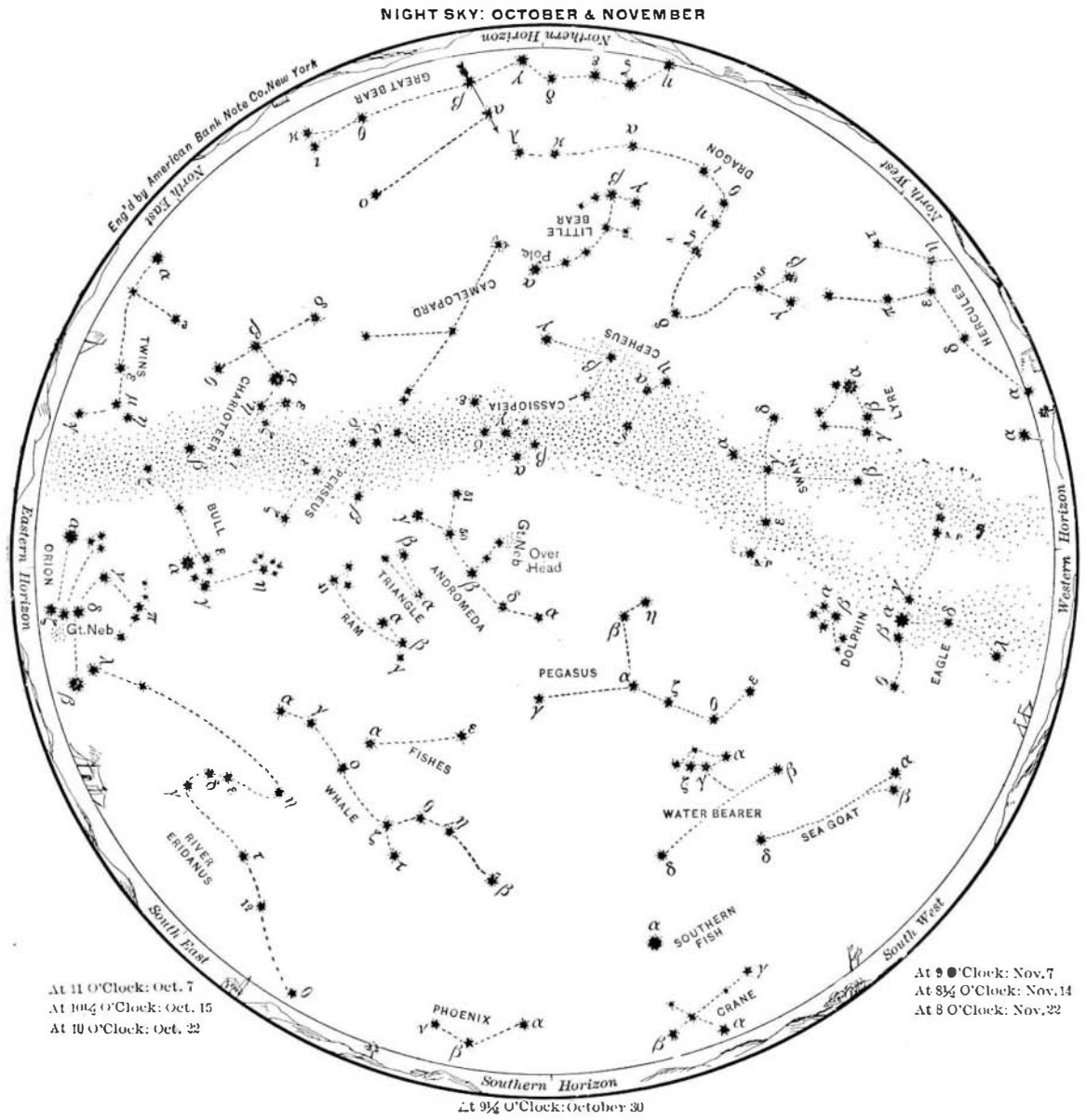
Low down in the northwest, Hercules is setting. Above is the Lyre, with the bright steel blue Vega; and above that the stars of the Swan (*Cygnus*), which has sometimes been called the Northern Cross.

Nearly due west we find the Eagle (*Aquila*), ζ and ε marking its tail, θ the head. Above the Eagle is the pretty little constellation *Delphinus*, the Dolphin.

In the southwest, rather low, is the Sea Goat (*Capricornus*); above and to the south of him the Water Bearer (*Aquarius*), with his pitcher, marked by the stars, α, γ, and ζ. The head of the Winged Horse, *Pegasus*, now upside down (in fact, he is seldom otherwise), is just above this group. The "Square of Pegasus" will be noticed high up, due south. The star α, of Andromeda, one of the corners of this square, used to be also called δ of Pegasus.

Much attention need not be directed to the lowly Phœnix, low in the southern horizon. The River *Eridanus* is coming well into view; and the great Sea Monster (*Cetus*) now shows finely, his head at at α and γ, his paddles ζ and τ. The fishes (*Pisces*) are above, the Ram (*Aries*) above them and eastward, lying toward the southeast, then the Triangle (*Triangula*, or the Triangles, according to modern maps) and the Chained Lady, *Andromeda*, too nearly overhead to be very pleasantly observed. The great nebula in which the new star recently appeared is near the point overhead.

The grand giant Orion is rising in the east; above him the Bull (*Taurus*) with the Pleiades. Low down in the northeast the Twins (*Gemini*) are rising; above is the Charioteer (*Auriga*), and above him the Rescuing Knight (*Perseus*), "of fair haired Danae born." The Camelopard is hardly worth noticing, except as marking a barren region of the heavens.



In the map, stars of the first magnitude are eight-pointed; second magnitude, six-pointed; third magnitude, five-pointed; fourth magnitude (a few), four-pointed; fifth magnitude (very few), three-pointed, counting the points only as shown in the solid outline, without the intermediate lines signifying star rays.

Preserving Eggs.

Now is the time the egg preserver may get in his work. In many towns, both East and West, shrewd men are packing eggs by the thousands at a cost of less than one cent each. Next winter they will sell at two cents each, when fresh eggs are 50 per cent higher. Eggs packed and treated as follows can be kept three months, and seem and look like fresh eggs:

Take a common box, such as is used for packing canned tomatoes; upon a two inch layer of fresh, clean oats place the eggs, large end down, and leave space of at least an inch between the eggs; cover with a layer of oats and then place another layer of eggs as before, until the box is nearly full; fill it with oats, packing the grain in neatly and screw on the top; place your box in a cool cellar, and turn it upside down every other day. If strictly fresh eggs are used, and the turning is attended to as directed, few persons will know them from fresh eggs, and they will certainly be much superior to limed or pickled eggs.—*National Stockman.*

IN the Smithsonian Institution, at Washington, is the small nugget of gold, a little larger than a pea, that first met the eyes of James Marshall in the sawmill raceway at Sacramento, and was the beginning of those discoveries in California that have added nearly $1,500,000,000 in gold to the world's stock of the precious metals.

* For further details about the various constellations, the reader is referred to the author's "Easy Star Lessons."