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THE FINANCIAL CRISIS.

One of the incomprehensible financial tempests, which occasionally rage with more or less fierceness in the monetary world, has appeared among the brokers and banking institutions of this city; and although now, it may be hoped, it has nearly passed over, it has left a path marked with victims, in the shape of several of the most prominent houses in a state of either failure or suspension. Why such a violent commotion should have arisen at a period when the business and industries of the country are flourishing, when there is no reason for a dearth of funds in circulation, and to what cause it may be justly ascribed, are questions difficult to answer. It seems as if people suddenly concluded not to lend or expend money or accommodate each other on any terms. Not only on railroad but on every other species of bonds, was it almost impossible to obtain funds; even governments could not be sold until the Sub-Treasury opened its doors for their redemption; and the banking houses not only declined to advance to their customers, even upon the deposit of unusually large collaterals, but in some instances refused to pay out the amounts of open accounts other than by certified checks.

The savings banks, sharing in the general grab, called in all funds due to them, demanding immediate cash payment; while they themselves, taking advantage of the law, refused to meet the drafts of their depositors until the thirty or sixty day notice had expired. This stringency, or rather emptiness, of the money market (for currency was thus completely locked up) created a panic; and, as usual, frantic appeals to the Government for aid, by placing in circulation the reserve fund in the United States Treasury, were made. This, being illegal, was justly refused by the President, so that the financial men of the community, among whom the storm arose and to whom it has been almost entirely confined, are left, with such aid as the redemption of the United States bonds (now ceased) may afford them, to return as best they can to their normal though never quiescent condition.

It has been the general impression that the effects of the panic would be felt by few other than the dealers in money and its equivalent; but it is to be feared that, although mercantile and manufacturing houses have not partaken materially in the disaster thus far, the result of the tightness of the money market will be seriously detrimental to the fall trade and the export of grain and cotton.

DISCOVERY OF AN OLD BOOT AND SHOE SEWING MACHINE PATENT.

The discovery is announced of an old English patent, granted July 17, 1790, to Thomas Saint, for a "Machine for Sewing Boots, Shoes, etc.," which is alleged to contain substantially the same mechanism as that which forms the basis of existing American machines.

We have looked over the drawings and specification of this old patent, and find them rather defective; still it is possible that the machine could be made to work. It makes the loop stitch, contains an awl for punching the hole for the needle, apparently employs the eye-pointed needle, and has a horizontal feed. But if anybody expects by the production of this contrivance in court to invalidate any of our existing patents for shoe machinery, we think they are destined to disappointment. The Saint machine, while it is interesting as an old curiosity, could not possibly be substituted for the effective devices employed in this country. The Saint invention bears about the same relation to modern sewing machines that the ancient revolving pistols do to the existing repeating fire arms. The first, indeed, exhibited the revolving principle, but practically were good for nothing. So of the early attempts at

sewing machinery, including that of Saint; they may show the eye-pointed needle, the loop stitch, and a feed, but still are, practically, useless. The ideas of American inventors had to be adopted before sewing machines were made useful to the world.

HOW PIANOS ARE INJURED.

According to a prominent manufacturer, there are more pianos injured by improper tuning than by legitimate use and the consequent natural wear of the instruments. The frame of a good piano, fully strung and tuned, is made to resist a tension equal to about seven tons. This severe strain relaxes as the strings recede from pitch, but is renewed when the piano is tuned; and it is frequently discovered, as a result of this repeated process, that the frame is bent or bellied; and at the hands of an ignorant tuner or one lacking good judgment, an instrument at this stage is soon injured beyond remedy. With reasonable use, a piano is expected to remain in good condition for seven years, and the best makers will so guarantee their instruments; but the incompetence and malpractice of certain so-called tuners sets the seal of destruction on thousands of instruments in from two to five years.

In tuning a piano, the correct method is to begin in the center of the instrument, on what is called middle C. Yet many tuners, when leaving middle C, instead of going down the scale and tuning the lower notes and heavier and longer strings first—thus immediately bringing the greatest tension to bear upon the frame, and forming, as it were, a solid foundation upon which to operate,—will go up the scale, beginning with the shorter and lighter wires and higher notes, leaving the bass strings until the last, with the invariable result that, when the tuning of the lower portion of the piano is completed, the upper octaves are found to be decidedly away from pitch. Every time a piano is tuned in this manner, it increases the liability of bending the frame and renders the instrument more difficult to tune and keep in tune. The apparent physical effect may be so infinitesimal as to be impossible of measurement, yet a change in the outline of the frame equal to but the thickness of a sheet of tissue paper will produce a difference of nearly a half tone in the sound of any given note. If the lighter strings are tuned first, they relax when the greater strain is brought to bear in keeping the heavier wires up to pitch, with the effect referred to above.

Many tuners do not carefully note the condition of the frame of a piano, and adapt their treatment to the circumstances of the case, with full knowledge that a bent, weakened, or very old frame will not stand the extreme tension or sustain the strings at the high pitch which can be put upon and borne by a frame and wires which have never been injured through ignorance or neglect, and bear no special marks of time or use. There are very few pianos, and those of the best description, that will stand at concert pitch. The piano manufacturers advise purchasers to have their instruments tuned by representatives of the respective factories from which the pianos are sent, as they are aware of the terrible ordeal through which the instruments must pass at the hands of tuners of every degree of intelligence and ability. It is but a fair presumption that the maker of an instrument ought to know how to tune it properly and without injury to its most important parts; yet there are, comparatively, very few persons who profit by the well meant advice, an impression prevailing in some minds that the suggestion is not entirely disinterested, as the makers charge \$3 for tuning, while professional tuners and the music stores ask but \$1.50, and some of the Bohemians but \$1. But were the matter fully and generally understood by the owners of pianos, they would consider it greatly to their interest, even in the light of an investment, to have their instruments tuned by parties in whose hands there is the least possibility of accident or injury.

SAND AND MUD BATHS.

Baths of sand or mud have had a reputation, more or less deserved, for centuries; and at the present day are employed to a considerable extent in different parts of the world. By the former, the inhabitants of the eastern shores of the Mediterranean expect to cure their rheumatic and scrofulous troubles. The process of taking this "cure" is very simple; the patient buries himself almost completely in the hot dry sand, and remains thus, some time after a profuse perspiration has broken out; the perspiration is soon followed by a rash upon the skin, which subsides in a few days.

The little benefit arising from this cure is due in the main to the sweating, which frees the blood from impurities through the pores of the skin, which latter is locally irritated and excited to greater action by direct contact of the sand.

But the latter, the mud baths, so popular on the continent of Europe, among which those of Salzburg, Franzenbad, and Marienbad in Germany have the highest reputation, are really more beneficial. They are prepared in the following manner: Bog mud is thoroughly dried and sifted, then saturated with mineral water, the mixture being made so soft that the body can sink into it; the temperature is raised to about 112° Fahr., and the bath is ready. The baths may be either partial or complete, according to the part of the body to be treated; but in either case, the duration of a single bath is from thirty to fifty minutes; after which the body is cleansed by a warm water *douche*. They are taken daily, early in the morning, until relief is obtained. The diseases to which they are particularly suitable are some kinds of paralysis, muscular rheumatism, and the dull nervous pains which follow severe bruises and which are called weather pains. In former times, their efficacy was thought to depend upon the large amount of iron and salts contained in

them, and which were absorbed into the blood through the pores of the skin. It was even supposed that there existed a magnetic current in the mud, which acted as a strong nervous tonic; but at present, the general belief is that the action is simply that of a universal poultice, giving to the entire surface of the body the heat and moisture which we apply to a sore finger in the bread and milk.

Any one who lives near a bog swamp can extemporize a bath, almost as efficient as those of the celebrated watering places, if he have the time and patience to make it; but instead of mineral water, he can use ordinary boiling water or water in which is dissolved a quarter of a pound of green vitriol and half a pound of rock salt. As the heat and moisture are considered the principal parts of this cure, other substances than mud may be used, which, although more expensive, are yet more cleanly; as, for instance, a fine sand or bran, or any material which will mix well with water and retain the heat for some time.

THE MECHANICS OF THE BRAIN.

"There is a just criticism," considers Dr. Edward Fournié, in a paper on the human brain, recently read by him before the French Academy of Sciences, "which may be applied to the efforts of Gall and of those who have followed his teachings in endeavoring to divide, classify, and localize all the manifestations of the human mind. It is that, in place of determining the seat and functional part of the elements which conduce to cerebral activity, a research which constitutes the physiology of the organ, the localizers have attempted to place a mass of manifestations resulting from the working of the brain without pretending to explain the working itself. In other words, they have replaced true cerebral physiology by a synthetic expression of a certain number of phenomena which they have associated with this or that portion of the brain; or, to illustrate, we are told that the faculty of articulate language has its seat in the anterior lobes, while we are left in darkness as to by what mysterious means the idea of speech is formed."

In the living body, three orders of organs may be recognized, the operations of which may be referred either to the laws of physiology or of chemistry. The liver, for example, furnishes a chemical product. A muscle is governed by mechanical laws; it is a motor; while the brain is referred to the laws of molecular dynamics. Like the electric battery, it is the seat of a movement which escapes our observations; but while the pile acts upon apparatus submitted to its influence, the brain manifests itself by its effect upon the muscular system. It is by the movements of the latter that we know that the brain acts, and the full value of this assertion will be better apprehended in considering that the speech (*parole*) with which we think was primitively a muscular movement provoked by cerebral activity, and that we repeat tacitly while we think. Now the essential property of the brain is to feel that which provokes its operation, as well as the act resulting from the latter. The liver does not feel the blood which it modifies, or even that it makes bile; the muscle has no knowledge of the nervous influence which contracts it, or of the displacement which it provokes in the parts, and the electric battery cannot feel that it is in activity and causing motion. Herein the brain stands alone; and in its faculty of sensation, we trace the special properties of the organ.

There are two rival methods of studying the brain—the experimental and the psychological. The latter classifies the manifestations of the mind, but does not explain its functional mechanism. The former, or phrenological system, but demonstrates the material substances through which the efforts of the mind receive a stable, permanent, and sensible form. The one refers to results, the other to physical means. It is only by using both methods, the boundaries between which have been but dimly defined, that our author believes he determines the seat of the anatomical elements which lead to the mechanism of cerebral functions.

The accompanying figure will render clearer the problem which Dr. Fournié sets himself to solve. In the region marked 1 are the nerves of impression, that is to say, the nerves which carry toward the brain the result of an impression received, and which occupy the posterior part of the medulla. These nerves end in region 2, known under the name of optic couches, and are composed largely of nervous cellules. Fibers leading from this center, under form of radii, place it in communication on one side with region 3, composed of cellules, and called the cortical couch of the brain; on the other, with region 4, similarly formed of cellules, and known as striated body. From this last portion lead the nerves which occupy region 5, the anterior part of the medulla. These five regions represent the principal localizations determined by science. It remains to determine their functional rôles.

Resembling, in this particular, all living organs, the brain, in order to operate, requires the intervention of an especial excitant. This is an impression received at the peripheric extremity of an impressing nerve. Its effect is to modify the vitality of the nerve, nearer and nearer, until the optic couches are reached, and there the nerve, in its turn, acts upon the cellule in which it ends. The result of this last modification of the cellule is the wonderful phenomenon known as simple perception. This faculty, then, has its seat in the optic couches, a fact capable of experimental demonstration, for if that region be destroyed in a living dog, the animal is insensible to any impression; for example, he cannot smell or see; in a word, he lives but does not feel. In man, when the optic couches are impressed, he simply feels—simple perception and no more. To feel *with knowledge* is, however, a different matter; it is simple perception *plus* something else. What that something else is, is the object of our investigation.