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X. CHESS RECORD.—Biographical Sketch and Portrait of Mr. George Walker, of London.—Grand Problem Tournament of the American Chess and Problem Association of 1878.

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#### THE INVENTION OF THE MICROPHONE.

original invention of his own. Mr. Edison also commented about 30 per cent. upon an apparent breach of confidence on the part of Mr. principle to the measurement of minute degrees of heat.

most absolute and unqualified denial" to Mr. Edison's state- ing clinkers on the grates. ments, and further says that "Hughes has not brought out" that Mr. Preece asserts.

he saw Professor Hughes conduct with it. Mr. Preece also paper, linen, etc. may possess some special knowledge warranting his assertion that the microphone is different from Edison's telephone, but save in a very unimportant modification in form that difference to most people will be imperceptible. The may have been independently discovered by both inventors.

Preece, the latter gentleman will doubtless give a more specific reply. He might not, as he says, have been a coadjutor probable from the fact that Hughes in the first paper read before the Royal Society tenders him his "warmest thanks for his kind counsel and aid in the preparation of this paper."

Since the above was written Mr. Edison has replied to Mr. Preece at length, giving many citations, etc., in support of

# PREPARATION OF IRON FUELS.

It is well known that the preparation of coal for smelting purposes by coking is attended with only partial success, so far as the elimination of sulphur and phosphorus is concerned, while at the same time it involves the loss of the hy. and the fiber from the bark of the ramie. drocarbons with their high thermal values. Many other practice, having for their ultimate object the purification of the iron to be treated.

Those acquainted with inventors and their fortunes know that many valuable discoveries are long withheld, or not earnestly pressed upon public notice, because the times do not seem propitious or because of the difficulties and disappointments encountered in the attempt, and in not a few inpire unexploited and the invention to become public property.

description for the advantage especially of those who produce | selecting a stone, Mr. Gent counsels preference for a mediiron from the blast furnace, melt it in the cupola, or work it um stone in every particular, not too porous or open, and in the forge, though it is not unlikely that the matter may cover much more extended and other fields.

A suggestion that coal might be desulphurized, and obserheated stove liquefied and removed the clinkers, led to a long porous parts exceed one tenth of the whole face. series of experiments, eighteen or twenty years ago, which impurities contained in iron and its ores.

this steaming was required to charge the coal with such fluxes every furrow leading to as common salt, potash, lime, etc., in the proper degree and ably a satisfactory result. proportions for the purposes intended; and that the operation did not make it more friable or in any way change its appearance.

Thus prepared the coal contained within itself all the necthe process of combustion its own sulphur and phosphorus, as well as for removing these impurities from the ore and iron in contact with it.

Anthracite coal so prepared and used in a blast furnace

which was quite foul, first scoured off the clinkers, and after-In our issue of June 22 last we gave the substance of a ward, through successive weeks of use, produced an iron, communication to us from Mr. Edison, wherein he claimed we are told, bearing a tensile strain about twenty per cent the origination of the principle of the carbon telephone and higher than any former production of the furnace, while in a the discovery of the variability of the conducting power of cupola furnace it was reported, through many months of trial, many substances under pressure; these facts being those as having carried a one third larger charge of iron, and as which underlie the construction of the microphone, which having run it out in a much hotter and consequently more is alleged by Professor D. E. Hughes, of London, to be an liquid condition and with an increased tensile strength of

Used in many blacksmith forges, bituminous coal so pre-W. H. Preece, electrician of the London Post Office De- pared imparted a welding heat more quickly, corrected the partment, to which gentleman Mr. Edison states he commu- cold or red shortness of the iron, and caused perfect welding, nicated the results of his investigations during their pro- While file cutters and tinsmiths successfully substituted it gress, including those relating to the adaptation of the new for charcoal in their work. Even the Broad Top coal of Pennsylvania treated by this process and used in locomotives Mr. Preece has cabled a reply, in which he gives "the burned with intense heat, without smoke and without form-

It was natural that prominent chemists even should be any thermopile. His microphone is quite a different instru- found to assert not only that a mass of anthracite could not ment from Edison's telephone." Mr. Preece denies being a be penetrated by steam, but also that steam could not take coadjutor of Hughes, and adds that he knew nothing of up and carry the alkaline salts, and that indifference, opthe invention until Hughes communicated it to him. In a position, and dishonesty should be encountered at every step, postscript Professor Hughes "emphatically indorses" all for such is part of the history of every discovery of importance. Nor is it surprising that an inexperienced inventor It is to be presumed that the very positive expressions of should withdraw in disgust from such encounters, and, apply-Mr. Preece's answer will be modified by the more detailed ing himself to other subjects which he might hope would defense which he will probably publish, and therefore it is meet with more favorable reception, let the whole matter, as scarcely yet just to express any opinion on the merits of the it were, drop out of his life. And yet it is strange that a discontroversy. It may be pointed out, however, that it is dif- covery of such importance as this should have lain unnoticed ficult to reconcile the statements that Professor Hughes has for so many years, for not only does it enable the manufacbrought out no thermopile, with the fact that the Engineer turer and worker of iron to greatly improve its quality at a for May 17, 1878, published an engraving of such an instru- cost of, say, 8 to 10 cents per ton of coal used, but the proment made by that gentleman from a quill tube filled with cess may, we doubt not, be applied with great advantage to metallic powder, and the writer describes experiments which the treatment of vegetable fiber used in the manufacture of

In our issue of June 29th we spoke of the neglected flax and linen industry of America, and of the general complaint that the American fiber is less skillfully cared for than the foreign and carelessly cured and prepared, and it may be principle underlying the inventions is the same, although it found that in this process there exists a remedy for these conditions, for the same chemicals (and others besides) that are To the personal charges made by Mr. Edison against Mr. used in the manufacture of paper pulp from straw may be applied to flax, ramie, and the like, and, we should think, without entanglement of the fiber, by suspending the stalks of Professor Hughes, but that he rendered material aid is in strong iron tanks and subjecting them to the action of the chemical steam under pressure for a sufficient time for the removal of the silicious and albuminous coating, as well as for the required degree of bleaching, while pure steam might then be introduced for rinsing or cleansing.

Not only in our Southern and Southwestern States is there his statements, the main points, however, being those which great necessity for improved machinery and processes for treating vegetable fibers, but the need is not confined to us, as our readers must be aware, for several months since we published the offer made to inventors by the government of India, by which it appears that fifty thousand rupees (about \$2,300) are offered to the inventor of the best process or machine which will separate the bark and fiber from the stem,

The best machines hitherto tried for this purpose have methods have been tried, some of which are now in limited failed to meet all the requirements. May not this "chemical steam" process be substituted for or at least satisfactorily supplement them? JACOB I. STOVER.

298 Macon street, Brooklyn.

## MILLSTONES.

In the proceedings of the Fifth Annual Convention of the Millers' National Association, held in Indianapolis in May stances the patents for these discoveries are permitted to ex- last, there appears a valuable report on mill machinery, prepared by Mr. Joseph F. Gent, of Indiana. Among the prac-neither extremely hard nor soft. If a close stone is desired, one should be selected that has every block close alike; if an open stone is preferred the same rule should govern, but in vation of the fact that a handful of common salt thrown into a no case should a stone be chosen in which the openings or

As regards dress, one in which every furrow runs to the resulted in demonstrating that sulphur could not be removed eye is preferred for high grinding, and in no case is a dress from coal as suggested, but that the coal could be so treated advisable which makes less than every other furrow a leadthat not only would its impurities be rendered harmless, but ing furrow. For most kinds of wheat grown in the Norththat it could also be made to operate as a detergent upon the west, furrows should be 18 inch deep at the eye, and 16 to 38 deep at the skirt. They should be wide enough to insure The experiments proved that at certain moderate pressures perfectly cool grinding, and to discharge the chop free and steam would take up and convey the alkaline salts according round. With stones grinding on winter wheat, the furrows to their measures of solubility; that steam thus saturated and required are equal to very nearly two thirds of the entire conveyed into closed bins or like receptacles containing coal surface of the stone. Draught can only be decided upon would penetrate to the center of the hardest anthracite as when the dress to be put in, the amount of grain to be well as of the softest bituminous, the coal becoming expanded ground per hour, and the speed and diameter of burrs and by the heat of the steam, and condensing therein would de- quality of stone are considered. Mr. Gent states that with posit the conveyed chemicals throughout the innumerable a medium close stone, 4 feet in diameter, at a speed of 130 interstices; that not more than from six to eight hours of revolutions per minute, to grind 51/2 to 6 bushels per hour, ,  $3\frac{1}{2}$  inches would give prob-

If the old-fashioned stone with small eye is used, the eye blocks should be kept a little below the face of the stone; or in other words, after applying the redstaff, it should touch the whole face of the stone, but show heaviest at the skirt. essary elements for neutralizing by chemical action during not in spots, but all the way around. If a stone, while grinding the proper amount of wheat, runs hot and glazes, the trouble is not enough furrow. The stone should therefore be taken up and the furrow widened until the proper amount is ground cool.