this article by quoting from a scientific weekly contemporary the following report :—

"The old flat flour-mill ordinarily consists of a lower fixed circular stone, and an upper revolving one, each of about 4 ft. 6 in. in diameter. The wheat being introduced through an aperture, is drawn in, and ground between the revolving and the fixed *surfaces*. The average weight of these stones is about 14 cwt., and it is ordinarily found that the grinding surface presented, is so extended as to render the delivery of the flour extremely slow and uncertain, notwithstanding the great velocity of the running stone, which is generally 120 revolutions per minute. The evil arising from this circumstance is, that the flour, finding only a partial escape, is triturated and re-triturated to the great ultimate injury of the meal.

"Some idea of the power required to keep such massive machines in operation may be gathered from the fact, that a single pair of stones, 4 feet in diameter, require the power of a four-horse engine to maintain the needful speed. This enormous power becomes necessary, in consequence of the great weight of the 'top stone,' the rapid rate of revolution, and the very large amount of friction produced by the process of grinding so glutinous a substance as meal between such extended surfaces.

"These are the principal objections to the old flat mill system of grinding, which has been the universal one in use in all parts of the kingdom for a considerable time ; the only variation in practice consisting in the motive power. Most commonly steam power is employed, but when the locality admits of its introduction the cheaper and more uniformly certain agent, water, has been brought into action. In all other respects, the mechanical detail of the system has been uniformly the same.

"The 'conical' mill is intended to obviate these defects ; and a very few remarks will suffice to show that its inventor has not only detected their causes, but has brought into operation a most philosophic, and therefore successful, combination of grinding and separating agencies, by which these defects have disappeared to an extent which leaves little to be desired. The beneficial changes effected may be succintly enumerated. First, the reduction of the weight of the running-stone from 14 cwt. to 1½ cwt., by placing it beneath instead of upon the fixed one; second, the reduction of the size of the stones in the proportion of 3.34 to 1; and thirdly, the giving to the stones a new form—that of the frustum of a cone. The advantage of lessening the diameter and weight of a mass, of which the one is 4 cwt., and the other 14 cwt., will be apparent, when it is considered that its effective velocity is 120 revolutions per minute, and that this velocity must be sustained against the enormous friction of the grinding surfaces. The altered position of the running-stone admits of a much more delicate adjustment of the opposing surfaces, and gives to the miller an easy and effective control over the most important portion of his operation. The conical form facilitates the discharge of the flour, and obviates the clogging und overheating of the old practice. In addition to these advantages, by a judicious modification of the ordinary mode of dressing. or rather by a combination of the mill with the dressing machine, a perfect separation of the flour from the bran is effected at the moment the grist escapes from the stone. The bran still remains in the mill, and falls by its own gravity to a second pair of stones in all respects resembling those already described.

"Both pairs of stones are mounted upon the same spindle, and of course impelled by the same gearing. The operation of the lower pair need not be described; they complete the process, and leave nothing unconverted into flour which could add either to the weight or the quality of the loaf. In considering this arrangement, we cannot fail to be struck with the analogy subsisting between it and that which we observe in the construction of the jaws of animals—a circumstance which assures us of its philosophical superiority.

"There were three trials as regarded the old system and the new. The first experiment on the old mill gave a discharge of 16 lb of flour in five minutes, which was equal to 192 lb per hour; while upon the patent mill there was a discharge of 38½ lb in five minutes, or 462 lb per hour. The difference, therefore, on that experiment was, against the old system, 270 lb per hour. The second experiment tried was even more favourable as regarded the new system.

"Two conical mills worked against two on the flat principle for an hour, ascertained exactly, and with the following results : Conical mill (No. 1.) produced 8¾ bushels ; ditto, No. 2.) 7¾ bushels; Flat mill (No. 1.) 3 bushels; ditto, (No. 2.) 3 bushels. (See plate.)

On Fixing Photographic Drawings.

We have received from an amateur, who states he has "never yet seen the productions of any other person," some calotypes, which are to a certain extent successful. They exhibit, however, many of the faults which mark the productions of the inexperienced operator; and we are therefore induced to offer a few suggestions which may be of assistance to our correspondent, and others similarly situated.

In the first place, the specimens before us bear the evidence of having been obtained with a very imperfect lens—we should judge from appearances, a lens which has not been made for a Photographic Camera. Now, the peculiar conditions of the agent by which these pictures are produced, demand the use of lenses which have been constructed with due regard to certain known principles; otherwise a perfectly flat field, and distinctness up to the edges, cannot be obtained.

It is a mistake to attempt to adopt an ordinary lens to a photographic camera; as, by so doing, failure must follow upon failure, and the production of a good photograph is rendered impossible.

Our correspondent complains of the injury which his pictures receive in the process of fixing with the hyposulphite of Soda, and regrets that some more perfect method cannot be discovered.

We believe it will be difficult to discover any chemical agent superior to the hyposulphite of soda, which, when properly employed, ensures the utmost degree of permanence to the photograph under any circumstance of exposure. To place this clearly before our readers is our object.

1. The hyposulphites are remarkable for their property of dissolving several of the salts of silver—such as the chloride and iodide—forming with them compounds which are distinguished by their peculiar sweetness. *Negative* Talbotypes consist of an iodide of silver over all those parts which are not darkened: and of metallic silver in a state of minute division over the darkened portions. Positive pictures only differ from negatives in the general use of the chloride of silver, instead of the iodide. In either case the unchanged silver salt is to be removed, and the darkened portions disturbed as little as possible. In the process of change under the influence of the solar radiations, oxide of silver appears to be formed at first; the oxygen is then liberated and metallic silver is the final result. If much oxide of silver re-