Correspondence

Pitches of Screw Threads.

Messrs. Editors:—Referring to the remarks of your correspondent, P. T. Kissane, in No. 16, current volume of the Scientific American, on the subject of screw threads, allow me to say that I am on a committee, with nine others, appointed by the Franklin Institute some months since, to take up the subject of a uniform system of sizes of bolt heads, nuts and screw threads. We have held several meetings on the subject, in which we have discussed the importance of an uniform system, also the imperfections of all present systems, if indeed they can be called such, and we will very soon submit a complete scale of pitches and form of threads, such as we can recommend for general adoption by the American mechanics.

Our discussions thus far seem to convince the majority of us that the general practice in this country and England has been to make the pitches of our screw threads too coarse; that what is known as the "Whitworth standard," which is in general use in this country, is unnecessarily coarse for any common bolt work. We deem it a very important subject and would like to have an expression of opinion from all good *practical* mechanics.

Any communications giving light on the subject addressed to the "Committee on Screw Threads, Franklin Institute, Philadelphia," or to my address, shall have consideration at the hands of the committee. Wm. B. Bement,

Chairman of Committee on Screw Threads, Franklin Institute, Philadelphia.

[We take great pleasure in publishing this communication because there seems to be a prospect of arriving at some solution of the very general dissatisfaction on the subject of varying pitches for screw threads. For years we have been agitating this point in the Scientific American. Our correspondent, Mr. Bement, has underscored the word "practical," mechanics, but in spite of this we shall offer some suggestions to the Committee which may be of some value as coming from one who has been, but is not now, a "practical mechanic." We hope that in discarding the "Whitworth standard" *fractional parts of uneven threads* will have no part in the new arrangement. No man can count them in short lengths; few lathes or trains of gears can cut them, and in every sense of the word they are a vexation. What can be worse than 15¾ threads in two inches or 9½ threads in seven-eighths of an inch, or similar absurdities. There is one other point, too, which may be worth considering, and that is the nature of the metal the thread is used on. Cast iron being by nature crystalline, should have a finer thread than wrought iron, brass work has always finer threads than wrought iron. These three are the metals most in use. No machinist makes a thread more than three-fourths full in cast iron because all beyond that weakens it by tending to break off the sharp edge. Very many mechanics in small practice could not afford to have two sets of taps; or three, for all have two sets — one for brass and one for iron—and this would tend to confuse the subject perhaps more than it would aid it. Regarding the bolt heads and nuts, the matter is more difficult to set at rest. If a blacksmith in a small place had not iron large enough to make the heads or the nuts, the machinist would have to take the best he could get, or else delay his job, and perhaps lose his money. Fine threads are as apt to be overrun as heavy or coarse pitches are to detract from the strength of the bolt, but we presume the Committee have taken these points into consideration and will give them all the reflection they deserve.—Eds.

Food for Gold-fishes.

Messrs. Editors:—I have read your note concerning gold-fish in a recent number of your journal, and think I am able to answer it satisfactorily as I have always had much to do with these fishes in Europe and this country.

Gold-fish require food, though very little. The best is to take a *white* wafer of small size every two or three days, grind it to powder and throw it into the basin. This will be plenty for five or six fishes. A great deal of care ought to be taken not to give more, as it may kill the fish, by their eating too much of it. W. C.

New York, Oct. 13, 1864.

White wafers are made of flour and water.—Eds.

Hams Cured with Dry Sugar.

A correspondent sends us the following interesting advice on this subject:—

"The meat must not be allowed to freeze under any circumstance—freezing destroying the property in the juices, which prevents any application of sugar, molasses or salt from uniting with them and forming the chemical combination which keeps them from souring. Separate the right and left hams; spread them on a floor, shelf or in a box, the thick part of each ham overlapping the thick part with the butts elevated three inches more than the shanks. Bearing in mind, through the whole process, that the retention of the juices by placing the hams in a proper position and free from any kind of pressure is essential.

"To cure a ham of fifteen lbs. weight requires one lb. of good brown sugar. two oz. refined and ground saltpetre, half a pound ground sea salt. First application—saltpetre, and cover the face of the ham with sugar a quarter of an inch thick; on the fifth day rub the skin side with sugar. Second application—saltpetre and a mixture of three parts sugar and one part salt; on the seventh day rub as before. Third application—half sugar and half salt: in 7 days rub as before. Fourth application—same as last; in seven days rub with half sugar and salt; clean the flesh side of the ham. Fifth application—very good molasses (not sorghum) as long as the meat will absorb it. Saturate the ham with sugar as you would in preserving fruit; the salt is only to flavor it; for hams intended for boiling, and which require more salt, you may use salt according to your judgment and give more time. The ham is now cured, and for purposes of broiling it will be found delicious.

"Hams should always be dried without smoke, hanging them in domestic sacks, shank down. If you prefer smoke, hang for two months, and then commence smoking, observing to have your meat elevated as many feet from your fires as practicable. Smoke-houses should be constructed so that the smoke is admitted at the top of the building; the meat being near a dry floor, the smoke settles on the meat after being cooled. Hot smoke should never touch meat. Smoke very slowly, using green hickory smothered with green sawdust from white or burr oak timber, if you can get it. I have never used any thing else, and therefore cannot speak of the merits of corn cobs or sassafras; but as a rule use timber that smokes *red*, not *black*; during the last six hours smoking throw red peppers on the fire, it keeps off the "skipper bug." You may want to know what are the advantages gained by curing hams by this expensive process. Well, they are weight and superior quality; as to their keeping I never had a chance to ascertain it—hams cured in this way being "gobbled up" immediately when placed in market—their keeping qualities don't get a chance to be tested. Compared with a sweet pickled ham there is just the same superiority in quality as there is between the sweet pickled and salted. Try a few.

"One word more about the special advantage of curing with sugar; fat cured with salt is repulsive to weak stomachs, consequently a large portion is trimmed off hams intended for the American market that in England is always retained, for two reasons—economy and preserving the juices. Stomachs that reject fat when salted, find it palatable and delicious when cured with sugar. J. T. D.

"Springfield, Ill., Oct. 3, 1864."

A Rolling Wheel and Flying.

Messrs. Editors:—In your paper of Oct. 15, I saw two questions propounded both of which are founded on error. It is manifestly impossible that any point in the wheel should go "through a series of changes in velocity during each revolution, for that would imply that each one of any circle of points equidistant from the center was moving with a different velocity; and the points of the circumference, for example, would be continually approaching and receding from each other, or from the center. Each point of the circumference of a circle generates, as it rolls over a plane, a cycloid, as is well known. But every part of a cycloid is generated with equal velocity for in proportion as the horizontal component diminishes the vertical increases, and thus the velocity remains constant. In the case of a wheel brought to rest, inertia tends to compress the particles of the periphery, in front of the point of contact with the ground and to separate those behind. The reverse occurs when the wheel is started from a state of rest, but during uniform motion there are no tendencies of this kind.

If it is admissible to speak on two subjects I would like, while I have the floor to make a remark in regard to the sensible article on flying machines which appeared in the same number. Those visionary and unmechanical gentlemen who have from time to time proposed various wing contrivances to be operated by the legs and arms, seem to have forgotten that it requires the same amount of power to raise a man 100 feet by flapping as it does by any other means. Flying is only climbing up into the air with wings, then holding on there and sliding along. But the aforesaid climbing up and holding on is the worst part of it, for air is rather an unsubstantial support, and it will not do to stop and rest; on the whole, getting up into it is harder than going up a greasy pole. A man has not the strength of a bird in proportion to his size any more than he has that of a flea, which jumps several hundred times its own length. Let any one try taking a run up the stairs of Bunker Hill monument, and when he gets to the top he can reflect, if he feels like it, that it would take the same power to fly to that hight, even if he succeeded in applying it as advantageously as nature has done it for us, to say nothing of the weight of the flying apparatus. We must resort, then, to the tireless steam engine, if no other more powerful motor be adopted. It would be necessary to make a nice calculation, based on accurate scientific principles, of the weight of the different parts in relation to the area and speed of the propelling surfaces. If then we combine an engine designed for lightness and the consumption of petroleum, one or more large screw propellers and a pair of flat, rigid wings whose inclination might be varied, we will have something which might perhaps contain some of the elements of a successful flying machine. Wm. Main, Jr.

Philadelphia, Oct. 14, 1864.

[The motion of all parts of a rolling wheel is the same in relation to the axle and to the carriage, but not in relation to the earth. The upper part is always moving the fastest along the road. Some very clear-headed mechanics are of opinion that a machine may be constructed by means of which a man can fly by the power of his own muscles, but none of them suppose that a man can raise himself 100 feet high by wings. The power required to skim along nearly horizontally is very different from that required to ascend vertically.—Eds.

Another Cone Pulley Rule.

Messrs. Editors.—I saw in the columns of your paper a simple rule for obtaining the size of cone pulleys, which I think I can simplify considerably; it may be well understood, but I have not seen it in print or practice. My plan is to make one cone any size required; say, for instance, a four-cone pulley, 14, 12, 10 and 8 inches. Now suppose the smallest pulley of the next cone is 4 inches; adding that to the largest pulley of the first cone, makes 18 inches, and 6 to the next in size, making 18 inches also, and so on; like this, for example :—

14	12	10	8
4	6	8	10
18	18	18	18

The belt will run correct on either cone. Any odd or fractional part of an inch will be the same. To make a new cone to match an old one it is a quick and sure way. We frequently find cones that do not descend in gradual ratio, viz. :—

14	11	9	6
6	6	11	14
20	20	20	20

The same operation will produce the same results the belt will run equally well. H. Mechanic.

Lanesboro', Mass., Sept. 14, 1864.