NATURAL PONDS FOR THE CULTIVATION OF CARP FOR PRIVATE USE.

We received some months ago (through Mr. Eugene Blackford) a number of scale carp which were raised by Mr. Rudolph Hessel, the curator of the government carp ponds at Baltimore. When we placed them in the pond they measured from 2½ to 4 inches in length, and greatly to our astonishment (when drawing off the pond recently), we found that these carp had, in many cases, increased to 16 inches in length.

We are now having this natural or wild pond thoroughly overhauled and constructed according to the instructions published by Mr. Rudolph Hessel. Having received so many demands for information on the subject of carp ponds, we republish Mr. Hessel's instructions for the benefit of our readers.

In establishing carp in natural ponds it is first necessary to ascertain the following points:

1st. Is there sufficient water for all purposes all the year round?

2d. Is the ground, soil, aquatic plants, and water favorable for culture?

3d. It is important to examine the soil minutely in order to ascertain its vegetable and mineral qualities.

If points 1 and 2 have been satisfactorily settled, the ground must be examined as to whether it will allow the collected water to penetrate, and whether the ground is sandy or loamy. Above all, measure the depth of the stratum and be assured that it is sufficiently impermeable to withstand the pressure of the water and to hinder its oozing through, and so prevent the drying up of the pond.

A rocky, gravelly ground is not appropriate for carp culture. Sandy ground with a considerable mixture of loam, clay, and humus, is of small use. I speak here of large ponds of considerable extent. Small ponds with a sandy bottom may be improved by supplying them with loam. Loam is a mixture of a small per cent of sand and a larger quantity of clay. If such ground contains some marl, or better, some elements of humus, it is of the greatest advantage.

Too much humus or dissolved peat is injurious. Water which runs through bog meadows or oak woods is not of much use, because it contains too much humic acid and tannin, which impart a mouldy flavor to the fish. The most favorable water is that which comes from rivers and brooks.

Rain water, particularly during the winter, when frozen over, takes a mouldy taste, which is communicated to the fish, as does the water from bogs also.

Spring water, direct from the ground, ought to be conducted for at least a few hundred yards through wide shallow ditches in order to obtain more nourishing components from air as well as earth, and above all, to be warmed by the action of the sun.

Ponds must not be too deep, as the water will be too cold, and will harbor fewer insects, larvæ, and worms, which form part of the carp's food. A depth of 3 feet is sufficient for the center of the pond. Toward the outlet sluice it may be from 6 to 8 feet, but only for an area of from 200 to 1,000 square feet. In the depths of this "collector" the fish seek their resting place for winter, as also in summer when the water becomes too warm. The outer part of the pond should not be deeper than 1 foot for a distance of 70 to 100 feet.

Toward the center of the pond a cavity is dug 2 feet deeper than the rest of the pond; this also serves the fishes as a resting place in summer and winter. This cavity is called a "kettle." From the entrance of the pond to the other end, where the collector and the outer sluice are situated, two or three ditches 2 feet in depth and 4 feet in length must be made; these ditches cut the deeper "kettles" transversely as far as the collector. These ditches are intended to carry all the fish into the collector when the pond is being drained. The collector is nothing but a place from 20 to 40 feet in length and breadth, near the outer sluice, and is 1 foot deeper than the rest of the bottom of the pond. This collector must be cleaned out every year, or the fish will become too much soiled by the mud. The inflow of water into a pond should never be direct, as, for instance, a brook falling into it, as this often causes the water to suddenly rise, carrying into the pond injurious fishes. The inlet sluices from the stream must of course be of a strong and practical construction, and they ought to be provided with gratings to prevent other fish from intruding. It will also be found very useful to construct a hatching place on some flat and sunny spot near the bank; that is, a so-called cut in the land, measuring 40 to 100 feet in length and from 30 to 50 feet in breadth, and having a depth of from 18 inches to 5 inches. This cut should be planted with aquatic plants, and ought to be the only place where the carp can ascend from deep water in order to deposit their eggs conveniently on the plants and engage in the spawning process. As soon as this has taken place the entrance to the cut is closed with a net, so that the eggs cannot be eaten by the fish. See Fig. 1.

The carp also has the disposition to swim toward the inflowing water, by which means it is drawn away from its proper feeding places. The water should be conducted into the pond sideways from the stream; and if it should be a small brook only it may be turned off entirely and carried alongside the pond, from which point the latter can be easily supplied with water.

It is an indispensable condition for the culture in ponds, according to established rules, that they be so constructed as to allow of being thoroughly drained, so that the fishes may be taken out without any difficulty.

On account of the required outlet sluices, etc., the fact must be kept in view, that newly constructed dams will sink ten per cent after a lapse of time of little more than a year, unless it has been solidly made. The dam should be sodded. For the draining of the pond, at the "fishing out" season, it should have an outlet at the lower end, if no other advantageous arrangements can be made for the purpose. The use of woodwork for the channel should be avoided, its durability not being sufficient. The most desirable construction would be that the outlet consist either of masonry work or water pipes, which may be made either of clay or iron. This channel or pipe must be so made that it can be closed tightly or opened again readily if needed, and must be provided with two or three fold gratings to prevent the escape of the fishes upon the opening of the sluice. At the same time there should be an outlet channel, several feet in breadth, at the side of the pond to allow the water to run off. This must also be secured by grating, but should be kept open always, so that in case of continued rainy weather or sudden and violent showers of rain or thunderstorms, no overflowing of the banks or dams may be possible through the unexpected rising of the water in the pond.

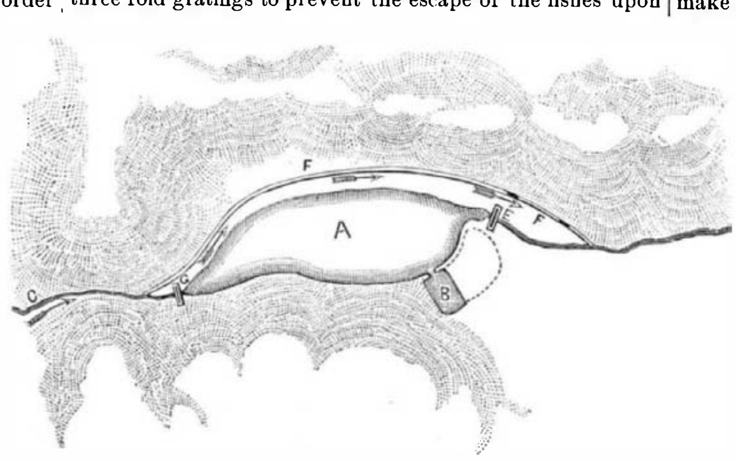

Fig. 1.—Plan of natural pond.

Explanation of Fig. 1.—A is the pond, B is the cut or breeding pond. The dotted line contains the water having a depth of only 5 inches; B is the water of 1½ feet in depth; F F is the outer ditch to prevent an overflow of the pond; G is the inlet sluice; and E is the outlet sluice.

P is a natural pond; its extent is about 150 feet to 200 acres. It is formed by a dam, D, about seven to eight feet high, crossing a valley, and thus collecting the water of a run flowing there. Before D is a deepening, C, the collector. In the dam, D, there is an outlet leading to another deepening, the so-called outlet collector, O C. The purpose of this collector is to retain fish that may have passed through the outlet when opened. It is provided with a screen or netting. C D. Upon the bottom of the pond, P, is the collector ditch, which conducts the fish to C when the water is let out, and thus prevents them being caught in the mud. R is the run of water which, to prevent overflow, has to be conducted around the pond in a separate ditch, leaving an inlet at J protected with screens.

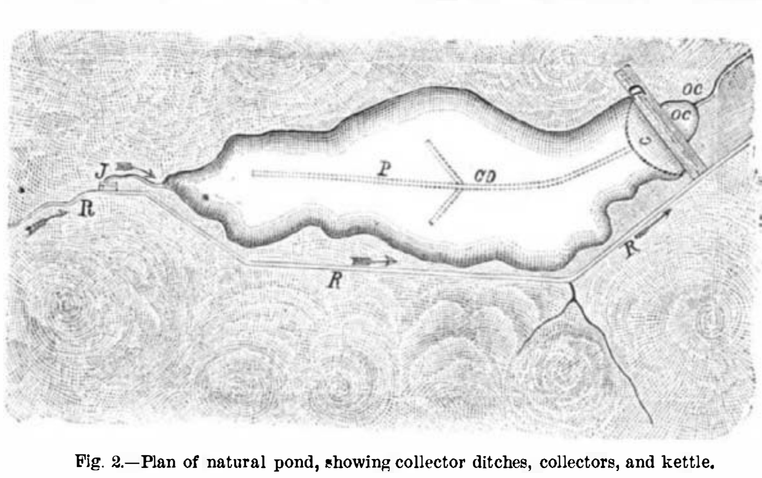

Fig. 2.—Plan of natural pond, showing collector ditches, collectors, and kettle.

A Curious Parasitic Fish.

An interesting specimen of the *fierasfer* has lately been added to the collections of the American Museum of Natural History in Central Park. The fierasfer is a parasitic fish, perfectly white and almost transparent, which inhabits certain holothuria, or sea cucumbers. The specimen in the museum was recently taken on the Florida reef, in the neighborhood of Tortugas. The discoverer was poling a boat along the reef looking for specimens, when his companion at the bow of the boat suddenly called out to him to stop, and diving into the water, came up with an enormous holothurian. He held it over the boat with both hands, and was about to drop it, when, to his amazement, a silvery, tapering fish, about eight inches in length, appeared squirming and twisting from its mouth, evidently forced out by the strong grasp of the man. He held it over a pail of salt water, into which it dropped, and after a few ineffectual attempts to swim, it died. Suspecting that it was a parasitic fish, the discoverer collected numbers of holothurians, and in many of them found the large fierasfer snugly lying in the stomach of its worm-like protector. Every attempt to keep the fish alive out of the stomach of the holothurian failed. Although some were placed in open water, it seemed to affect them immediately. It is one of the most interesting illustrations of parasitic life.

London Milk Supplies.

The books of the railway companies show that nearly 20,000,000 gallons of milk are brought into the city every year. It is estimated that not less than 3,000,000 gallons more are produced within the metropolitan area or brought in otherwise than by railway, making a total of 23,000,000 gallons, which at five pence a quart, represents an annual cost of about $10,000,000.

Are Fish more abundant in Water Containing Lime?

Is hard water favorable to the growth of fish, or do fish make the water harder than it would be? This is a curious question and one having a practical bearing. Pisciculture is attracting more attention abroad since the wonders accomplished here have become noised abroad. W. Weith has been studying the waters of Switzerland both in regard to their chemical composition and the beings that inhabit them, and prepared a paper for the Berlin Fish Exhibition on this subject. He made a large number of quantitative analyses, and arrived at the conclusion that in general, with some exceptions explained by him, the most fish were to be found in those waters which contained the most carbonate of lime in solution, provided, of course, that the other conditions were the same. Weith advances the following plausible theory to account for these facts. The simple carbonate of lime is widely distributed in the soil both on the shores and in the bed of the river, but being insoluble cannot be taken up by the water in its present form. When, however, the water contains an abundance of carbonic acid, which would be produced by the respiration of water animals, the simple carbonate of lime would be converted into the bicarbonate, which readily dissolves in water.

This ingenious theory is sustained by an interesting experiment which he made. Two vats were filled with pure water from Lake of Zurich, and an equal quantity of carbonate of lime put into both; and in one he put some carp. After a while the water in both was analyzed, and he found that the quantity of carbonate of lime in solution had perceptibly increased in the water containing the fish, while in the other it had remained unchanged.

According to this a mere chemical analysis of a river will frequently enable us to guess with great probability whether it contains many fish or not. On the other hand Weith was able to judge of the chemical composition of the water when he had ascertained the quantity of fish in it. His prognostications were afterwards fully verified by direct experiment. An important practical consequence would result from these investigations, if further experiments confirm the suspicion that not only do water animals increase the percentage of lime in water, but the converse is true, that the abundance of lime is favorable to the increase of fish. This is by no means improbable, for water plants require carbonic acid for their nourishment, which is introduced into the water in soluble form along with the lime. The fish produce the carbonic acid, and in the presence of lime it cannot escape into the air, but remains dissolved in the water and promotes vegetable life in the water.

Water plants, however, feed the water animals and render their existence possible. The intimate mutual dependence of animal and vegetable life upon each other has long been known, and now both are upheld by the aid of lime.

Experiments upon a large scale must decide whether it is possible to improve water that flows over a soil free from lime, and hence poor in organic life, by a suitable addition of carbonate of lime and convert it into one that shall afford to vegetable and animal life the conditions necessary for their existence. It may also be questioned whether water too poor in lime to grow fish is worth doctoring to this extent.

P. N.

Immigration as a Source of National Wealth.

The enormous annual addition made to our national wealth by the vast tide of immigration now flowing in is discussed at some length by the London *Economist*. The principal part of the paper is well worth reproduction here. The money values we take the liberty of changing to dollars, rating the pound sterling for convenience $5. Taking the average amount of money brought by immigrants at the low figure which the emigrant commission found to be the average fourteen years ago, namely $70 a head, the *Economist* finds that the immigrants of the current year will add not less than $35,000,000 to the capital of the States, and adds:

But of course the value of the immigrants is not to be measured by the altogether inadequate standard of the coin they bring in their pockets. Of infinitely greater worth are the physical vigor and acquired industrial skill of the immigrants themselves. As to the rate at which these ought to be appraised opinion will differ widely, for all estimates of their value are necessarily more or less speculative. We cannot apply to this wealth-producing power the brutal though fairly conclusive test which fixed the value of slave labor, by the price it brought under the hammer of the auctioneer. It is only by indirect and imperfect modes that any idea of its worth can be obtained, and so intricate is the problem that little reliance can be placed upon the most elaborate calculations. For our present purpose, however, it is not necessary that any very minute estimates should be attempted. It will suffice if we give some rough indication of the enormous additions that are being made to the wealth of the United States by this continuous inflow of skilled labor, and to that end let us first look at the composition of the emigrating body. In 1879 it was made up thus:

Males between 15 and 40	46 per cent.
Males over 40	7 per cent.
Males under 15	10 per cent.
Females over 15	28 per cent.
Females under 15	9 per cent.

Now it is probably considerably below the mark to place the average duration of active life in the males between fifteen and forty—the time, that is, during which they will be working with full vigor—at fifteen years. For those above forty an average of ten years does not seem excessive, while, if we calculate that of the males under fifteen one-third will have an active working life, at full adult wages, of twenty years, we keep well within bounds. It is further a reasonable supposition that a sum equal to at least 20 per cent of the wages earned by this body of workers will be realized as profit on their labor, and recent statistics place the average wages of all classes of male laborers in the States at about $625 per annum. On an average, therefore, each actively employed workman may be said to add $125 per annum to the capital of the country; and, taking the duration of active life above estimated, we arrive at the conclusion that the average value to the United States of each man and boy arriving as an immigrant is not less than $1,625. Going now a step further, and assuming the value, as a producer of wealth, of each female to be only a fourth of that of a male, we get an average value for each man, woman, and child of about $1,250. Of course a deduction should be made from this estimate for the scum of the immigrants, who instead of adding to the wealth of the country detract from it. But, on the other hand, a far greater sum must be added as the equivalent for the profit realized from the labor of the children begotten by the immigrants, and also for the fact that many of the skilled artisans arriving in the States are able, by their special knowledge of manufacturing processes, to add greatly to the efficiency of the native labor. If, however, in order to avoid anything like exaggeration, we place the average value as a capital creating force of each immigrant at $1,000, we get as the actual or potential addition to the wealth of the country by such a body of immigration as that now taking place the enormous sum of $500,000,000 per annum. This estimate, we would again repeat, is not put forward with any claims to perfect accuracy. It is simply a rough calculation intended to bring home to the minds of those who may not have thoughtfully considered the subject some notion of the rapidity with which the United States are being enriched by the draughts they are making upon the population of the Old World. But it is some indication that we have not overstated the annual movement of wealth arising in this way that the United States Bureau of Statistics have estimated the growth of capital through immigration in the fifty years prior to 1871, when, of course, the influx was trifling to what it is now, and when, moreover, the quality of the immigrants was much below the present standard, at an average of $125,000,000 per annum.

Good Use for Sawdust.

What shall we do with the sawdust? is a question which puzzles the economic brain of the man who realizes that the utilization of the fast depleting forests is accompanied with an amount of absolute wastefulness simply appalling. "Make it into railroad car wheels," says an enthusiastic inventor of Chicago, who has discovered a means of compressing sawdust, bran, tea, and kindred bulky substances into from one-tenth to one-third of their original bulk. The *Lumberman* some weeks since spoke of this invention in terms somewhat of disparagement, which it subsequently modified on seeing specimens of sawdust and bran compressed into a remarkably small compass. Its credulity is further shaken on being shown a model of a car wheel consisting of an iron rim of seven inches outward diameter by one-half inch thick, fitted with a well proportioned hub, the space between the hub and rim filled with pine sawdust, pressed in so solidly that we are ready to believe the assertion that, resting the iron rim upon bearings, a pressure equal to 23 tons applied to the hub failed to develop any signs of weakness. We hesitate in these days of progress to assert that anything is impossible, and we begin to think that even sawdust possesses elements of value hitherto unsuspected, and that the day may come when the filled grounds adjacent to all saw mills may be seen to have a great value in the mechanical development and utilization of the now useless *debris* placed upon them to get it out of the way. Sawdust car wheels, sawdust brick, sawdust fence posts, railroad ties, and even sawdust window and door frames, wainscoting and mouldings, begin to appear among the possibilities of the immediate future. Sawdust hair pins, watch chains or cases, and sawdust knives and forks, or sawdust shovels, pitch forks, or hoes, will probably not be urged upon this generation, which will remain satisfied with utilizing sawdust in place of the more expensive basswood in the manufacture of hams and cakes of soap, but the field of possibilities is still large enough to utilize a vast amount of this valueless material. Seriously, however, the compression of bran and oats into one-tenth of their original bulk, without injury to the substance, means cheaper transportation, which will enable their shipment to foreign lands at a profit which their bulk has rendered impossible, while with the freight on tea from China, costing about $25 per ton on account of the space it occupies, a compression into one-third its bulk would mean a saving of from three-quarters of a cent to one cent a pound on freight and labor of handling. It is not by any means impossible that we may buy a "brick of tea" in the near future which we can carry home in our vest pocket, or that the housewife may keep her truant husband at home evenings to saw the coffee up into thimblefuls suitable for the preparation of the morning draught.

Verily it would seem that with the recent discoveries of a Rip Van Winkle of the press, who after being absent from home for a year had to have a pilot to show him about the city of his former residence, and who in his absence developed a sixty year stock of pine on the Menominee, and about as large a supply throughout the State of Michigan, there is no danger after all of a timber famine, at least so long as the sawdust holds out.—*Northwestern Lumberman.*

Removal of Stains and Spots.

Matter Adhering Mechanically.—Beating, brushing, and currents of water either on the upper or under side.

Gum, Sugar, Jelly, etc.—Simple washing with water at a hand heat.

Grease.—White goods, wash with soap or alkaline lyes. Colored cottons, wash with lukewarm soap lyes. Colored woolens the same, or ammonia. Silks, absorb with French chalk or fuller's earth, and dissolve away with benzine or ether.

Oil Colors, Varnish, and Resins.—On white or colored linens, cottons, or woolens, use rectified oil of turpentine, alcohol lye, and their soap. On silks, use benzine, ether, and mild soap, very cautiously.

Stearine.—In all cases, strong, pure alcohol.

Vegetable Colors, Fruit, Red Wine, and Red Ink.—On white goods, sulphur fumes or chlorine water. Colored cottons and woolens, wash with lukewarm soap lye or ammonia. Silk the same, but more cautiously.

Alizarine Inks.—White goods, tartaric acid, the more concentrated the older are the spots. On colored cottons and woolens, and on silks, dilute tartaric acid is applied, cautiously.

Blood and Albuminoid Matters.—Steeping in lukewarm water. If pepsine, or the juice of *Carica papaya*, can be procured, the spots are first softened with lukewarm water, and then either of these substances is applied.

Iron Spots and Black Ink.—White goods, hot oxalic acid, dilute muriatic acid, with little fragments of tin. On fast dyed cottons and woolens, citric acid is cautiously and repeatedly applied. Silks, impossible.

Lime and Alkalies.—White goods, simple washing. Colored cottons, woolens, and silks are moistened, and very dilute citric acid is applied with the finger end.

Acids, Vinegar, Sour Wine, Must, Sour Fruits.—White goods, simple washing, followed up by chlorine water if a fruit color accompanies the acid. Colored cottons, woolens, and silks are very carefully moistened with dilute ammonia, with the finger end. [In case of delicate colors, it will be found preferable to make some prepared chalk into a thin paste, with water, and apply it to the spots.]

Tanning from Chestnuts, Green Walnuts, etc., or Leather.—White goods, hot chlorine water, and concentrated tartaric acid. Colored cottons, woolens, and silks, apply dilute chlorine water cautiously to the spot, washing it away and reapplying it several times.

Tar, Cart Wheel Grease, Mixtures of Fat, Rosin, Carbon, and Acetic Acid.—On white goods, soap and oil of turpentine, alternating with streams of water. Colored cottons and woolens, rub in with lard, let lie, soap, let lie again, and treat alternately with oil of turpentine and water. Silks the same, more carefully, using benzine instead of oil of turpentine.

Scorching.—White goods, rub well with linen rags dipped in chlorine water. Colored cottons, redye if possible, or in woolens raise a fresh surface. Silks, no remedy.—*Muster Zeitung für Faerberei, Druckrei, etc.—Chemical Review.*

Deep Drive Wells.

In the vicinity of Antwerp, much difficulty is experienced in obtaining water, owing to the fact of the ground being entirely a deposit of fine sea sand of a "blowing" nature. Mr. Huger, the agent of the Great Eastern Railway Company at Antwerp, has been trying to ascertain how deep the bed of sand extended, and has made his first attempt on a very small scale, employing an "Abyssinian" tube well, only 1¼ inch diameter, and driven by a monkey weighing 75 pounds. With this little tube he has been able to reach to no less a depth than 152 feet, testing the soil at short intervals the whole way down, and demonstrating that nothing but sand extends to this depth. It is now very probable that the attempt will be followed upon a larger scale.

NEW INVENTIONS.

An improved horse-stopping attachment for wagons has been patented by Mr. George W. Blake, of Port Townsend, Washington Ter. The object of this invention is to furnish horse-stopping attachments for wagons so constructed that the momentum of the wagon may be utilized for stopping the horses.

Messrs. Anthony Marschall & Casper L. Marschall, of Evansville, Ind., have patented a harness buckle whose swinging tongue is provided with curved notches and a single point at right angles to the main body of tongue, the point being grooved in front and near its upper end.

An improved child's stocking suspender has been patented by Harriet F. Bowman, of Mattoon, Ill. The invention is designed to avoid the necessity for the use of garters for holding up children's stockings, the bad effect of an impeded circulation, cold feet, and other incidental evils being recognized as due, to a large extent, to the use of tight garters, which, as the child grows, constantly become tighter.

In that class of type-writing machines in which the paper is placed between a printing cylinder and smaller paper-pressing feed rollers, and is held by endless rubber belts, small sheets of paper, such as envelopes, cards, etc., cannot be satisfactorily held and passed around the rollers, thus preventing a general use of the type-writing machines. To avoid this difficulty Mr. John H. Pratt, of Allentown, N. J., has patented a new paper presser for type-writing machines, which carries and holds small pieces of paper, such as cards, envelopes, small sized note paper, etc., to be written upon by the machine.

Mr. Charles J. Le Roy, of Palestine, Texas, has patented improvements in reel spool racks used in retail stores for holding different sizes and kinds of rope coils in a convenient manner for unreeling any required length of rope without disarranging the coil. It consists in a peculiar construction of frame and arrangement of the spools or reels upon the frame to secure a light and compact structure of sufficient stability to support the required number of rope coils.

Early Rising.

Of course the majority of the busy members of the community have been "away for change of air and scene," and, equally, of course, the majority have derived substantial benefits—not at the moment apparent, perhaps, but to be evidenced, in better health or more energy, presently. This is, therefore, a good time to speak of such reforms in the management of self as may be expedient. We venture to suggest that those who have not yet made a fair trial of the practice of early rising should do so. With a cup of tea, and perhaps a single slice of bread-and-butter, to wake him at 6 or 6:30 in the morning, a fairly healthy man may go to his study, and enjoy the priceless luxury of two or three hours of work, when his brain is clear and the distractions of the day's ordinary business have not begun to assail him. The practitioner of an applied science, such as medicine, is especially in need of time for reading and quiet thought. In the active hours of the day this is denied him. At night he is, or ought to be—but for the bad habit of reading by night, probably formed in student days—too weary in mind and body to do good work. In the early morning, with his brain recuperated by sleep, and his whole system rested, he is especially fit for labor. Those who do not feel thus on awakening are either the subjects of some morbid state, or the slaves of a habit which, however common, is essentially unnatural. Some of the difficulties which beset the task of early rising are due to want of method in the act of "getting up." It is comparatively easy to rouse one's self instantly, but to not a few of us it is extremely irksome, and almost impracticable, to rise slowly, that is, taking time to think about it. The man who *really* wishes to rise early should get up the instant he wakes, and, if weakly or over forty years of age, instead of plunging into cold water or applying cold to the head to rouse himself, he should, as we have said, take a cup of tea or milk to stimulate the organism before expecting to elicit a reaction by a powerful depressant such as the cold bath or douche. Many persons make a mistake in this matter, and by taking their bath immediately after getting out of bed, lower the vitality instead of raising it. In certain cases it is better to leave the bath until after a walk or a spell of work has thoroughly awakened the organism and called out its energies. Experiences in relation to this and other matters must differ as widely as constitutional peculiarities diverge; but, speaking generally, the early morning is the time for serious work, and those who do not so use it find a poor substitute, and one which is by no means hygienic, in the late hours forced upon them. A man cannot get up early if he goes to bed late; but as between the two extremities of the day, the morning is, on all accounts, the best for brain exercise.—*Lancet.*

A Cure for Night Sweats.

A powder known as *streupulver*, composed of 3 parts salicylic acid and 87 parts silicate of magnesia, is used in the German army as a remedy for sweating of the feet. Recently a Belgian physician, Dr. Kohnhom, tried its efficiency in several cases of night sweating by consumptives. The beneficial effect was immediate and permanent. The powder was rubbed over the whole body. To prevent any breathing of the dust and consequent coughing a handkerchief must be held over the patient's mouth and nose while the powder is being applied.