adding a series of ponderous and palpably wooden pillars to the front of the building, and thus darkening, by the overhanging roof, all the front windows of the upper stories; and lastly, the aspiring efforts to rival the modern French construction by imitating the iron and stone mansards and lofty towers, in wood and on a much reduced scale, too frequently in entire incongruity with all the surroundings. In constructing larger country dwellings, the same models, enlarged, have been kept in view, so that it is no uncommon sight to find the villa, standing in the midst of its score of acres, duplicated in the cottage, cramped in a twenty-five foot lot, or the cottage repeated on a magnified scale in the more pretentious residence.

So many excellent plans have been published for country homes that we are led to believe that a genuine taste has been awakened for a really rural style of architecture. A city house, with its lofty staircases and its general construction carried skyward, remains a city house, to all intents and purposes, no matter if planted in a wilderness. It suggests cramped space and narrow limits, and not that carelessness as regards the area covered over, which is the distinctive feature of the country dwelling. Let the reader compare the illustration of the beautiful villa, given herewith, with any of the perky, stiff, tall structures which sprang up like mushrooms when the taste for French design became first prevalent here. The edifice is low and broad, suggestive of ample halls and large, cool, airy rooms. It is irregular in shape, as if it were planned for the convenience of the occupants—adjusting itself to their needs, and not at all suggestive of that hermit crab peculiarity of many people who fix on a residence and then adjust themselves to it. There are broad windows shaded by tasteful porches, the heavy effect of which is relieved by the delicate half-Moorish tracery of their supports, and lastly, there are the piazzas, which fill out the details of the bare walls. Add tasteful painting, in a couple of cool shades of brown, for example, and the embowering westeria or other vines which trail over doors and windows, and a dwelling is made which is in itself a picture of comfort.

It is such architecture as this that we hope to see replace the designs so long prevalent. Taste, or rather the gratification of it, is not necessarily expensive; for it costs no more —perhaps not so much—to erect either a cottage or a villa which shall be graceful and pleasing in appearance, than to construct tall towers, and mansard roofs, and elaborate ornamentation, or even the severely plain edifices which, to our minds, serve only by their contrast to enhance the beauty of Nature's handiwork.

It would be an excellent plan, we think, for persons contemplating building to have models of their houses constructed in paper or thin wood. Few people can obtain a perfect idea of the aspect of any proposed edifice from the architect's drawings. Engineers very frequently adopt this plan in building bridges and similar structures; and in theaters, the scenic artist always submits pasteboard models of elaborate set scenes to the manager and playwright before putting brush to canvas. A good model is always preliminary to the construction of a machine—as indeed it is to almost every structure, except a building—and why architects should not also furnish an embodiment of their designs in the same manner has always seemed to us rather anomalous.

BRITISH ASSOCIATION NOTES.

PROPELLING SHIPS BY WAVE MOTION.

Mr. Beauchamp Tower read a paper on "A Machine for Obtaining Motive Power from the Motion of a Ship among Waves." The machine consists in principle of a weight supported on a spring, so that it can oscillate on the spring through a considerable range in a vertical line. The scale of the spring, and consequently the natural period of oscillation of the weight, can be varied at will. When it is so adjusted that it synchronises with the waves, the oscillations become very violent, and a large amount of power can be obtained from them. In practice, the springs consist of highly compressed air pressing on the rims of hydro-pneumatic cylinders, and the arrangement is such that the vessel containing the compressed air forms the moving weight. The author exhibited a design of a machine for working an auxiliary propeller of a sailing ship of 1,800 tuns displacement. The moving weight in this case is 200 tuns, and he showed by calculation that it would give about 30 horse power in the long swell met with in the tropical calms, 260 horse power in average ocean waves, and more than 600 horse power in a heavy head sea. The space occupied by the machine compares favorably with a steam engine of the same power. The author exhibited a model of the machine, which recently, in a moderate sea, had yielded power at the rate of 1½ horse power per tun of moving weight.

WAVE MOTION

Professor Guthrie read a paper on the measurement of wave motion. He said his endeavor in various inquiries was to determine the rate of wave progress. The rate at which the wave moved along depended very little indeed upon the hight of the wave, nothing at all upon the breadth of the wave, nothing upon the density of specific gravity of the liquid, but almost entirely upon the wave length—that was, the distance from crest to crest. The learned professor demonstrated by means of experiments that, in circular troughs, the smaller the diameter the more rapid was the pulsation, and that the rate in different sized troughs varied inversely as the square root of the diameter. It was also found that in a circular trough a wave 39·4 inches in length traveled in one minute over 270 feet.

UNDERGROUND TEMPERATURE COMMITTEE.

Professor Everett presented the report of the Underground Temperature Committee. He said the committee had been in existence for eight years, and during that time had been engaged in trying to determine the rate of increase of temperature of the rock as they went deeper into the ground. The observations had generally been made by means of artesian wells and mines, and he gave interesting particular, of investigations recently made in the St. Gothard tunnels at Chiswick, and at Swinderly, near Lincoln. Mr. Galloway, mining engineer, narrated the result of some observations in mines in regard to the temperature, and Professor Everett said he did not think that in old mines, where good ventilation had been obtained for many years, any reliable data with reference to the temperature of the rock could be obtained without boring to a very great extent.

THE ATMOSPHERE AND SOUND.

Professor Osborne Reynolds read a paper on the refraction of sound by the atmosphere, and related the effect of experiments which he had recently made, with a view of throwing light on the subject. He had confirmed his hypothesis that, when sound proceeded in a direction contrary to that of the wind, it was not destroyed or stopped by the wind, but that it was lifted, and that at sufficiently high elevations it could be heard at as great distances as in other directions, or as when there was no wind. An upward diminution of temperature had been proved by M. Glaisher's balloon ascents, and he showed, by experiments with the sounds of firing of rockets and guns, that the upward variation of temperature had a great effect on the distance at which sounds could be heard. By other observations he found that, when the sky was cloudy and there was no dew, the sound could invariably be heard much farther with than against the wind; but that, when the sky was clear and there was a heavy dew, the sound could be heard as far against a light wind as with it. Professor Everett remarked that Professor Reynolds had given the most important contribution to the subject that had been given for very many years.

SUN SPOTS AND ATMOSPHERIC FORCES.

Professor Barrett read a paper prepared by Mr. T. Moffat, on the apparent connection between sun spots, atmospheric ozone, rain, and force of wind. The author stated that from 1850 to 1869 he discovered that the maximum and minimum of atmospheric ozone occurred in cycles of years. He had compared the number of new groups of sun spots, in each year of these cycles, with the quantity of ozone, and the results showed that in each cycle of maximum of ozone there was an increase in the number of new groups of sun spots. He also showed that there is an increase in the quantity of rain and the force of wind with the maximum quantity of ozone and sun spots, and a decrease in these with the minimum of ozone and sun spots.

CONSTITUTION OF THE SUN.

Professor Balfour Stewart, in an address on this subject, said: Several new metals have been added to the list of those previously detected in the solar atmosphere, and it is now certain that the vapors of hydrogen, potassium, sodium, rubidium, barium, strontium, calcium, magnesium, aluminum, iron, manganese, chromium, cobalt, nickel, titanium, lead, copper, cadmium, zinc, uranium, cerium, vanadium, and palladium occur in our luminary

If we have learned to be independent of total eclipses as far as the lower portions of the solar atmosphere are concerned, it must be confessed that as yet the upper portions—the outworks of the sun—can only be successfully approached on these rare and precious occasions. Thanks to the various government expeditions despatched by Great Britain, by the United States, and by several Continental nations—thanks, also, to the exertions of Lord Lindsay and other astronomers —we are in the possession of definite information regarding the solar corona.

In the first place, we are now absolutely certain that a large part of this appendage unmistakably belongs to our luminary, and in the next place, we know that it consists, in part at least, of an ignited gas giving a peculiar spectrum, which we have not yet been able to identify with that of any known element. The temptation is great to associate this spectrum with the presence of something lighter than hydrogen, of the nature of which we are yet totally ignorant.

A peculiar physical structure of the corona has likewise been suspected. On the whole, we may say that this is the least known, while it is perhaps the most interesting, region of solar research: most assuredly it is well worthy of further investigation.

THE TRIALS OF SCREW STEAMSHIPS.

Mr. William Denny (Dumbarton) read a paper on "The Trials of Screw Steamships." A considerable part of his paper was taken up in proving the fallacy of the cube of the speed theory, of which "arbitrary and misleading dogma" he hoped there would soon be an end. The system of progressive trials exploded this idea, and if the late Professor Rankine had had the advantage of progressive trials his work would have been more valuable. In making progressive trials, perfect accuracy should be obtained, and they would be worthless if they fell below Admiralty standard, which the majority of private trials, he was sorry to say, did almost invariably. A perfectly calm day was necessary, as the wind told enormously on the slow speed. The great aim was to equalize the development of power on the two runs. They would gain literally nothing from single model trials. Mr. Thorneycroft (Chiswick) having observed that, in a ship with a very large surface, the resistance increased in a slower ratio than in a bluff vessel, Professor Kennedy said that shipbuilders had not at present got anything like so far to adopting progressive trials as Mr. Denny seemed to have gone. But one thing they might at least look for was tolerably complete results. They continually had to work at results which looked very complete, and had a great many figures in them, but frequently happened to leave out one or two matters which were absolutely essential to coming to anything like conclusions from them. It was very easy indeed, on a trial ship, with a moderate amount of care, to get to know a great deal of the commoner particulars, which, if put together and collated, would help them to come to something like a conclusion. They wanted especially particulars of the size of the vessel, her general form, the exact draft, and the exact speed. Mr. W. Smith (London) agreed with Professor Kennedy in his remarks. He said that the very systematic mode of setting about to deceive had been too thoroughly followed, and had been a practice quite recognized in connection with steamship builders, marine engineers, and even the persons associated with them. It was impossible to conceive of anything more fallacious than the records that had been sent to the British Association on this matter. Mr. Denny heartily agreed with what Professor Kennedy and Mr. Smith had said, and added that he had seen glaringly careless trials, which were as bad as dishonest trials.

THE STEERING OF SCREW STEAMERS.

In a paper read before the mechanical section of the British Association, Professor Osborne Reynolds says: 1. That when the screw is going ahead, the steamer will turn as if she were going ahead, although she may have stern way on. 2. That when the screw is going reversed, the rudder will act as if the vessel were going astern, although she may be moving ahead. 3. That the more rapidly the boat is moving in the opposite direction to that in which the screw is acting to drive it, the more nearly will the two effects on the rudder neutralize each other, and the less powerful will be its action. In reference to the effect of the screw to turn the boat independently of the rudder, the author states the following law: 4. That, when not breaking the surface, the screw has no considerable tendency to turn the ship as long as the rudder is straight. On the subject of racing, the author stated that his experiments had enabled him to establish the following laws: 5. That when the screw is frothing the water, or only partially immersed, it will have a tendency to turn the stern in the opposite direction to that in which the tips of the lower blades are moving. 6. That when the boat is going ahead, its effects will be easily counteracted by the rudder; but when starting suddenly either forward or backward, at first the effect of the screw will be greater than that of the rudder, and the ship will go accordingly. 7. That if, when the boat is going fast ahead, the screw is reversed, at first it almost destroys the action of the rudder, what little effect it has being in the reverse direction to that in which it usually acts. If then the screw draws air or breaks the surface, it will exert a powerful influence to turn the ship.

New Photo Dry Process.

M. E. Quiquerez furnishes the details of his rapid dry process, which, he claims, combines the quality of results belonging to the albumen processes with a sensitiveness hitherto unapproached. The plates first receive a preliminary coating of albumen (one in forty) to be filtered immediately before use. M. Quiquerez insists upon the use of ammonia rather than acetic acid for preserving the albumen from decomposition, as the acid causes the growth of a species of fungus which destroys the clearness of the liquid. Any good commercial collodion may be used, but one containing a large proportion of bromide is to be preferred. The silver bath consists of: Nitrate of silver 40 to 50 grains, glacial acetic acid, 2½ to 10 minims, according to temperature, rain water 1 oz., to be saturated with iodide of silver. The plate is allowed to remain in the bath at least four or five minutes, after which it is well washed, first in rain and then in ordinary water, until the whole of the free silver is removed. The preservative, in which the novelty of the process lies, is as follows:

SOLUTION NO. 1.—Roasted and finely ground coffee, 3¾ ozs.; Caramel, 1½ ozs.; boiling rain water, 40 ozs.

SOLUTION NO. 2.—Gum arabic, 1 oz.; albumen (beaten and decanted), 1 oz.; pyrogallic acid, 120 grains; cold rain water, 26 ozs.

When No. 1 has become cold, it is filtered and added to No. 2, the whole being well agitated, when it is ready for use. M. Quiquerez attributes the great sensitiveness of this process to the large quantity of pyrogallic acid employed, the albumen, though present in very small proportion, giving great solidity to the sensitive film. The gum and caramel lessen a slight tendency to harshness noticeable with coffee and albumen alone, and also render the film more permeable during development. The pyrogallic acid facilitates the action of the alkaline developer. The preservative is applied in the usual way by pouring it on and off the plate (previously well drained) three or four times.

The development is performed in a dish, by means of a plain solution of carbonate of ammonia, the plate being plunged direct into the developer without previous washing. If the exposure has been well timed, the details will be brought out without further treatment, when the film is carefully washed and intensified with pyro and silver. If, on the contrary, the exposure has been too short, the development must be continued by means of the ordinary alkaline pyro developer. An eighty-grain solution of sulphocyanide of ammonium is recommended for fixing, as it does not destroy the half tones. The color of the image is a rich red brown: but for those who prefer a black tone, M. Quiquerez recommends the use of chloride of gold.

New Theory of the Resistances of Ships and other Moving Bodies in Water.

The following is an abstract of the address of Mr. W. Froude, C.E., F.R.S., as president of section G (Mechanical Science), British Association:

"I propose," he said, "to treat of certain of the fundamental principles which govern the behavior of fluid, and this with special reference to the resistance of ships. By the term "resistance" I mean the opposing force which a ship experiences in its progress through the water. Considering the immense aggregate amount of power expended in the propulsion of ships, or, in other words, in overcoming the resistance of ships, I trust you will look favorably on an attempt to elucidate the causes of this resistance. It is true that improved results in shipbuilding have been obtained through accumulated experience; but it unfortunately happens that many of the theories, by which this experience is commonly interpreted, are interwoven with fundamental fallacies, which, passing for principles, lead to mischievous results when again applied beyond the limits of actual experience. The resistance experienced by ships is but a branch of the general question of the forces which act on a body moving through a fluid, and has within a comparatively recent period been placed in an entirely new light by what is commonly called the theory of stream lines. The theory as a whole involves mathematics of the highest order, reaching alike beyond my ken and my purpose; but I believe that, so far it concerns the resistance of ships, it can be sufficiently understood without the help of technical mathematics; and I will endeavor to explain the course which I have myself found most conducive to its easy apprehension. It is convenient to consider first the case of a completely submerged body moving in a straight line with uniform speed through an unlimited ocean of fluid. A fish in deep water, a submarine motive torpedo, a sounding lead while descending through water, if moving at uniform speed, are all examples of the case I am dealing with. It is a common but erroneous belief that a body thus moving experiences resistance to its onward motion by an increase of pressure on its head end, and a diminution of pressure on its tail end. It is thus supposed that the entire head end of the body has to keep exerting pressure to drive the fluid out of the way, to force a passage for the body, and that the entire tail end has to keep on exerting a kind of suction on the fluid to induce it to close in again--that there is, in fact, what is termed *plus* pressure throughout the head end of the body and *minus* pressure or partial vacuum throughout the tail end. This is not so: the resistance to the progress of the body is not due to these causes. The theory of stream lines discloses to us the startling but true proposition that a submerged body, if moving at a uniform speed through a perfect fluid, would encounter no resistance whatever. By a perfect fluid I mean a fluid which is free from viscosity, or quasi-solidity, and in which no friction is caused by the sliding of the particles of the fluid past one another, or past the surface of the body. The property which I describe as 'quasi-solidity' must not be confused with that which persons have in their minds when they use the term 'solid water.' When people in this sense speak of water as being 'solid,' they refer to the sensation of solidity experienced on striking the water surface with the hand, or to the reaction encountered by an oar blade or propeller. What I mean by 'quasi-solidity' is the sort of stiffness which is conspicuous in tar or liquid mud; and this property undoubtedly exists in water, though in a very small degree. But the sensation of solid reaction which is encountered by the hand or the oar blade is not in any way due to this property, but to the inertia of the water. It is in effect this inertia which is erroneously termed solidity; and this inertia is possessed by the perfect fluid, with which we are going to deal, as fully as by water. Nevertheless it is true, as I am presently going to show you, that the perfect fluid would offer no resistance to a submerged body moving through it at a steady speed.

It will be seen that the apparent contradiction in terms which I have just advanced is cleared up by the circumstance that in the one case we are dealing with steady motion, and in the other case with the initiation of motion. In the case of a completely submerged body in the midst of an ocean of perfect fluid, unlimited in every direction, I need hardly argue that it is immaterial whether we consider the body as moving uniformly through the ocean of fluid, or the ocean of fluid as moving uniformly past the body. The proposition that the motion of a body through a perfect fluid is unresisted, or, what is the same thing, that the motion of a of a perfect fluid past a body has no tendency to push it in the direction in which the fluid is flowing, is a novel one to many persons; and to such it must seem extremely startling. It arises from a general principle of fluid motion, which I shall presently put before you in detail—namely, that to cause a perfect fluid to change its condition of flow in any manner whatever, and ultimately to return to its original condition of flow, does not require, nay does not admit of, the expenditure of any power, whether the fluid be caused to flow in a curved path, as it must do in order to get round a stationary body which stands in its way, or to flow with altered speed as it must do in order to get through the local construction of a channel which the presence of the stationary body practically creates. Power, it may indeed be said, is first expended, and force exerted to communicate certain motions to the fluid; but that same power will ultimately be given back, and the force counterbalanced, when the fluid yields up the motion which has been communicated to it, and returns to its original condition." He illustrated this portion of his address with several interesting experiments, in one of which he was assisted by Sir William Thomson, showing that, if a chain be set rotating at a very high velocity over a pulley, the centrifugal forces did not tend to disturb the path of the running chain, and that a stream of fluid in a tortuous flexible pipe would behave in a strictly antagonistic manner. He also introduced an experiment to show that, in a pipe of varying diameter, the pressure of a running stream is greater in the wider part. He then pointed out that the causes of resistance to the motion of a ship through the water are: First, surface friction; secondly, mutual friction of the particles of water (and this is only practically felt when there are features sufficiently abrupt to cause eddies); and thirdly, wave genesis; and that these are the only causes of resistance. He also showed that a ship at the surface experiences no resistance in addition to that due to surface friction and the action of eddies, except that due to the waves she makes.

He then said: "I have done my best to make this clear; but there is an idea that there exists a form of resistance, a something expressed by the term 'direct head resistance', which is independent of the abovementioned causes. This idea is so largely prevalent, of such long standing, and at first sight so plausible, that I am anxious not to leave any misunderstanding on that point. The notion of head resistance, in the ordinary sense of the word, or the notion of any opposing force due to the inertia of the water on the area of the ship's way, a force acted upon and measured by the area of midship section, is, from beginning to end, an entire delusion. No such force acts at all, or can act. No doubt, if two ships are of precisely similar design, the area of midship section may be used as a measure of the resistance, because it is a measure of the size of the ship; and if the ships were similar in every respect, so also would the length of the bowsprit, or the hight of the mast, be a measure of resistance, and for just the same reason. But it is an utter mistake to suppose that any part of a ship's resistance is a direct effect of the inertia of the water which has to be displaced from the area of the ship's way. Indirectly the inertia causes resistance to a ship at the surface, because the pressure due to it makes waves. But to a submerged body, or to the submerged portion of a ship traveling beneath rigid ice, no resistance whatever will be caused by the inertia of the water which is pushed aside. And this means that, if we compare two such submerged bodies, or two such submerged portions of ships traveling beneath the ice, as long as they are both of sufficiently easy shape not to cause eddies, the one which will make the least resistance is the one which has the least skin surface, though it has twice or thrice the area of midship section of the other. The resistance of a ship, then, practically consists of three items—namely, surface friction, eddy resistance, and wave resistance. Of these the first named is, at least in the case of large ships, much the largest item. In the Grayhound, a bluff ship of 1,100 tuns, only 170 feet long, and having a thick stem and sternposts, thus making considerable eddy resistance, and at 10 knots visibly making large waves, the surface friction was 58 per cent of the whole resistance at the speed; and there can be no doubt that, with the long iron ships now built, it must be a far greater proportion than that. Moreover, the Grayhound was a coppered ship; and most of the work of our iron ships has to be done when they are rather foul, which necessarily increases the surface friction item. The second item of resistance—namely, the formation of eddies—is, I believe, imperceptible to ships as finely formed as most modern iron steamships. Thick square shaped stems and sternposts are the most fruitful source of this kind of resistance. The third item is wave resistance. On this point, the stream line theory rather suggests tendencies than supplies quantitative results, because, though it indicates the nature of the forces in which the waves originate, the laws of such wave combinations are so very intricate that they do not enable us to predict what waves will actually be formed under any given condition. In order to reduce wave resistance, we should make the ships very long. On the other hand, to reduce the surface friction we should make her comparatively short, so as to diminish the surface of wetted skin. Thus, as commonly happens in such problems, we are endeavoring to reconcile conflicting methods of improvements; and to work out the problem in any given case, we require to know actual quantities.

We have sufficient general data from which the skin resistance can be determined by simple calculation; but the data for determining wave resistance must be obtained from direct experiments upon different forms to ascertain its value for each form. Such experiments should be directed to determine the wave resistance of all varieties of water line, cross section, and proportion of length, breadth, and depth, so as to give the comparative result for each. An exhaustive series of such experiments could not be tried with full sized ships; but I trust that the experiments I am now carrying out with models for the Admiralty are gradually accumulating the data required on this branch of the subject. I wish, in conclusion, to insist again, with the greatest urgency, on the hopeless futility of any attempt to theorize on goodness of form in ships, except under the strong and entirely new light which the doctrine of stream lines throws on it. It is, I repeat, a simple fact that the whole framework of thought, by which the search for improved forms is commonly directed, consist of ideas which, if the doctrine of stream lines is true, are absolutely delusive and misleading. And real improvements are not seldom attributed to the guidance of those very ideas which I am characterizing as delusive, while in reality they are the fruit of painstaking, but incorrectly rationalized, experience. I am but insisting on views which the highest mathematicians of the day have established irrefutably; and my work has been to appreciate and adopt these views when presented to me. No one is more alive than myself to the plausibility of the unsound views against which I am contending: but it is for the very reason that they are so plausible that it is necessary to protest against them so earnestly; and I hope that, in protesting thus, I shall not be regarded as dogmatic. In truth, it is a process of scepticism, not of dogmatism; for I do not profess to direct any one how to find his way straight to the form of least resistance. For the present we can but feel our way cautiously towards it by careful trials, using only the improved idea which the stream line theory supplies, as safeguards against attributing this or that result to irrelevant or, rather, non-existing causes."

Remarkable Shower of Ice---Perils of Rocky Mountain Railway Traveling.

At Potter station, on the Union Pacific Railroad, recently, a train was just pulling out from the station when a storm commenced, and in ten seconds there was such a fury of hail and wind that the engineer deemed it best to stop the locomotive. The hailstones were simply great chunks of ice, many of them three and four inches in diameter, and of all shapes—squares, cones, cubes, etc. The first stone that struck the train broke a window, and the flying glass severely injured a lady on the face, making a deep cut. Five minutes afterward there was not a whole light of glass on the south side of the train, the whole length of it. The windows in the Pullman cars were of French plate, three eighths of an inch thick, and double. The hail broke both thicknesses, and tore the curtains into shreds. The wooden shutters, too, were smashed, and many of the mirrors were broken. The decklights on the top of the cars were also demolished. The dome of the engine was dented as if it had been pounded with a heavy weight, and the woodwork on the south side of the cars was plowed as if some one had struck it all over with sliding blows from a hammer. During the continuance of this terrific fusillade, which lasted fully twenty minutes, the excitement and fear among the passengers ran very high. Several ladies fainted, and one lady, Mrs. Earle, wife of the superintendent of the Mountain division of the road, went into spasms, from which she did not recover for over an hour after the cessation of the storm. Several persons sitting on the south side of the cars were more or less injured about the head and face.

As soon as the storm abated a little, the matting in the cars was hung up in front of the windows, and the train moved ahead, the drifted hailstones proving an obstacle for some miles. At the next station, strips of tin were procured and fasted over the windows the entire length of thd train. The cars have been run into shop for repairs, and the damage will amount, it is estimated, to several thousand dollars.—*Denver News.*

DECISIONS OF THE COURTS.

United States Circuit Court.---Northern District of New York.

PATENT PRESS.—GEORGE B. BOOMER AND RUFUS E. BOSCHERT *vs* UNITED POWER PRESS COMPANY *et al.*

Shipman, J.

This is a bill in equity filed February 5, 1874, praying for an account and an injunction, for infringement of letters patent for an improvement in cheese presses, granted to the complainants and to Thomas G. Morse, on November 1, 1870. A reissue was granted to the complainants on January 28, 1873, Morse having previously assigned his interest in the invention to Boomer.

The alleged invention of the patentees consisted in constructing sliding standards, the lower ends of which are attached to the platen, and the upper ends extend through a socket in the head block. When one end of the platen is depressed, these standards tend to incline towards the side of least resistance, and in an opposite direction from that towards which the screw shaft tends to move. In order that these opposing tendencies may be made to counteract each other, a central hub is attached to the screw shaft between the standards; when the standards incline to the side of greatest depression, this central hub or bearing attached to the screw shaft comes in contact with the standard, prevents its further movement, and at the same time, by its pressure upon the standard, prevents the movement of the screw shaft to the side of greatest resistance.

The two styles of machines which the defendants' corporation manufactured and sold, in the city of New York, prior to April 10, 1874, differ only in immaterial details from the press of the complainants.

The defendants contend first that the reissued patent is void because it is not for the same invention as the one which was claimed in the original patent.

But the court held that the claim of the reissued patent embraces, in comprehensive terms, the actual invention, and describes what is claimed to be new, and it was not necessary to mention in that part of the specification that toggle levers and a platen were also used in the press. The only ingredients which entered into the invention for which the original patent was granted are those which are specified in the claim of the reissued patent.

The defendants insist, in the next place, that the complainants' patent is invalid, because the elements which are specified in the claim, as forming in combination the invention, do not of themselves perform or accomplish anything.

But the Court held that the claim is properly confined to the invention, and specifies only the improvement which the patentees invented. The elements of the invention are operative in connection with the mechanism of the press, which is accurately described in the specifications.

The defendants contend, thirdly, that the complainants' patent is void, in view of the previous state of the art, as shown in the presses which are described in the patent of Robert Harding, of September 3, 1842, in the patent of P. G. Gardner, of February 28, 1845, in the patent of Nathan Chapman of January 12, 1858, in the patent of Pickens B. Weaver, of August 21, 1860, and in the French press of P. Samin.

But the court held that no one of these presses contained the combination of sliding standards with the central hub of the complainants' press and no one was constructed upon the principle of keeping the platen level by means of the active resistance which standard and hub make to the tendency of the screw shaft to move towards the side of greater resistance when the platen commences to tilt. The point upon which the defendants most strongly relied in this part of the case was that the sliding standard of the Harding press and the central hub or wheel of the Gardner press could have been combined, and thus the complainants' press could have been constructed without the exercise of invention. This theory is not supported by the facts, and it is manifest that an operative machine could not, prior to the date of the complainants' invention, have been constructed from a combination of the two machines of Gardner and Harding without inventive skill of more than ordinary character.

Let there be a decree for the complainants declaring the infringement, and directing an account of profits and an ascertainment of damages until April 10, 1874, with costs.

[*W. B. Smith* and *A. J. Todd* for complainants.
J. Van Sanvoord for defendants.]

Recent American and Foreign Patents.

Improved Screw-Pegging Machine.

A. C. McKnight, Philadelphia, Pa.—This invention consists of several novel devices in a screw-pegging machine, by which the fastening together of sole and upper of boot or shoe may be greatly facilitated. These new features, both separately and in the aggregate, will materially contribute to the cheaper manufacture of boots and shoes, while the pegging is done thoroughly and in a workmanlike manner.

Improved Machine for Stiffening Hats.

Granville B. Fuller, Middletown, N. Y.—The hats are dipped into stiffening in a tank, and are placed upon blocks, to which a rapid rotary motion is then given to throw off the surplus stiffening. The hats are given a heavy or a light stiffening by varying the gravity of the stiffening solution contained in the tank.

Improved Knock-Down Bedstead.

William S. Moses, Lebanon, N.H.—This consists of a method of detachably locking the end boards and standards of the head and foot portions of a bedstead by hooks on the lower end board and screws at the top, by which the parts may be readily separated for packing and be put together without the aid of skilled labor.