of whom are gentlemen of abundant means, who have brought their families, have built substantial houses, and have come to stay. Others have purchased land which they are having improved, and will come themselves as soon as they can arrange to leave their present callings. With their national thrift, they prefer to have their country homes where a good income can be derived from their investment, rather than have their country residences in some suburban town of San Francisco, where no income is ever expected, as in the Oakland or Santa Cruz highlands that overlook the towns, as the foothills here overlook the valley and the capital city of Sacramento.

These terraces, as they lie on the face of the curving ridge that encircles the sloping valley, are like "pictures hung on the wall" to travelers on the Central Pacific Railroad as they pass through the towns of Penryn, Loomis, and Rocklin, and to the people who live in the vicinity they are a constant source of pleasure. When the face of this ridge from the Newcastle line to Rocklin becomes converted into terraced orange orchards, as the owners purpose doing in a few years, and when the trees attain good size, and come into bearing, they will present scenes of unique beauty unequaled by anything similar in the country.—*P. W. Butler, in Rural Press.*

Transmission of Power by Compressed Air.

Compressed air is, perhaps, the chief rival of electrical transmission. It is at present used chiefly in mines, where it is still a very successful rival of electricity, but from present appearances it is likely that it will gradually be replaced by the latter method. In Paris there is a large central station for the distribution of compressed air, and it seems to be in successful operation. It does not appear, however, that the advantages over electrical transmission are so great that it will not soon be replaced by electricity. Its introduction is not making the rapid strides that the introduction of electricity is now making. Its efficiency as compared with electricity will be shown very well at the Niagara Falls power plant, where I understand a compressed air system is to be introduced in competition with electricity. From a paper by Professor Unwin it appears that the transmission of power by compressed air is practical to a distance of at least 20 miles. It seems that 10,000 horse power can be transmitted to a distance of 20 miles in a 30-inch main at 132·3 pounds per square inch with a loss of pressure of only 12 per cent. The efficiency of such a plant is said to be 40 to 50 per cent if the air is used cold, and 59 to 73 per cent if the air is reheated. The relative efficiencies in per cent for different distances of several systems is as follows:

Distance in Miles.	Efficiency in per cent. Hydraulic.	Pneumatic.	Wire Rope.
½	50	55	91
1	49	54	85
3	41	51	61
5	37	50	43
10	26	43	21
13	18	39	11

The most usual and extended method of transmitting power, if so it may be called, is that of transporting the coal itself from the mines in the manufacturing cities. The efficiency in engineering terms in Philadelphia, which is not far from the coal regions, is only 50 per cent. CARL HERING.

Good Will—Trade Name.

The following rulings regarding the important subjects of good will and trade name were made by the Supreme Court of Louisiana, in the case of Vonderbank *vs.* Schmidt, viz.:

1. Good will is the favor which the management of a business wins from the public and the probability that old customers will continue their patronage and to resort to the old place.

2. It may be said to consist of those intangible advantages or incidents which are impersonal, so far as the vendor is concerned, and attach to the thing conveyed. When it consists in the advantage of location it follows an assignment of the lease of the location, and if not assigned it passes to the lessee of the property at the termination of the lease.

3. A trade mark has no separate existence, but owes its existence to the fact that it is actually affixed to a vendible commodity, whereas a trade name, or a fictitious name, may be considered as a quasi-trade mark, a mere property which is somewhat allied to good will.

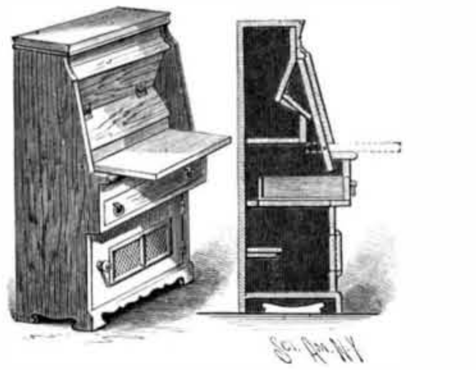
4. The only restraint the grant of good will imposes upon the grantor is to prevent his subsequent employment of his name so as to deceive and mislead the public.

5. A surname may become impersonal when attached to an article of manufacture, and become the name by which such article is known in the market; and, in case of sale of the right to manufacture the name passes also, though it does not pass as good will, but as a trade mark.

6. By giving a particular name to a building, as a sign to the hotel business, a tenant does not thereby make the name a fixture to the building and the property of the landlord upon the expiration of the lease. One may consent to the employment of his name as that of a place of refreshment, but if such consent be purely gratuitous he may withdraw it at pleasure, particularly if such name be his surname, it being personal to the proprietor and not an element of good will of the business.

A FLOUR OR KITCHEN CABINET.

The cabinet shown in the illustration is designed to present a neat appearance, and afford ample ventilation to the flour or other materials in the bins. It has been patented by Mr. Albert A. Tinker, of Madison, Wis. The front opening of the flour compartment is closed by an inclined hinge cover, and pivoted to the



TINKER'S FLOUR CABINET.

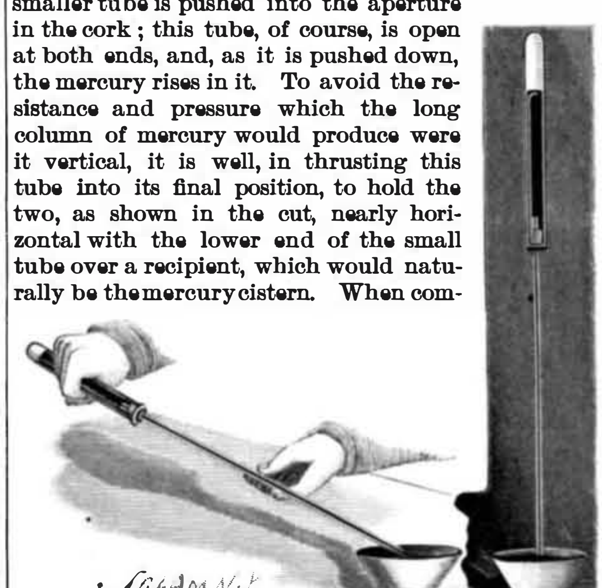
framing is a moulding board, adapted to be swung up in front of the cover, as shown in the sectional view. When the moulding board or leaf is tilted, any flour on it may be readily scraped off into a drawer below. The rearward movement of this drawer is limited, an air passage being left behind it so that air may freely circulate, the door of the lower compartment being provided with wire gauze.

A LECTURE BAROMETER.

T. O'CONOR SLOANE, PH.D.

A simple form of barometer is illustrated for exhibiting the principle of the instrument in lectures or before audiences. The object is to have a large air chamber, so that it can be readily seen at a distance, yet to avoid the necessity of using very large amounts of mercury. It also is comparatively portable, as the tubes composing it are much shorter than the barometric column.

Two tubes and a perforated rubber cork comprise the recipient of the barometric column. The upper tube may be half or three-quarters of an inch in internal diameter, resembling a test tube in general appearance, but should be considerably heavier and stronger. The lower tube is regular barometric tubing, or may be almost capillary in bore. To fill it, the tubes being taken apart, the tube of larger diameter is filled with mercury nearly to the top, and the cork is inserted. This has the effect of expelling a little mercury through the perforation of the cork. Next the smaller tube is pushed into the aperture in the cork; this tube, of course, is open at both ends, and, as it is pushed down, the mercury rises in it. To avoid the resistance and pressure which the long column of mercury would produce were it vertical, it is well, in thrusting this tube into its final position, to hold the two, as shown in the cut, nearly horizontal with the lower end of the small tube over a recipient, which would naturally be the mercury cistern. When com-



A LECTURE BAROMETER.

pletely filled, the finger is placed over the end of the lower tube and the whole system is inverted in mercury, as in the manipulation of the ordinary barometer tube; the finger is removed and the mercury settles down to the proper height.

As regards their lengths, the upper tube may be 8 in. or 10 in. long and the lower one about 24 in. Owing to the large volume of mercury employed, it settles down slowly to its position, the long almost capillary lower tube acting as a damper upon its motion exactly as in the ordinary sea barometer.

The advantages of this method of filling are that air can be so readily excluded. When a barometer is filled from the top, air is always carried in with the mercury, and to get rid of it some trouble is requir The bubbles may be fished out with a wire. By verting the tube in mercury they may be made coalesce into a large bubble; or the mercury may boiled. In the present case, if any bubbles collec the large tube, they may easily be drawn out v glass rod or iron wire before inserting the cor the subsequent filling, as there is no agitation ıe mercury, a perfect integral column is obtained.

As its disadvantage, the liability to leakage of the joint between the tubes should be mentioned. This is to be guarded against by using a very soft and perfectly fitting cork.

Palladium.

An experiment, illustrating the remarkable power possessed by palladium of occluding hydrogen is described by Prof. Wilm, of St. Petersburg, so says *Nature*, in the current number of the *Berichte* of the German Chemical Society. The experiment is so simple, and requires so short a time to exhibit, that it would appear to be eminently suitable for lecture demonstration. The metallic palladium is employed in the finely divided state obtained by heating the easily prepared yellow crystals of the compound $PdCl_2 . 2NH_3$, first in the open air, and subsequently for a short time in an atmosphere of hydrogen. A small quantity, about four grammes in weight, of the palladium so obtained is placed in a bulb blown at the bend of a U-shaped tube. The extremity of one limb of the U-tube is bent round at right angles, and connected with a wash-bottle containing sulphuric acid, which in its turn is connected with a Kipp's apparatus generating hydrogen from zinc and dilute sulphuric acid. The wash-bottle serves not only to dry the hydrogen, but also to indicate the speed of the current of gas.

The extremity of the other limb of the U-tube is narrowed to a capillary, and terminates with a tightly-fitting stop cock and jet. In commencing the experiment, the hydrogen current is started, and then, first the metal, and afterward the whole U-tube, is carefully heated with a Bunsen flame in order to remove the moisture formed by the action of the hydrogen, under the influence of the palladium, upon the oxygen of the air contained in the apparatus. When all the air and moisture are thus driven out of the apparatus, an attempt may be made to ignite the issuing hydrogen at the jet above the open stop cock. It will be found, however, that even while the metal is hot and the stream of hydrogen very rapid, a constantly burning flame cannot be maintained at the jet with the stop-cock fully open; instead, a series of somewhat explosive ignitions and sudden extinctions occur. It is only when the stop cock is turned so as to reduce the exit of the gas to a minimum that a constantly burning jet can be obtained, the hydrogen in contact with the palladium being then subjected to a certain amount of compression. The palladium is now heated a little more strongly, just above bright redness, when it is no longer capable of occluding hydrogen, and then the lamp is withdrawn, and after a few seconds the stop cock closed. The occlusion is then demonstrated in a most striking manner, for the stream of hydrogen continues to bubble through the sulphuric acid bottle and into the U-tube for several minutes with its original rapidity, although all exit is prevented by the closing of the stop cock.

At length, however, the occlusion diminishes, and the stream of hydrogen gradually becomes slower and slower, until it entirely ceases, the palladium having regained the temperature of the room, and becomes saturated with hydrogen at this temperature. If now the stop cock is opened, and the metal again heated, upon applying a flame to the jet, the issuing hydrogen evolved from the palladium takes fire, and burns with a tall flame which remains constant for some minutes, then, as the hydrogen stored in the palladium becomes exhausted, diminishes in size, and finally disappears. The moment the flame is removed occlusion instantly commences again, and the experiment may be repeated any number of times with undiminished effect.

Torpedo Depot Ship.

The French government is about to construct one after designs which have been prepared by M. J. C. Duplaa-Lahitte, of the Corps du Genie's Maritime. The vessel, which is to be named the Foudre, will be 370 feet 6 inches long and 51 feet 3 inches broad, and at a mean draught of 20 feet will displace 5,970 tons of water. Engines of 11,400 aggregate H. P. will drive twin-screws and give an extreme speed of 19 knots. The armament will consist of eight 3·9 inch, four 2·5 inch, and four 1·8 inch, quick firing Canet guns, and five torpedo ejectors; and she will carry ten torpedo boats, corresponding with ours of the second class, which will be hoisted and lowered by means of hydraulic gear. A certain amount of protection will be given to the vessel by a steel deck 1½ inches thick. The Foudre, which will be ready for sea in 1895, will be supplied with material and apparatus for the repair of torpedoes and torpedo boats and for the construction of small craft.