Writing Inks.

Writing inks can be made equally well from galls and tannin, but inks made from galls are preferable for copying purposes, as they have much greater "body," owing to the extractive matter derived from the galls. The following formulæ are taken from notes by Dieterich quoted by the *Pharmaceutische Centralhalle*. The peculiarity of the first set of formulæ is that they start from the extract of galls and solution of tannin, to which, after filtration, a definite amount of ferric-chloride solution is added, and, after standing three weeks, these ferrated solutions are filtered. We shall call these ferrated solutions "gall basis" and "tannin basis" respectively. They really are the ink, but it is necessary to add coloring matter in order to make the writing visible. On exposure to the air, the writing becomes black. Chinese galls are preferable to oak galls for ink making, as they contain most extractive matter. To make the

GALL EXTRACT,

reduce 6 oz. of Chinese galls to No. 20 powder, and digest in a pint of water for twelve hours. Strain, press the marc, and digest it again in 12 ounces of water for twelve hours, repeating the pressure at the end of this time. Now add to the strained liquors 5 drachms of powdered French chalk. Set aside in a cold place for twenty-four hours, then filter, washing the filter with as much water as will make the filter measure 30 ounces.

TANNIN SOLUTION.

This is made by dissolving 3 ounces of commercial tannin (it need not be the purified medicinal kind) in sufficient water to make 30 ounces of solution.

GALL BASIS.

To 10 ounces of the gall extract add 1 ounce of 10 per cent solution of ferric chloride, made by dissolving the salt in distilled water. Allow the mixture to stand in a corked bottle for three weeks and filter.

TANNIN BASIS.

Made in the same way, using 10 ounces of the tannin solution and 1 ounce of iron solution.

BLUE-BLACK OFFICE INK.

Gum arabic	½ ounce.
Aniline water-blue, I.B.	75 grains.
Glycerine	1 fl. drachm.
Water	12½ ounces.

Mix these with 18 ounces of gall basis or the same of tannin basis, and set aside in a closed vessel for a few weeks to clear. Then fill into small bottles, preferably stone bottles, so as to keep away from the light.

This ink writes a beautiful blue color, dries very readily on the paper, and changes to a good blue-black. It is of good quality, and is well liked. It is not a copying ink.

A RED-BLACK INK,

which is identical with the above in quality only that it writes red, changes to reddish-brown, and finally to a deep brown-black, can be made by using 150 grains of Ponceau BB. (a red aniline color) in place of the aniline water-blue. The following colors may also be obtained:

Violet-black.—Mix together 2 parts of the red-black and 3 parts of the blue-black inks.

Green-black.—Omit the aniline water-blue from the blue-black formula, and use 150 grains of aniline green D.

Blue green-black.—Mix together 2 partsof blue-black and 3 parts of green-black. A nice color is also obtained by adding 8 to 15 grains of aniline green to the blue-black ink.

Deep-black.—Omit the aniline water-blue, and use in its place 5 drachms of aniline deep-black E.

COPYING INKS.

The following are made with the same bases as the foregoing:

King's Copying Ink.

Gall basis	24 ounces.
Aniline water-blue, I.B.	150 grains.
Glycerine	2 fl. drachms.
Gum arabic	5 drachms.
Sugar	150 grains.
Water	8 ounces.

Mix and set aside for a few weeks as above directed.

A ruby ink is made by using 150 grains of Ponceau R.R. in place of the aniline water-blue. Both the inks and the copies ultimately turn jet-black. Other colors are obtained with aniline green D, 150 grains; deep-black E, 5 drachms; and indigo-carmine, 150 grains each, in place of the aniline blue.

INK EXTRACTS.

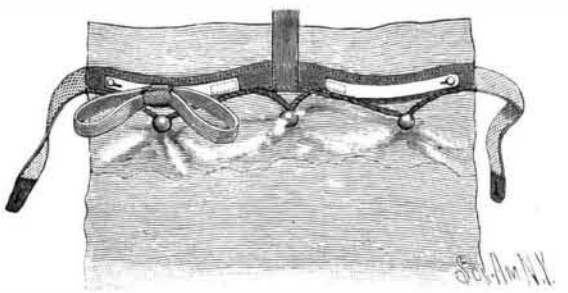
The following quantities are intended for a wine-bottleful of rain water. The powder is to be added to the water, and the mixture gently boiled for from fifteen to twenty minutes, and when cold the ink should be bottled and set aside for four weeks before using:

	Plain.	Copying.
Tannin	1 ounce.	9 drachms.
Dried sulphate of iron	3½ drachms.	4 "
Gum arabic	75 grains.	2 "
Sugar	40 "	75 grains.
Aniline water-blue, I.B.	40 "	75 "

Other colors may take the place of the aniline blue as in the preceding formulæ.

A BEDCLOTHES FASTENER.

The illustration represents a device more particularly designed to prevent children from becoming uncovered when sleeping in bed, at the same time stopping them from lying on their backs, and thus preventing nightmare and snoring. A band is arranged to extend across and be attached at or near its ends and middle to the upper end of the under side of the top sheet or cover. The attachment is made by cords fastened to the band and secured by a whip grip around balls of rubber, cork, or wood, incased by the sheet. To each end of the main band are attached elastic extensions, to be secured by eye-holes on screw-hooks on the side of the bedstead, a branch band also extending to a similar fastening on the head of the bedstead, there being more than one branch band if more than



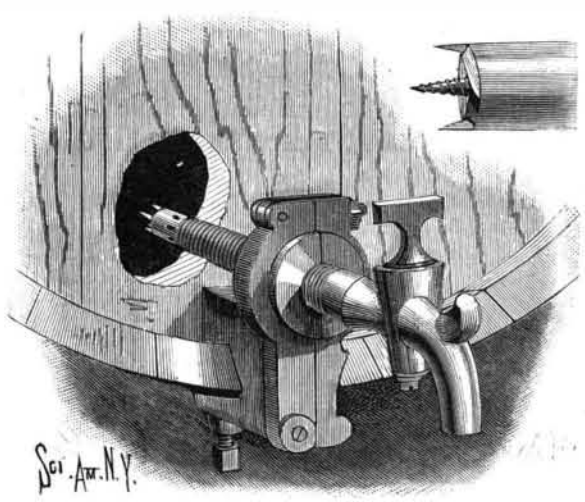
ANGELL'S BEDCLOTHES FASTENER.

two persons sleep in the same bed. Upon the under side of the transverse loop-like body band are band slides on which slide loops, to each of which is attached a double shoulder strap, adapted to fit comfortably over the shoulders of a child or other person, and partly made up of elastic webbing. This strap is intended to allow sufficient freedom of the limbs and body, but prevent one having it on lying on the back. The shoulder strap is put on the child before the latter is put to bed, and is then attached to the slide.

Further information relative to this invention may be obtained of the patentee, Mr. C. E. Angell, Box 75, Salt Lake City, Utah.

A DEVICE FOR TAPPING BARRELS.

A novel form of faucet and attachment, by means of which the faucet may be made to form its own opening into a barrel at any desired place, is shown in the accompanying illustration, and has been patented by Mr. William Lindenmann, of No. 93 Gilden Street, New Brunswick, N. J. A frame or block, having an angular recess adapted to engage one of the staves of the barrel head, is secured to the barrel by a set screw. On the frame is an upwardly extending arm carrying a pivot pin, on which is pivoted a second arm adapted to close on the first arm, and be fastened thereto by a pivoted bolt passing through slots in both arms at their upper ends, a nut screwing on the end of the bolt to clamp the arms together. The two arms are adapted to hold in place a sectional nut, of polygonal shape on its inside, and fitting in correspondingly shaped recesses in the arms, thus preventing the nut from turning. This nut is adapted to be engaged by a screw thread on the shank of a faucet, which has its rear end formed into an auger adapted to screw into the head of a barrel. Openings are formed in the shank in the rear of the



LINDENMANN'S FAUCET.

auger, so that when the latter has passed through the head of the barrel communication will be established between the interior of the barrel and the bore in the shank of the faucet.

THE Shepherd Sewerage System Co., of N.Y., whose automatic valve has been patented in this country and Europe, have recently established a branch office at 109 East Fayette Street, Baltimore, Md. This invention has been tested in this city and elsewhere.

In this system a valve is used which is claimed to be proof against clogging and which will automatically and periodically discharge the contents of the lower end of the drain pipe into the sewer, at the same time cutting off the gases from flowing back into the house.

The New French Steamship La Touraine.

This, the first twin screw vessel of the French line, arrived in New York from Havre on her maiden trip on June 26, covering 3,177 miles, by a long southerly route. Her average hourly speed was 18·41 knots, and her daily runs were: 507, 450, 451, 442, 456, 481, and 390 knots. Her furnaces burned 240 tons of coal a day, and her propellers made 74 to 75 revolutions a minute. Her engines developed 12,000 horse power, or 1,000 less than her maximum capacity, although forced draught was used throughout the voyage.

La Touraine was built by the Compagnie Generale Transatlantique, in their own ship yards at Penhouet, near St. Nazaire, France. Her keel was laid more than two years ago, so that ample time has been taken in her building. She is 540 feet in length, 57 feet in width, and has a depth of hold of 38 feet. Her burden is 11,675 tons. At the trial trip before the French commissioners the minimum speed attained was 19½ knots. This rate was increased to 20½ when the ventilators of the engines were in operation. During her passage from St. Nazaire to Havre the steamer made the distance between the two ports in 20 hours and 30 minutes, which gives a speed superior to 21 knots.

She has two triple expansion engines of 11,000 horse power, nominal, and can, it is said, easily be brought up to 13,000 each. The engines are separated by a longitudinal water tight bulkhead, and each engine normally operates but one of the two screws. The vessel has all the latest improvements in marine construction and is divided into fourteen water tight bulkheads, which form a safeguard against sinking in case of accident or collision.

There are 36 special cabins, 6 of which contain large double bedsteads, bathrooms, and wardrobes, 8 cabins with 2 beds each, 4 cabins for a single person, 15 for 2, and 3 for 3, on the promenade deck, all for first class passengers. There are 45 large cabins for second class passengers, 21 of which are for 2 persons and 24 arranged to accommodate 3 persons. There are 20 bathrooms, independent of those connected with the special cabin, for the accommodation of cabin passengers. The lower deck has accommodations for 600 emigrants. Taken in all, the vessel can accommodate 1,090 passengers—392 first class, 98 second, and 600 steerage.

The Recent Transit of Mercury.

In the June *Sidereal Messenger*, Dr. E. E. Barnard, of Lick Observatory, gives the following brief report:

The transit of Mercury was successfully observed here on May 9 with the 12 inch equatorial.

The day proved clear throughout, though the preceding few days promised anything but a clear day for the 9th.

The first and second contacts were observed, the planet being sharply caught at the position angle predicted by Mr. Schaeberle:

1st contact 1891, May 9. 3 h. 46 m. 32·7 s., Mt. Hamilton, M. T.
2d contact 1891, May 9, 3 h. 51 m. 19·9 s., Mt. Hamilton, M. T.

I also made forty-six filar micrometer measures for the polar and equatorial diameters of Mercury, and eleven measures of the position of the planet on the sun's disk.

No trace of Mercury could be seen before first contact, though it was carefully looked for, nor was that portion off the sun visible between first and second contacts. No bright spot was seen on the planet, nor any atmospheric ring—such as was seen about Venus at the transit of December 6, 1882. A careful examination of the sun's disk showed nothing that could be taken for a satellite.

Some excellent photographs of the transit were made by Mr. Burnham with the 12 inch between the micrometer measures.

As a matter of popular interest, I would say that a preliminary reduction of the measures for the planet's diameter gives 2,960 miles for that value, which must be taken as altogether provisional, until the measures are thoroughly reduced. The measures do not indicate any polar compression.

NOTE.—The times of contact expressed in standard Pacific time (8 h. slow of Greenwich) would be

1st contact, 3 h. 53 m. 7·0 s.
2d contact, 3 h. 57 m. 54·2 s.

MR. CHARLES H CRAMP is authority for the statement that it is entirely out of the question for an American shipbuilder to duplicate exactly a British ship or to follow out British specifications and plans, because American vessels are in advance, and there is no comparison when the outfit of the vessel is considered. Another point he makes is the fact that when foreign shipbuilders are asked to duplicate an American ship, or build entirely on American plans or methods, they always ask as much as American builders. This has been confirmed by evidence furnished by Mr. Cramp, and the whole summing up means that a contract for an inferior vessel will not be undertaken here on competitive terms, but that our shipbuilders stand ready to duplicate first-class steamers at the same cost of construction as abroad.—*Marine Journal.*