building is supported, its weight being distributed by steel trusses, which extend from pier to pier. A steel frame is carried up several hundred feet in the air, steel roofing trusses and beams are put in place, and the skeleton of the structure is complete. The process is comparable to the framing of a wooden house. The building is closed in with walls of brick and stone, but these represent only its sheathing. The building depends for integrity on its steel skeleton. In its frame even wind bracing is provided for.

It may be that a partition is required on a lower story, on the floor above which it is desirable that there should be an unbroken or undivided space. The engineer provides for this by including within the intermediate wall of the lower floor a truss, precisely such as would be used in bridge work. It is so throughout. The modern office building is only possible because of the engineer. In its roofing, flooring, and foundation, new engineering problems constantly arise, and the fully equipped architect is no longer the product of an apprenticeship at the drawing-board—he must be a capable engineer.

### A DECISION RELATING TO ASSIGNMENTS.

A decision of considerable importance to all persons who hold property in letters patent by assignment has recently been made by the United States Court of Appeals. This is the case of the American Cable Railway Company *vs.* the Mayor of New York City. Heretofore it has been assumed, and in fact decided, by the State courts that the simple recording of an assignment in the Patent Office is *prima facie* evidence of the genuineness of the instrument; but the Court of Appeals now reverses this doctrine and holds than an assignment of a patent is not a public document, but is simply a private writing, and there is no statutory provision requiring an assignment to be recorded in the Patent Office. Section 4898 of the Revised Statutes permits this to be done for the protection of the assignee against a subsequent *bona fide* purchaser or mortgagee. The section does not make the recorded instrument evidence, and does not require the assignment to be executed in the presence of any public officer, or to be acknowledged or authenticated in any way before being recorded, and does not provide nor contemplate that it shall remain subsequently in the custody of the Patent Office. It devolves upon the Patent Office merely the clerical duty of recording any instrument which purports to be the assignment of a patent. "We are aware," says the court, "of no principle which gives to such a record the effect of primary evidence or of *prima facie* proof of the execution or the genuineness of the original document. To give it such effect would enable parties to manufacture evidence for themselves." The decree of the lower court was reversed and the complainant's bill was dismissed.

Heretofore, as above noted, it has been the practice simply to record an assignment in the Patent Office, the document being simply signed by the owner of the patent and attested by one witness.

In view of the foregoing decision, it will be well for those who are interested in patent property to take the precaution of having their assignments more fully authenticated and verified. Such documents should be executed before a notary public in the same manner that deeds and conveyances of real estate and other properties are certified.

### Medicaments Derived from Coal Tar.

As a consequence of the progress made in the manufacture of coloring materials from coal tar, physiologists and physicians have been able to experiment with a host of new products, some of which have found a place as therapeutic or antiseptic agents. The substances submitted to such experiments are of very diverse nature, but there is observed in them, nevertheless, a limited number of characteristic groupings. They are phenols, acetylated amines and sulphonated, sulphureted, iodated and chlorated derivatives of the aldehydes. Methodical experiments have not been numerous enough and the data furnished by biological chemistry are not precise enough to allow us to establish any relation between the constitution of these bodies and their physiological properties, provided any exists. Their applications, in fact, exhibit many anomalies. We see products that are very different as to constitution act upon the organism in a similar manner, and substances that are analogous, from a chemical point of view, produce very different therapeutical effects. With the information that we possess upon this subject it is hazardous to draw absolute conclusions.

The number of organic bodies proposed as antiseptics or as medicinal products is very large, and one or more new medicaments are observed to make their appearance every day. We can mention but a limited number here, in selecting the most important of them.

We have arranged these substances as antithermics and analgesics, and hypnotics and antiseptics. There is nothing absolute about this classification. A large number of these products has at the same time several of these properties. For example, chloral, which we place among the hypnotics, is an analgesic, and is even employed as an antiseptic, and asaprol is at the same time an antiseptic and an analgesic.

1. *Antithermics and Analgesics.*—Of all the artificial antithermics, *antipyrine* or *analgesine* is the most widely used up to the present. It is derived from phenyl-hydrazine, which is itself obtained by dinitrating aniline and in reducing the dinitro-benzol thus obtained. This phenyl-hydrazine is afterward condensed with aceto-acetic acid, and then, finally, the product is submitted to a methylation. We have at last the dimethyl phenyl-pyrazolon that constitutes antipyrine. It is very soluble in water, and this property permits of administering it under the most varied forms—a quality that is highly appreciated in pharmacy. It must be observed, however, that, as a general thing, solubility has no relation whatever with the quickness of action and assimilation of a medicament. Phenacetine, while being but slightly soluble in water, acts nevertheless as quickly as antipyrine.

The success of antipyrine has evoked a series of experiments with the object either of preparing substitute antipyrines and of analogous pyrazolons, or of associating it chemically with other substances. In the first order of ideas has been produced *tolypyrine*, which is a paramethylated antipyrine in the phenylic nucleus, and then chlorated, bromated, etc., antipyrines. In the second series antipyrine has been associated with salicylic acid, and this has given *salipyrine*. *Tolysal* is the salicylic combination corresponding to tolypyrine. Apropos of hypnotics, we may mention *hypnal*, which is a derivative of antipyrine and chloral.

*Thalline* and *kairine* are quinoleic products that have been proposed likewise as antiseptics.

Among the oldest analgesics and antithermics, we find *acetanilide* and *antifebrine*, which are prepared by treating aniline with anhydrous acetic acid. If, instead of operating with aniline, we start from hydroxylated aniline, that is to say, from a product which is both phenol and amine, and etherify it before acetylation, we shall have *phenacetine* or *phenedine*.

*Thymatecine* is the phenedine of thymol, and *exalgine* is derived from the acetylation of methyl-aniline.

*Salicylate of soda* has been for some time employed as an antirheumatic. Salicylic acid is a carboxylated phenol, that is to say, a body that is at once phenol and benzoic acid. It is prepared by passing a current of carbonic acid over phenate of soda at a high temperature. Several applications have been found for its derivatives, among which may be mentioned salipyrine, that we have spoken of above, and salol, which we shall find among the antiseptics.

*Asaprol* has the same action as salicylate of soda. It is obtained by treating beta-naphthol with sulphuric acid at a low temperature. It is the sulphuric ether of beta-naphthol. It is offered in the state of calcium salt very soluble in water. Under the name of *abrastol* it has been used as a microbicide.

2. *Hypnotics and Various Medicaments.*—One of the most frequently employed hypnotics is *chloral*, which is the hydrate of trichlorated acetaldehyde.

An endeavor has been made to associate it with various organic substances. In this way have been prepared: *Chloralose*, which is a combination of chloral and glucose; *hypnal*, which is due to the union of one molecule of antipyrine and one of chloral; and *somnal*, which is obtained from chloral and urethane.

*Sulphonal* is likewise a very efficacious hypnotic, but its constitution has no relation with that of chloral. Chemically, it is called the diethyl-sulphone of dimethyl-methane. It is formed by the combination of acetone with ethyl-mercaptan. *Trional* and *tetronal* form part of the same series.

For skin diseases there have been proposed *dermatol*, which is the subgallate of bismuth; *sulphaminol*, obtained by the action of sulphur upon meta-oxidi phenyl-amine; *resorcinol*, which is a combination of iodoform and resorcine; and *lysophane*, which is chemically called triiodo-meta-cresol.

*Tumenol*, *thioline* and *sulphonated thiophene* are designed for the same use.

*Piperazine*, a nitrated product of the closed chain series, is diethylene diamine. One of the processes of preparing it consists in causing ammonia to act upon bromide of ethylene.

*Orexine* serves to stimulate the appetite. It is a hydrochlorate of phenyl-dihydro-quinazoline.

3. *Antiseptics.*—Among the organic antiseptics, we find, especially, bodies with phenolic and aldehydic functions, and halogenated derivates.

*Phenol*, *beta-naphthol* and *gaiacol* are characterized by the phenolic grouping OH directly connected with the benzolic or naphthalic nucleus.

The use of a large number of phenolic derivates has been recommended. Thus, *salol* is salicylate of phenol, and *betol* is the salicylate of beta-naphthol. The union of benzoic acid with naphthol gives *benzo-naphthol*.

*Abrastol*, of which we have above spoken under the name of asaprol, is the salt of calcium of the sulphuric ether of beta-naphthol. It is a microbicide at present proposed for the preservation of wine.

Among the phenolic products of less importance, we may mention *alumnol*, *sozal*, *daphtherine*, *phenoline*, *cresine* and *microcidine*. *Iodoform* is triiodated methane, analogous to chloroform as regards constitution. This antiseptic has, as well known, an insupportable odor. An endeavor has, therefore, been made to substitute odorless and likewise iodated substances for it. Among the bodies proposed to this effect we may mention *diiodoacetylene* or *diiodoform*. In order to prepare this alkaline hypoiodites are made to act upon an aqueous solution of acetylene, or water upon a mixture of iodine and carbide of barium, or else by treating acetylene with iodine in the presence of an excess of potassa at a low temperature.

There likewise exists a *tetraiodo-acetylene*. The other iodated derivatives are: *Traumatol* (iodo-cresylol), *aristol* (iodo-thymal), *iodol* (tetraiodo-pyrol) and *sozoiodol* (diiodo-paraphenate of sodium).

*Formol*, which has recently been proposed as an antiseptic, is form-aldehyde. It has the great advantage of being volatile, and, consequently, of penetrating to the very interior of the objects to be disinfected.

*Ichthyol*, *anytine*, *thiol* and *thiolinic acid* are sulphonated and sulphureted derivates of organic and mineral oils employed in this state and that serve as solvents for products insoluble or but slightly soluble.

Among the substances mentioned, a small number only will doubtless receive the sanction of practice, but the road is laid out. On the one hand, syntheses are multiplying with the object of finding new series, and, on the other, the natural alkaloids are the object of numerous studies. With the means now at the disposal of chemistry, it is possible to study the active principles of digitalis, belladonna and a host of other natural products. We shall certainly succeed in giving such alkaloids a greater energy, perhaps new properties, and even replace them by substances of which the syntheses will be only the results of a study of the products, of their reduction and of their decomposition.—*Le Genie Civil.*

### Trial of the New Warship Minneapolis.

When the Minneapolis returned from sea to Philadelphia June 7, she carried a broom on the foretopmast and on one of the funnels was painted the figures 21·75, which showed that the vessel is a record breaker. The speed of 21·75 knots per hour was made in an off-shore run under forced draught in comparatively shallow water, burning anthracite coal. At the above speed her shafts made 138 revolutions per minute, steam pressure 160 pounds. Streams of water were kept running over the bearings, but this was an unnecessary precaution, for none of the machinery became unduly heated. The Columbia, on her preliminary trial trip, made only 20·98 knots, so that the Minneapolis has proved herself to be the speedier vessel. Mr. Cramp said: "I am perfectly satisfied with the showing made to-day by the Minneapolis, and I expect her to do a knot and a quarter better under the same conditions as the Columbia."

The Minneapolis, a sister ship of the commerce destroyer Columbia, was launched August 12, 1893, at Philadelphia, in the yard of Wm. Cramp & Son's Ship and Engine Building Company. The new vessel is 412 feet long, beam 58 feet, mean draught 22 feet 6·5 inches, displacement 7,350 tons, indicated horse power 21,000. The hull is steel and has a double bottom, with considerable space between the two skins, this space being divided by numerous bulkheads into watertight compartments. The Minneapolis is, before all, a commerce destroyer, and is not intended to fight, so she is not armored. Her conning tower is of mild steel and her protective deck is a variety of turtleback, and is 4 inches thick on the sloping portion. The gun shields are two inches thick, or only sufficient to protect the gun crews from the fire of machine guns. Patent fuel will be stowed to a thickness of 5 feet around the machinery. The armament consists of one 8 inch standard breech-loading rifle, two 6 inch rapid-fire rifles, and eight 4 inch rapid-fire rifles. The secondary battery is composed of twelve 6 pounders, four 1 pounders, and four Gatling guns. The vessel is provided with five torpedo launching tubes. The 6 inch guns are loaded at one operation, as fixed ammunition is used, the powder and shot being combined in an immense cartridge, standing nearly 6 feet high.

The brag that the two new ships above mentioned are commerce destroyers, able to overtake any other ship afloat, remains yet to be verified. We hope the government will subject the vessels to actual trial. It is true the contractors have managed to squeeze a gratifying rate of speed out of them for a short time, everything being prepared and strained to the utmost. But how will it be on a sea voyage? Can these new vessels equal such merchant ships as the Campania, Lucania, Paris, New York, Majestic, Teutonic, Bismarck, Columbia, Normannia, which make from 20 up to 21½ knots per hour on almost every voyage? The experience thus far had with our most highly praised government ships is that they have never been able after being put into actual service to hold anything like their trial trip speeds. We venture to say that were the Columbia or the Minneapolis ordered to keep company with such boats as the Paris or the Campania on a voyage across the Atlantic, the navy ships would be left far astern.