LUBRICANTS.

In answer to a number of correspondents we publish the following:

The desirable features of a good lubricant or unguent may be briefly stated thus: It should, first of all, reduce friction to a minimum, should be perfectly neutral, and of uniform composition. It should not become gummy or otherwise altered by exposure to the air, should stand a high temperature without loss or decomposition, and a low temperature without solidifying or depositing solid matters. The question of cost and adaptability to the requirements of light or heavy bearings are also important considerations.

The finest lubricating oils in the market—those used for watch, clock, and similar delicate mechanism—are chiefly prepared from sperm oil by digesting it in trays, with clean lead shavings, for a week or more. Solid stearate of lead is formed, and remains adhering to the metal, while the oil becomes more fluid and less liable to change or thicken on chilling.

Sperm oil is used for lubricating sewing machines and other light machinery. Some of the oils sold for this purpose contain cotton seed oil and kerosene, and others are composed largely of mineral, sperm, or signal oil—a heavy, purified distillate of petroleum

Good heavy lubricating oil is made from heavy paraffine oil (a distillate of petroleum). Owing to "cracking" (decomposition of the vapors of the heavy distillate into lighter products), which takes place in the still, the crude oil contains a large per cent of light offensive oils, too thin for lubricating purposes. In Merril's process these are separated by blowing superheated steam through the oils, heated just short of its boiling point in the still, the lighter oils being driven off, a neutral, nearly odorless, heavy oil, gravity 29° B. to 26° B., and boiling at about 575° Fahr., remaining. When mixed with good lard oil it makes an excellent and cheap lubricant.

Common heavy shop and engine oils are commonly variable mixtures of heavy petroleum or paraffine oils, lard oil, whale or fish, palm, and sometimes cotton seed and resin oils. There are nearly as many of these composite oils in the market as there are dealers in such supplies. The following is one of them.

Petroleum	30 per cent.
Paraffine oil (crude)	20 "
Lard oil	20 "
Palm oil	9 "
Cotton seed oil	20 "
	99

Solid or semi-solid unguents, such as mill and axle grease, etc., are prepared from a variety of substances. The following are the compositions and methods of compounding a few of these:

Frazer's axle grease is composed of partially saponified rosin oil—that is a rosin soap and rosin oil. In its preparation, one half gallon of No. 1, and two and one-half gallons of No. 4 rosin oil, are saponified with a solution of one-half pound of sal soda dissolved in three pints of water, and ten pounds of sifted lime. After standing for six hours or more, this is drawn off from the sediment and thoroughly mixed with one gallon of No. 1, three and one-half gallons of No. 2, and four and two-third gallons of No. 3 rosin oil. This rosin oil is obtained by the destructive distillation of common rosin, the products ranging from an extremely light to a heavy fluorescent oil or colophonic tar.

Pitt's car, mill, and axle grease is prepared as follows:

Black oil or petroleum residuum	40 gallons.
Animal grease	50 pounds.
Rosin, powdered	60 pounds.
Soda lye	2¼ gallons.
Salt, dissolved in a little water	5 pounds.

All but the lye are mixed together and heated to about 250° Fahr. The lye is then gradually stirred in, and in about twenty-four hours the compound is ready for use.

Hendricks' lubricant is prepared from whale or fish oil, white lead, and petroleum. The oil and white lead are, in about equal quantities, stirred and gradually heated to between 350° Fahr. and 400° Fahr., then mixed with a sufficient quantity of the petroleum to reduce the mixture to the proper gravity.

Munger's preparation consists of:

Petroleum	1 gallon.
Tallow	4 ounces.
Palm oil	4 "
Plumbago	6 "
Soda	1 ounce.

These are mixed and heated to 180° Fahr. for an hour or more, cooled, and after twenty-four hours, well stirred together.

A somewhat similar compound is prepared by Johnson as follows:

	Liquid.	Solid.
Petroleum (30° to 37° gravity)	1 gall.	1 gall.
Crude paraffine	1 oz.	2 oz.
Wax (myrtle, Japan, and gambier)	1½ oz.	7 oz.
Bicarbonate of soda	1 oz.	1 oz
Powdered graphite	3 to 5 oz.	8 oz.

Maguire uses, for hot neck grease:

Tallow	16 pounds
Fish	60 "
Soapstone	12 "
Plumbago	9 "
Saltpeter	2 "

The fish (whole) is steamed, macerated, and the jelly pressed through fine sieves for use with the other constituents.

Chard's preparation for heavy bearings consists of:

Petroleum (gravity 25°)	12 ounces.
Caoutchouc	2 "
Sulphur	2 "
Plumbago	4 "
Beeswax	4 "
Sal soda	2 "

This composition is stirred and heated to 140° Fahr. for about half an hour.

The following are a few of the compositions for lubricating that have been patented:

Petroleum residuum, alkali, ammonia, and saltpeter.
Graphite, oil, caoutchouc.
Asbestos and grease.
Lignumvitæ and spermaceti.
Ivory dust and spermaceti.
Tin and petroleum.
Zinc and caoutchouc.
Plastic bronze and caoutchouc.
Tallow, palm oil, salts of tartar, and boiling water.
Oil, lime, graphite, castor oil.
Shorts, soapstone, and castor oil.
Petroleum residuum, salt, caustic potash, sal ammoniac, spirit of turpentine, linseed oil, and sulphur.
Petroleum residuum and flour.
Petroleum residuum, lard, sulphur, and soapstone.
Mixed heavy and light petroleum.
Oil, wax, caoutchouc, rosin, and potash.
Petroleum residuum, sal soda, sulphur, and kerosene.
Glycerine, graphite, asbestos, kaolin, manganese, soapstone, sulphide of lead, carbonate of lead, and cork.
Saponified resin, wheat flour, petroleum, animal fat, and soda.
Type metal and caoutchouc.
Anthracite coal and tallow.
Tin oxide and beeswax.
Soapstone, magnesia, lime, and oil.
Sulphur and petroleum.
Vulcanized caoutchouc, petroleum, and tallow.
Paraffine oil and milk of lime.
Asbestos and tallow.
Spermaceti and India-rubber.
Tallow, petroleum, soda, and hair.
Mercury, bismuth, and antimony.
Petroleum, sal soda, lime, tallow, lard, salt, pine tar, turpentine, camphor, and alcohol.
Sulphur, plumbago, mica, tallow, and oil.
Palm oil, paraffine, tallow, alkali, and asbestos.
Tallow, oil, paraffine, and lime water.
Flax seed oil, cotton seed oil, tallow, and lime water.
Petroleum, tallow, beeswax, soda, and glauber salt.
Animal oil, croton oil, spermaceti, tallow, soda, potash, glycerine, and ammonia.
Sheets of paper or woven fabrics impregnated with graphite, steatite, paraffine, tallow, size, and soluble gums.

Tissue Negatives from Gelatine Plates.

BY WILFRED BAILEY.

The method of removing the films from collodion plates by means of a coating of transfer collodion, and subsequently either remounting them upon the glass in a reversed position to be utilized in processes requiring "reversed negatives," or preserving them as "tissue" negatives, in which form they may be printed from either side, will probably be familiar to most readers of the *News*. I am not aware, however, that any method has been made known for the application of the process to gelatine plates, which present somewhat more difficulty, so a few particulars of the treatment which I have found successful may not be unacceptable.

The collodion is prepared from one of the usual formulæ for the purpose, as follows: Ether, 5 ounces; alcohol, 0·805, 10 ounces; castor oil, ¼ ounce; pyroxyline, ¼ ounce.

The gelatine negative (in a dry, and, of course, unvarnished condition) is flowed liberally with the collodion, leveled, and allowed to dry. The film is then cut through to the glass at a short distance from the edges, and the plate left to soak in water for some twenty-four hours, after which it will be found that the film may be lifted by a corner, and easily detached from the glass. It may then be reversed, and laid upon the glass under water in a similar manner to that adopted with carbon tissue, the superfluous water being afterward gently pressed out, care being taken not to injure the gelatine surface, which is somewhat tender at this stage. The plate should then be allowed to dry (not too quickly, or the film will have a tendency to peel off the glass). If only a reversed negative is wanted it is now ready for use; but if a tissue negative is desired, the plate should again be flowed as before with the collodion, dried, cut round, either at the edges where previously cut, or to any size and shape desired, and then soaked in water until it can be easily removed from the glass, which will be the case in a few minutes. The film may then be dried in blotting paper, and preserved between the leaves of a book (one interleaved with tissue paper will be found convenient for the purpose).

To print, the film may be laid upon a piece of glass in the printing frame, and will be found to lie flat without difficulty in a dry state; but, if desired, it may be mounted as before with the aid of water and dried. In the latter case it will be generally found necessary to soak the plate a few minutes in water when the film is to be removed from the glass. In all stages of the process where soaking in water is required, be careful to continue it long enough, as if any adhesion exists between the film and the glass, damage to the former will ensue on attempting to remove it.

I was led to employ this method chiefly for the purpose of printing my negatives by the single transfer carbon process, which I consider the best and most convenient (for an amateur especially) that exists, but I find also great advantage in the small space occupied by the tissue negatives, and their portability. The tissue is very tough, and cannot easily be torn (unless a cut or tear has begun at the edges, in which case great care is requisite). The second coating of collodion acts as a protection to the inclosed gelatine film, and adds substance to the tissue, while it prevents the "cockling-up" which the sensitiveness of the gelatine to moisture causes if it is attempted to use the film as a tissue on its first removal from the glass, without a second application of the collodion as directed. Of course the same treatment may be applied to transparent positives, and might be useful for other purposes.—*Photographic News.*

The Treatment of Sea Sickness.

The *Tribune* has been making inquiries among prominent physicians touching the cause and cure of sea sickness:

"What advice in regard to sea sickness would you give a patient going to sea?" was asked of Dr. Alonzo Clark.

"I should tell him to take a wash basin into his stateroom," responded Dr. Clark, cheerfully.

"Then there is no remedy?"

"One remedy, yes—to stay ashore." Dr. Clark continued: "I think people will be sea-sick until the millennium comes. The disorder is in a way a puzzle to doctors. It is caused by a disordered action in the brain and nervous system, and the stomach feels it as a part supplied with nerves. There is no perceptible change in the nerve tissue, but a nerve disturbance, and probably all the brain is affected. It is unaccountable that the practice of going to sea cures the disorder, although this may be owing to a circulatory accommodation. I have never made use of the various remedies suggested. Sea-sickness is modified by a low diet, and if health is much depressed the patient should keep his bed. Food should be taken as constantly as possible, and the best form is soup with toasted crackers. Any alcoholic drink will soothe some stomachs. The supposed benefit to be derived from sea-sickness amounts to very little, except, perhaps, in the case of large feeders. Of course, land sickness, caused by riding backward and in railway cars, is practically the same as sea-sickness. An instance has been lately related of a woman cured by wearing a sheet of paper over her chest, which illustrates the power of faith."

Dr. George M. Beard said: "A year ago there was no disease of which so little was known and which was so incurable as sea-sickness; now there is no disease of which so much is known and which is so perfectly curable. It is a functional disease of the central nervous system, mainly of the brain, but sometimes also of the spinal cord, and comes from purely mechanical and physical causes, being the result of a series of mild concussions. No more benefit can be derived from it than from an attack of typhoid fever. Infancy and old age are least affected by it, and it is most frequent and severe with the nervous and sensitive. In some cases there is simply congestion of the brain. The chief symptoms are headache, backache, nausea, vomiting, pain in the eyes, mental depression, neuralgic pains, sleeplessness, and nervous exhaustion. Dr. F. D. Lente, of Florida, first suggested the use of bromide of potassium as a preventive of sea-sickness in voyages between the North and South, and it was used with good results. This had also been recommended by Dr. Barker, who carefully studied the subject. My experience had led to my developing this treatment for long voyages and suggesting bromide of sodium in large doses instead of bromide of potassium. The former is less irritating to the stomach and contains more bromine than the latter, but when not procurable bromide of potassium may be used. The patient should take thirty, sixty, or ninety grain doses of bromide of sodium three times a day a few days before embarking and keep it up at sea until the danger seems to be past. The result aimed at is a mild bromization of the central nervous system, rendering it less susceptible to the disturbances caused by the movements of the ship. There is a great difference in people about the effect, and the great point is to know when to stop taking it, avoiding an excess, and not to take too little. A few people have an idiosyncrasy against bromide, but there is little or no danger from its use if patients will carefully watch for the sleepiness and indisposition for exercise which are the symptoms of mild bromization. I have known of but one failure from the proper use of bromides, and I have here several letters from persons who have crossed safely by their use, although always sick before. Of course the drug should be taken intelligently and under competent directions, as there is a great difference in different people, and every case ought to be studied separately so far as possible."

"What is sea sickness?" was asked of Dr. William A. Hammond.

"Well, I should call it a disorder of the nervous system."

"Is there any remedy?"

"I can't lay down rules for other people, but I can tell what I have found beneficial in my own case, and that is ten or fifteen drops of chloroform on lump sugar, and the use of bromide of potassium."