

THE FRENCH DISPATCH TORPEDO BOAT LA BOMBE.

According to the new classification adopted by the French navy, the torpedo boats are divided into several classes, viz.:

1. The torpedo cruisers of from 1,240 to 1,260 tons.
2. The dispatch torpedo boats, of from 320 to 380 tons.
3. The torpedo boats for deep water, of 50 tons and upward.
4. The torpedo coasters, which are again divided into two classes, those of the first class being of 50 tons and those of the second class 25 tons.

Finally, in the fifth class may be included the vedette torpedo boats, of 25 tons, which, in spite of their slender build, or rather because of their slender build, can render great service for the defense of the coasts.

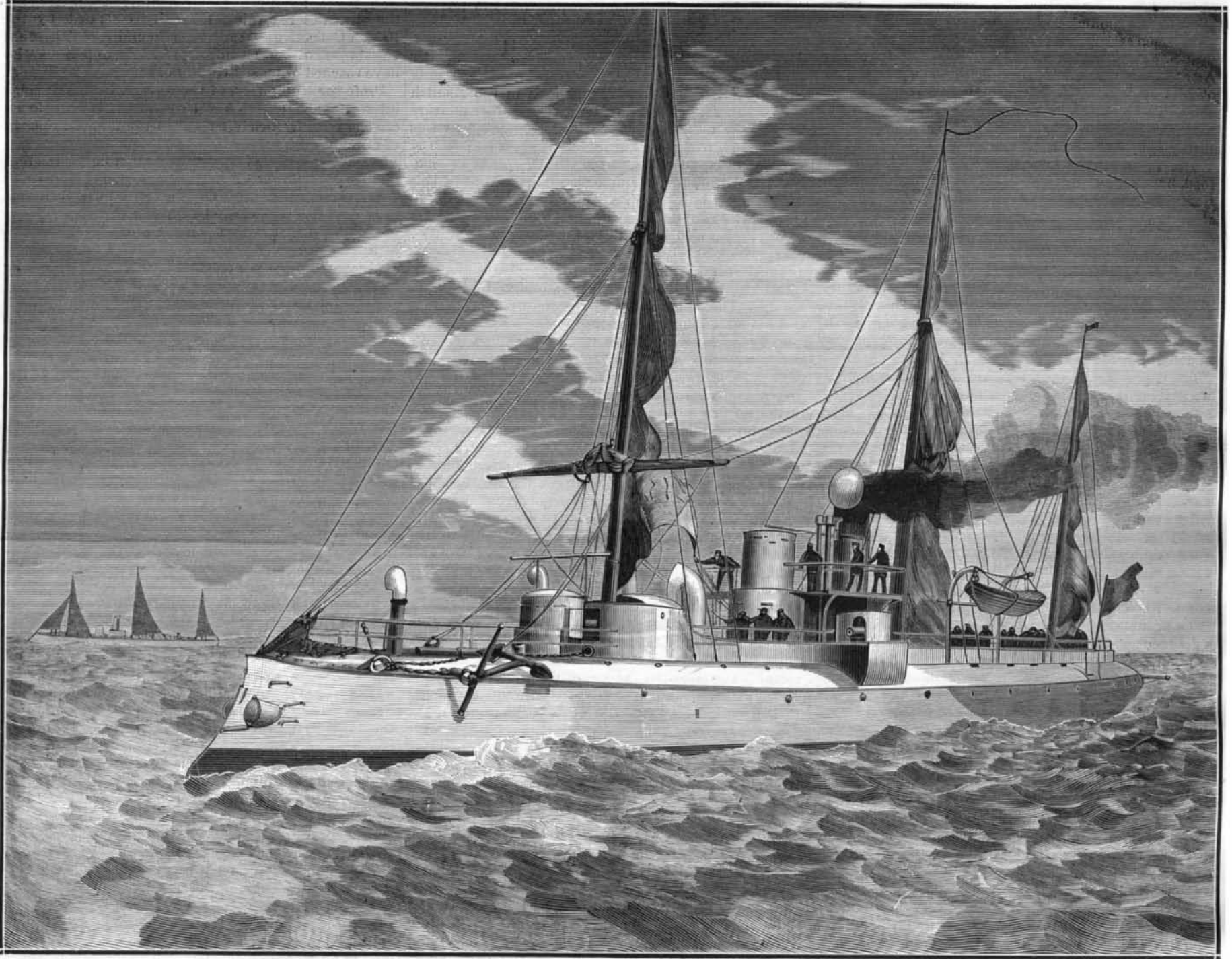
The annexed cut represents La Bombe, which has just been launched at Havre, and which belongs to the second class, that of the dispatch torpedo boats. It was

How Wood Paper is Made.

At Mapleton, Pa., there is a mill where paper is made from wood, and in this mill there is a machine resembling in appearance a large cheese box, about six feet in diameter, standing on its edge. In this cheese box there revolves, at an enormous speed, a strong iron disk, armed with a great number of sharp steel knives, which cuts up the wood into shavings similar to those made by a draw knife. While we were looking at this machine an attendant picked up a heavy stick of cord wood, which he placed in an inclined trough by the side of the machine, and shoved it into the same. In a twinkling the log had disappeared, and a second was sent after it, quickly followed by a third. Although it may seem incredible, that machine reduced those heavy 4-foot sticks to shavings at the rate of three a minute!

These shavings are carried off by a conveyer to the "boiling room," where they are boiled for several hours in caustic soda—"soda lye"—which combines with all the resinous matters in the wood, and reduces

chemicals from the fibers, and the pulp, thoroughly softened and mixed with water, is drawn off into storage tanks, whence it is pumped into the paper machines. At one end of the latter is a box into which the pulp is pumped from the tanks. This box has a fine horizontal slit, from which the pulp flows in a steady stream on to an endless wire gauze apron, about six feet wide, which is constantly running away from the box. The rolls over which this apron runs have an "end shake" similar to that of a grain separator. The apron runs over a copper "suction box" having numerous holes in the top, from which the air water are constantly being exhausted. The effect of the suction box is to remove most of the remaining water from the pulp, which by this time resembles a wet sheet of paper. The damp sheet is now taken up by a felt blanket and carried over steam heated drums. By this time the paper is strong and dry enough to support itself, so it leaves the felt and passes unaided between the highly polished calender rolls, which smooth it and



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built at Havre by the "Societe des Forges et Chantiers," which firm has just built, for the Ottoman Government, two torpedo boats which are really remarkable.

Eight torpedo boats, similar to La Bombe, are now included in the official list. They are: La Couleuvrine, La Dague, La Dragonne, La Fleche, La Lance, La Salve and La Sainte-Barbe. But of the eight, only La Bombe has been completed. This vessel measures 196 feet 10 inches, from stem to stern, and draws 5 feet 10 inches of water. It is made entirely of steel, and care has been taken to make the hull as light as possible, and at the same time strong enough for navigation of the high seas. The dispatch boats of the Bombe type are furnished with two engines, each acting upon a screw, and developing 1,800 horse power. The speed attained is almost 18 knots. They have three masts, and are provided with all the latest improvements for handling torpedoes, with apparatus for electric lighting, etc.—*L'Illustration*.

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The Panama Canal.

We learn that within a few months the first nine or ten miles of this canal will be opened to light draught vessels. This run will extend from Colon to above Gatun.

it to a mere fibrous pulp. This pulp is next run into the "washing machines," which are oval tubs about fifteen feet long and six or eight feet wide, having a longitudinal partition in the middle, extending nearly the entire length of the vat. In one of the compartments thus formed there is a "beater," composed of a number of steel blades with rounded edges, which revolve at a high rate of speed between stationary blades in the bed plate below. In the other compartment there is a "washer," which consists of an octahedral frame covered with very fine wire gauze, and inclosing a sort of water wheel. The water runs in the opposite direction to the beater, but very slowly, and the result is a constant current of the pulp up one side of the machine and down the other. A stream of water is constantly flowing into the machine, and the water in the washer is as constantly scooping it up and emptying it through its hollow shaft. The beater forces all the dirt and foreign matter out of the pulp, and the washer removes the dirty water, so that the fiber becomes thoroughly cleansed. It is now removed to another machine similar to the first, where it is bleached by means of chloride of lime and muriatic acid. The washer is dispensed with during the bleaching. After the bleaching comes another washing, to remove the

give it a hard surface. It is now rolled up ready to be removed to the cutting machine, where revolving knives reduce it to sheets, which are piled, sorted, and counted ready for shipment.

If a fine paper is desired, the roll in place of being cut up into sheets is reground in a "rag engine" similar to the washing machines, still further washed and bleached and sent through another "Fourdrinier machine," whence it issues as pure white finished paper. The "size" which gives paper its glossy finish is introduced into the pulp while it is in the last washing machine. At the West Newton paper mills, rolls of paper four miles long are regularly made, and rolls nine miles long have been made from reground wood paper.—*Paper and Press*.

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THE Bridgeport (Conn.) Hand Sewing Machine Co. is a new corporation now engaged in bringing out a novel and cheap sewing machine. It consists of a pair of handles, pivoted like scissors, but carrying a needle shuttle and feed motion, forming a complete sewing machine. By working the handles with the fingers the cloth is sewed with the lock stitch in a very effective manner. These sewing machines are to be supplied by the million at popular prices, say five dollars.

Clay Eating.

In many countries, certain clays have been used from time immemorial as a food product.

Clays are essentially formed of silica, alumina, and water in variable proportions, colored by metallic oxides, and presenting themselves in amorphous masses which are smooth and unctuous to the touch, and upon which the friction of the nail leaves a shining trace as upon soap. They adhere to the tongue, and form with water a fine, pliable paste that may be given all sorts of forms. Some samples of edible earth consist, as in the case of tripoli, of microscopic fossilized shells and innumerable fresh water infusoria.

How man came to have recourse to such food we do not know, but the same circumstances have led to like results in countries that are very remote from each other. "The practice of eating considerable quantities of clay," says the learned naturalist Guibourt, "as a necessary supplement to too insufficient a nourishment is almost universally diffused among the savage peoples of Africa, America, and Asia." The Ottomans, a people of South America, regularly consume from a pound to a pound and a half of clay per day, which satisfies their hunger without injuring their health. Among the Indians of the banks of the Amazon, clay forms a part of the fare, even when other food is abundant. Edible earth is sold in the markets of Bolivia, and a kind which has an agreeable odor is much esteemed among the Peruvians. According to travelers, the negroes of Jamaica have recourse to clay only when there is a dearth of other food, but they eat it without repugnance. On the contrary, the negroes of Guinea, transported to America, seek an earth analogous to that which they have been accustomed to, and, not always finding it, have recourse to pipe clay.

In the kingdom of Siam the women and children are clay eaters. In Java, says Labillardiere, they make a sort of cake out of a ferruginous clay which the men eat when they wish to become lean, and which the women use during pregnancy. It is an object of commerce in Annam and Tonkin.

It is a question here, then, of a widespread habit, that we find in all latitudes, from the equator to the polar regions—in Guiana, New Caledonia, Siberia, and Terra del Fuego—and one that has been preserved among some of the descendants of the Portuguese navigators. "There are still women in Portugal," says Guibourt, "who delight to eat the red Boucaros clay from which the alcavozas are made;" and he adds: "I do not think that so widespread a custom has the effect merely of momentarily appeasing hunger, without a result serviceable to nutrition. It is probable, on the contrary, that the instinct of preservation has made known to these miserable peoples species of clays that contain a certain quantity of organic matter derived from vegetable detritus, and that this material contributes to sustain them in those months of the year during which a more efficient food fails them." This reasoning appears very plausible, and if the more moderate use of edible earth has been preserved during years of abundance, it is doubtless so as not to lose the tradition of it, and in order to remember a resource that may become valuable at a given moment.

The Indians of the Dutch colonies of Java and Sumatra submit an edible clay to a peculiar preparation. They reduce it to a paste with water, separate all foreign matter from it, and spread it out in thin layers, which they cut into small cakes and cook in a saucepan over a charcoal fire. Each of these little cakes, which is rolled up, looks like a piece of dry bark. The color is sometimes that of slate and sometimes brown. The clay is also sometimes formed into rudely modeled figures of men and animals. This singular food has a slightly aromatic flavor that offsets its earthy taste.—*Science et Nature.*

Treatment of Cholera.

Dr. Mankan G. Dadiraian, of New York, formerly of Constantinople, Turkey, gives the following in the *Medical Record*:

That most estimable gentleman, Dr. Cyrus Hamlin, who spent forty years in Constantinople, and who had a wide and interesting experience in different epidemics, says in his book: "If you prepare for it (cholera), it will not come. I think there is no disease which may be avoided with so much certainty. But providential circumstances, or the thoughtless indiscretions of some member of a household, may invite the attack, and the challenge will never be refused." The greatest danger lies in the contact with choleraic discharges. This danger is greater than that of contact with the patient himself. To avoid this danger the stools should be thoroughly disinfected, and the closets where they are emptied should receive a thorough charge of the disinfecting agent. The disinfectants that are always kept in the houses of Europeans residing in Alexandria are as follows: First, two parts of carbolic acid and one hundred parts of water; second, twenty parts of ferrous sulphate and one hundred parts of water; third, one part of chloride of lime and eight parts of water. Either one of these may be mixed with the dejecta in the proportion of

one to ten, and greatly diluted with water for urinals and closets.

The treatment of cholera. Without entering into the pathology and symptomatology of the disease, herewith is given the most simple and practical method of treatment, which has yielded good results in Constantinople and Asia Minor. There are four stages of cholera, requiring each a more or less different treatment: (a) Choleraic diarrhœa; (b) true cholera, with rice water discharges; (c) collapse; (d) reaction.

(a) Choleraic diarrhœa. This is the most important stage to be taken into consideration. At the first appearance of this symptom, treatment should be begun. Many are careless about the matter, and forfeit their lives in consequence, for this is the time when treatment is most efficacious. Sometimes this stage lasts one or two days; again only two or three hours, and then the succeeding stages follow with fearful rapidity. The patient must remain at home, stop his regular eating and drinking, and take as follows:

R. Chloroform,
Laudanum.....aa ʒij.
Brandy..... ʒiijss.
M. Sig.—One tablespoonful every two to three hours in water.

One dose will often stop the diarrhœa, but it is safer to continue the remedy in half doses until the next day. This is the method mostly used in the English army in India. In Turkey, however, another mixture is generally used—known as "Dr. Hamlin's," as this gentleman introduced it in 1848 with great success. It consists of equal parts of laudanum, spirits of camphor, and tincture of rhubarb. Thirty drops of this mixture may be given in a little water or on a lump of sugar. The diarrhœa is generally checked, and great relief is also given to the vomiting and colicky pains which are often present. The dosage may be doubled if necessary. This remedy also should be continued for a day or two in gradually diminishing dosage. The diet should be rice, soup, toasted bread, and fermented milk (matzoon).

(b) True cholera. Here we find cramps, colicky pains, vomiting, and diarrhœa. The stools may succeed each other at intervals of from ten minutes to several hours. In India calomel is used in this stage, in hourly doses of ten grains, till the stools present their normal color and odor. This remedy is not much used in Constantinople, where "Dr. Hamlin's No. 2 Mixture," as it is called, has worked charmingly. It consists of equal parts of laudanum, tincture of capsicum, tincture of ginger, and tincture of cardamom seeds. Dose thirty to forty drops in a little water, given after each movement. After the third dose both the diarrhœa and vomiting are usually stopped. In this stage sinapisms must be applied to the stomach, abdomen, calves, and feet. Diet: rice water, crust wafers, chamomile tea.

(c) Collapse. Here spirits are our only sheet anchor. Brandy or whisky may be given every half hour in tablespoonful doses. Sinapisms, hot bottles, etc., are useful. The condition is one of the greatest gravity, but by no means hopeless. Many are pulled through.

(d) Reaction. As soon as the patient rallies, the treatment must be carried on entirely on general principles. After reaction has fairly set in, great care must be taken to prevent a relapse or a typhoid condition, which may prove fatal.

Practical Work of the American Dredging Boats at Panama.

A friend in Colon writes as follows: The Nathan Appleton, of the American dredges, which has been at work for some six weeks past in the cut at Gatun for the deviation of the Chagres River, has shown what can be done in the way of canal cutting. This dredge is now removing and depositing on the bank about 3,000 meters per day of hard clay and marl, mixed in some places with coral rock. The Belgian dredge which had been at work previously was a source of annoyance on account of its almost daily breaking of machinery, and incapacity otherwise, the work being a matter of haste. She was about six months in removing as much as has been done by the Appleton, her capacity being but 450 meters per day against 3,000 of the American. In the case of the American dredge, the deposit is discharged directly on the embankment, whereas the Belgian delivers in a scow, and that in its turn is again emptied of its contents by being placed between a double hull dredge, or in American terms a catamaran. This dredge is also fitted with revolving buckets, as are the others, and then the labor of discharging through a pipe to the embankment commences.

The number of men employed upon each of the above is as large as upon the American. The latter has no tugs or scows, which are needed for the former, and one can but note the great difference of expense in running them, and doing a small amount of work, against the large amount done by the American, at a light running expense.

There is no doubt but that there will be plenty of places where the Belgian dredges will be made available, but in the present instance time is an object, as that part

of the work is needed to be completed to allow the advancement of other work in the Gatun section.—*Panama Star.*

Old Age.

With every year the average duration of life is increased, and we have more old people on our hands. Naturally, the question becomes of increasing interest, How shall we secure a healthful old age, and how can we prolong in comfort this senility?

Some curious information regarding this subject, though more especially regarding what may be called "centenarianism," has been published by a gentleman of Syracuse, N. Y., who, we are informed, has collected the histories of 10,000 people that have passed the age of 100 years. According to this authority, the United States leads in centenarian longevity, while Connecticut is ahead among the States. As to sex, women; as to occupation, soldiers, sailors, and farmers are the longest lived. Among the professions, 100 ministers, 30 doctors, and 10 lawyers reached their centennial.

Of more practical and scientific character are the statistics regarding longevity obtained by the British Collective Investigation Committee. These are based upon over 500 returns, and relate to persons who have reached or passed the age of 80.

Professor Humphrey, of Cambridge, has given some interesting deductions based upon these returns in an oration recently delivered before the Medical Society of London.

The first requisite for longevity must be an inherent quality of endurance, a something which is inborn and perhaps inherited. It is noticeable that the phthisical taint does not necessarily lessen the capacity for longevity. Among 500 aged persons, phthisis appeared in fathers, mothers, brothers, or sisters of 82, that is, in about 17 per cent. In one case both father and mother were phthisical.

A second requisite for long life is freedom from exposure to casualties. It is on this ground, in part, that more women than men reach extreme age. Other reasons, however, are, perhaps, a greater natural vitality, since even in early life the mortality is less among females than males. It does not seem to be proved by the data collected that short and small men and women have any advantage over those who are taller and larger. The average height of old Englishmen is 5 feet 6 inches, that of women 5 feet 3 inches.

Professor Humphrey would limit quite sharply the changes which normally occur in old age. They are quantitative rather than qualitative. There is a diminution in material and force, with perhaps a slight increase in the oily matter of the tissues; all other changes are pathological.

Among the most marked of senile changes are those of the bones. These lose in weight, but not necessarily in size; indeed, they may even increase in size by a sub-periosteal ossification. The interior of the bones becomes softened and filled with marrow; the walls become thinned. The ends of the bones are particularly affected in this way, and hence the liability of the bones to fracture at these parts. The alveolar processes waste away, so that in men above eighty the number of teeth is only six, while in women it is but three. The cranium generally becomes thinner and lighter. In some cases, however, the skull walls are actually increased in density and thickness by the osseous deposits on the interior of the brain case.

Contrary to a generally received view, the cartilages of healthy old people do not calcify and harden, but remain elastic. They, however, undergo some atrophy, which accounts for the decrease in height.

In the same way Professor Humphrey believes that calcification of arteries is not a process normal or common in advanced age. Among 382 returns relating to the pulse, it was found incompressible in only 72. In 362 returns, the arteries were found knotty in only 40. We cannot, however, place very much dependence upon such data.

The rate of the heart beat in old age has been said by some physiologists to be increased, by others to be diminished. The Collective Investigation shows that there is not much change. From the age of 80 to 90 it averages 73-74 in men, 78-79 in women. The respirations are a little increased in frequency, especially in women. Urinary troubles are a well known source of discomfort and suffering among old people. They do not, however, necessarily attend the decline of life. Among 157 males from 80 to 85 years of age, only 6 had any disease of the prostate or bladder. In the next half decade, however, the proportion was greater.

In old people wounds are known either to heal rapidly or to slough. The reparative process is often as rapid as in the young.

Sir Henry Thompson, in a recent article on "Diet in Relation to Age," has called attention to the harm that comes from attempts to over-feed old people. They are injured, he truly says, by the solicitous relatives, who think that in feeding there is sure help for the waning strength. The old need a light diet to correspond with the lessened work and slower nutrition and waste of their tissues.—*Medical Record.*