

Harvard Sets the Pace in New Era of Industrial Hygiene

First University to Open Separate School for Prevention of Occupational Diseases Now Has Many Followers

THE importance of industrial hygiene, which, briefly, is the science of caring for the health of the industrial worker, has been recognized by the medical profession for many years and during the latter part of the nineteenth century was the subject of research and comment by leading physicians, scientists and manufacturers, but only during the last decade has it been recognized generally in the United States as a subject for highly specialized work by physicians. For all of the fact that industrial hygiene is concerned entirely with the human element in industry, the element that always has been the big stumbling block of utter efficiency, manufacturers have been strangely unable to comprehend the fact that the production of their plants and the quality of whatever they manufactured depended largely if not entirely upon the health and happiness of their workmen. Most of them have been content with employing physicians to care for the men after they became ill, and few of them have inaugurated systems and methods calculated to reduce to a minimum the likelihood of their employees contracting diseases through the conditions of their employment. Many of them have even endeavored to evade the labor laws relating to the prevention of industrial or occupational diseases.

But during the past ten years, as a result of the constant preaching of many of the most eminent physicians of the United States, the manufacturers, the State and Federal governments and the leading medical schools have paid attention to industrial hygiene in the establishment of departments and in training. As far back as 1912 the Public Health Service of the United States formed a division of industrial hygiene, and to this division in 1918, by order of the President, was entrusted the care of the health of all workmen engaged in the manufacture of war materials. In 1916 the medical men engaged in industrial work formed the American Association of Industrial Physicians and Surgeons. But all of this work was done under difficulties, and whatever advancement was made by the science was made against opposition by industrial concerns without sufficient vision to see the ultimate benefits in production increases and better health for their employees. Many medical schools desired to establish separate divisions for the training of physicians in industrial hygiene, but were unable to break down the barriers of conservatism and obtain the necessary funds.

War Changed Viewpoints.
But the war changed the viewpoints of manufacturers as it did of almost every one else. Under the pressure of war conditions and the necessity of a maximum production of materials with a minimum of man power industrial hygiene advanced with great rapidity. It was recognized by the Government as a large factor in

the maximum production of munitions of war; by the manufacturers as a factor in efficiency, and by labor itself, although somewhat suspiciously at times, as is the case with all innovations, as contributory to its own welfare. And because of this belated recognition of the importance and the almost absolute necessity for industrial hygiene one of the great medical schools of the country at last was able to obtain the funds necessary for the establishment of a department for the teaching of industrial hygiene to physicians.

This was at Harvard University, and was due almost entirely to the efforts of Dr. Frederick Cheever Shattuck of Boston, an eminent physician and a member of the faculty of the Harvard Medical School. Early in 1918, while the war was at its height, and the necessity for a maximum of production was pressing the question of the health of the worker, Dr. Shattuck quietly conferred with the manufacturers of New England and procured from them a sufficient fund to establish courses of instruction in industrial hygiene at the Harvard Medical School. This fund was thought at the time to be large enough to carry the work through a five year period, although it is now recognized that more funds will have to be obtained if the division is to expand and increase its facilities as it should.

Others Follow Suit.
Harvard University placed the subject in the hands of a committee of specialists among the professors at the Medical School, headed by Dr. Shattuck and having as advisory members the heads of three large manufacturing concerns of New England. In September, 1918, the division of industrial hygiene was opened—the first foundation in the country to give a degree in the subject as a separate and distinct branch of the medical profession. Since that time a similar department, based upon the Harvard School plan, has been established at the University of Cincinnati, and Harvard has had calls from several institutions in this country and Canada for an outline of its organization. There was established almost coincidentally with the Harvard School a similar department at the University of Manchester, England, financed by the manufacturers of the district and headed by the noted physiologist Prof. A. F. Scott. These are the only schools of the kind in the world.

The Harvard School in its first year had enrolled fifteen students. Its faculty, like the foundation, is a cooperative affair, including the leading physicians of the Harvard Medical School who have specialized in the subject, and the physicians of three of the largest manufacturing concerns in New England—the Hood Rubber Company, the General Electric Company and the Norton Company of Worcester—as lecturers. There is also a lecturer on the workmen's compensation and other related laws. The division established in May, with an international staff of editors, the first periodical of the world devoted to industrial hygiene, the *Journal of Industrial Hygiene*, and it has carried on an important piece of re-

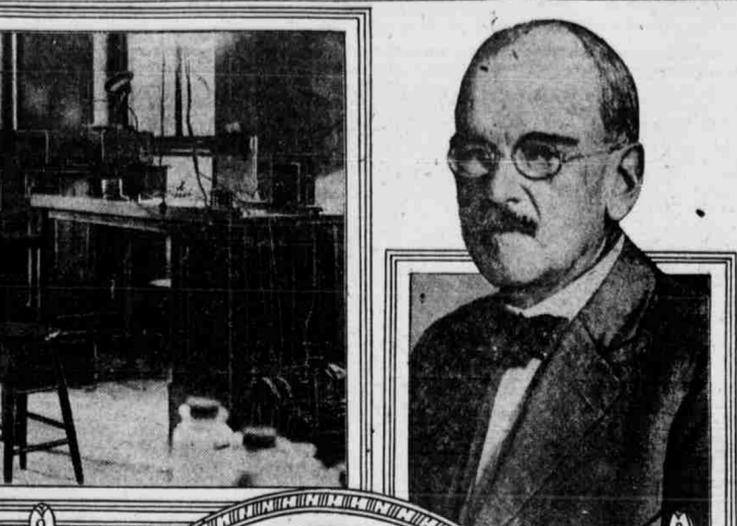


PART OF THE SCHOOL OF INDUSTRIAL HYGIENE.

search work in cooperation with and at the request of a large manufacturing concern, with requests from many other manufacturers to take up other similar problems, which its facilities would not permit.

Its Value Quickly Demonstrated.
The reception which the idea of the founding of the school received from the manufacturers who contributed to it and the interest and appeals for advice or work which have come to it from all over the country have demonstrated its practical value and necessity. Medical authorities consider it extremely likely that before many years have passed virtually all of the important medical schools of the United States will have similar departments, and that a degree obtained in a school of industrial hygiene will rank in importance and worth with a degree obtained in any other branch of the medical profession. The experience gained during the war and the very recent period of active development of industrial hygiene have shown the great need of a body of physicians specially trained to handle the health problems involving group relationships. This is the first function and purpose of such a course as that established at Harvard. Hitherto the courses in public health given in many institutions have included general attention to industrial hygiene, but nowhere has it been a specialty.

Subject Still in Infancy.
Dr. David L. Edsall, dean of the Harvard Medical School and director of the industrial clinic of the Massachusetts General Hospital, who was one of the principal advocates of the special school which Harvard has established, believes that aside from the question of training industrial physicians and their subordinates there is a need of greater importance attention to industrial hygiene, but nowhere has it been a specialty. "In spite of its strides during the last few years," said Dr. Edsall, "the



DR. ALICE HAMILTON FIRST WOMAN MEMBER OF HARVARD FACULTY.

Great Strides Made Since War Time Developments Opened Eyes of Both Manufacturers and Employees, but Work Is Still in Its Infancy

subject of industrial hygiene is still in its infancy. The unsolved problems of the influences affecting the health and happiness of workers in the thousand different occupations of to-day are legion.

"Each physician trained thoroughly in what already is known of industrial hygiene is a great asset to the employer of labor, to labor itself, and hence to society. But all physicians so trained can only work with such light as they have, and compared to its possibilities the light of industrial hygiene is still dim. The work of increasing the light gives immeasurably wider benefit than working with what light there is.

"Here again it has been the manufacturers, the employers of labor, who have recognized the need. Shortly after the foundation of the school a letter was received from one of the largest metal concerns in the United States asking advice on the question of workers in a poisonous dust, among whom, in the strain of war conditions, a peculiar disease had been noted. The school immediately undertook the problem and was assisted in its work by a liberal grant from the firm in question. The research so inaugurated has meant the employment of three laboratory rooms and some two-thirds of the working time of five trained professors and laboratory assistants has resulted in the installation of methods for examining the workmen which apparently are efficient in counteracting the danger.

What Dust Does to Lungs.
"That the inhalation of mineral dusts had certain serious effects on the lungs has long been noted and has been the subject of extended research. The worst effect of dust in the lungs consists in a slowly developing hardening of tissue which to function properly must be very elastic. Dusts apparently vary greatly in their power to cause this hardening. Thus coal dust acts very slowly and results in practically no shortening of life. Persistent inhalation of quartz dust, on the other hand, results in prompt damage and may cause death in two years. At the present time no one can say just why those differences exist. The various dusts need accurate listing as to the concentration in which they do harm, and in the lack of such knowledge intelligent legislation on dust control cannot be produced.

"At the present time the problems connected with dust inhalation entirely occupy the research facilities of the school, but they are merely indicative of the place there is for similar work when the school is enabled to grow or other schools are established. Requests have been received from a large number of factories to take other types of industrial research on the same basis, the manufacturer paying the costs, but these have had to be

laid aside because of lack of personnel or space. It is evident that the field, in which there is real need and real interest on the part of the employer of labor, is broad and that the work of the establishment of schools of industrial hygiene is of vital importance to research work, not alone because of the research work they do, but because they train men for research. They establish the care of the industrial worker as a profession, and send forth men to spread it and conduct research of their own. Bound up with these considerations and most important of all is the influence which it will have on the amelioration of labor conditions. It will dispel many of the clouds of ignorance under which the laborer is sent to work to-day, and the progress of the adjustment of labor and capital is so broad and the result of so many complex causes and impulses that one would hesitate to say that any one thing could adjust it. But I am of firm belief that no one thing can be neglected the potentialities of which are so great toward its solution."

Wood Alcohol's Ravages.
Of all the causes of what physicians call industrial diseases wood alcohol and the various dusts are probably the most prevalent, or at any rate they are better known to the general public. Wood alcohol, or methyl alcohol, to give it its technical name, is used in many industries, and in practically every manufacturing plant there are dusts, many of them poisonous and all of them causing a certain degree of ill effect, which are the inevitable result of manufacturing processes. It is to eliminate as far as possible the danger from such things as these that the Harvard school has been formed, and the research which the school has been conducting into the deleterious effects of dusts is bound to have an almost inestimable value.

The State Labor Department of course has given considerable attention for several years to industrial diseases and has procured the passage of a number of laws to safeguard the health of the worker, such as making compulsory the reporting of occupational diseases contracted in manufacturing plants, establishing rules for the care of the health of any one engaged in industries in which considerable quantities of wood alcohol is used and requiring the use of respirators in plants where harmful dusts are prevalent and where there is no way of lessening the danger by preventive methods.

Wood alcohol is the most dangerous and the most prevalent industrial poison of all the alcohols used in the various trades. It produces toxic effects whether taken internally, inhaled through the lungs or when coming directly in contact with the skin. Impairment of vision, complete loss of eyesight and even death result from drinking wood alcohol, as well as from inhaling its fumes. People working in places where large quantities of wood alcohol are used frequently have serious eye troubles. So decided are the effects of the fumes in some cases that death occurred when persons were subjected only a day or two to the fumes. Direct action of wood alcohol upon the skin when used externally, although not quite as disastrous, has serious consequences. It produces inflammation of the skin and in extreme cases death of the affected organ.

The fumes of wood alcohol are an irritant to the skin and mucous membrane, especially the palpebral and ocular conjunctiva. Inflammation of the hands and arms frequently occurs among workers exposed to the fumes or handling wood alcohol; conjunctivitis, at times with a swelling of the lids of the eyes, occurs among workers when exposed to the fumes; nearsightedness, dim and blurred vision are frequent; headaches and acute amblyopia, or temporary blindness, lasting from twenty to forty hours, frequently occurs; also a permanent blindness and death sometimes ensue as the result of the inhalation of the fumes. The wood alcohol acts locally both as an irritant and internally as a poison.

Rules Are Formulated.
In order to guard against the dangers of wood alcohol the State Industrial Commission has recently prepared a brochure on the subject, detailing the processes of manufacture among workers exposed to the fumes and methods of handling the alcohol throughout the work. Physicians of the State Health Department have also been consulted, and as a result of the investigation the commission has recently issued the following rules for factories handling or manufacturing wood alcohol, supplementary to the labor laws on the subject:

1. In any factory where the amount of wood alcohol exists in the atmosphere to the extent of one part per ten thousand volumes of air means of ventilation shall be provided.
2. In jars, bottles, barrels, cans or other receptacles in which wood alcohol is stored shall be properly labelled as poison.
3. In processes where wood alcohol is used by employees, which requires that the hands of the operators come in direct contact with the material, impervious gloves shall be worn by the proprietors of such factories, who shall see to it that they are kept in good condition.
4. When it is necessary to enter an enclosure, tank or still in which vapors of wood alcohol are present, a gas helmet or other device shall be provided by the proprietor and worn by the person obliged to enter such enclosure. Fresh air, free from contamination, shall be supplied through a hose within the helmet. All vats, pans, cans, or other receptacles containing wood alcohol shall be provided with tight covers.
5. Signs shall be posted in all work-rooms, calling attention to the dangerous nature of wood alcohol.

Gypsy Householders in Westchester County

FREQUENTLY late last winter and during the early spring days patrons of the Second Avenue "L" road enjoyed a free show. It was gay and dazzling in color, not particularly clean, and the actors in it either preserved a haughty silence or talked in the most vociferous and apparently quarrelsome fashion. They were gypsies from Dalmatia.

When the shipwrecked Viola inquires the name of the coast she has been cast on the reply (according to Shakespeare) is "Illyria, Lady," and Dalmatia, once Venetian, Austro-Hungarian after 1814, and now something else, is that ancient Illyria where these gypsies come from. It is a narrow coast country, forty miles wide at its broadest, with high mountains protecting it on the east, picturesquely built towns like Zara, Ragusa, and Spalato and a number of large islands along the Adriatic which that sea has stolen from the land. It's where maraschino comes from.

The gypsies that come from there also are as heady as this liqueur. Their men are bold and stalwart and defiant and abominably lazy; their women are beautiful and haughty, preserving their figures and erect carriage to old age. The band has been living in Westchester county for more than a year, with frequent wanderings and excursions. When they come to the city it is by wholesale, and that means on a visiting party of them is generally numerous enough to about fill an "L" car. They do not travel in the crowded hours, and if it should happen that all of them cannot be accommodated in one car they wait for one where they can be. These gypsies do not hurry; they have all the time there is.

Waiting for Newcomers.
An old man and an old woman, accompanied by a score of young women and a host of children, often went down to South Ferry last winter and lingered near the Bargue Office on the days when immigrants were to be admitted from Ellis Island. They made no explanation of their invasion of the city, but it is natural to suppose that they were expecting additions from Europe to their band. The old woman, stretch, big and of a trying temper, would sit only in the middle of the car and the others always stood until she found a seat to her satisfaction. The man, dressed in two or three shirts of contrasting colors and wearing on his head a hat like Italian Bersaglieri, seemed taciturn, paying no attention to the voluble cries of his party or to the long sermons, as they seemed to be, delivered on occasion by his wife. The couple was interesting, but the younger women fascinated. Without exception they were handsome, and

whether fat or slender, both styles being present to choose from, they had a regal way of wearing their gilded, rags. The adjective is chosen advisedly, for the gowns they wore had the color of old gold and were profusely embroidered or embellished with tinsel. The very shawl or fichu covering their shoulders and crossing on the chest had the same effect in silk.

Striking Costumes.
Stout matron, mother of half a dozen crawling, troublesome marmots, and young damsel were similarly costumed. On the forehead of their voluminous gowns (golden in color) drawn tightly over their small heads, tied in a knot at the base of the neck, with long tasseled ends hanging down their backs. On their low foreheads they had pasted curls of the sort we used to call in the freedom of the boudoir "pigtails."

And to describe one of the matrons may serve faintly to give a picture of all the females, young and old, of these Dalmatian gypsies. She was as tall and straight as a column, her hair black and satiny as if it received daily brushing; skin dried and burned by sun and wind, without red except as to the lips, which were full and cherry colored. The contour of her face, that is its bony structure, was elegantly drawn with a low, broad forehead; delicate nose, chin slightly dented; eyes full black and mysterious, at times sullen, sometimes fierce, but mainly indifferent. Her hands were shaped like a lady's with tapering fingers, and the dirtiest nails.

The language these people speak is neither Italian nor Spanish, but it has words from both these tongues. Their voices are raucous and shrill at the same time, and this extends to the children, who chatter ceaselessly; it reminds one of the talk of parrots. To trail these people to their encampment was a plain matter to conceive than to carry out. They did not leave the train in a body as they had entered it; part of them descended at 180th street, others transferred to the shuttle, and as the various groups parted from each other some of them trailed away down a countrylike street, and others took a different direction. The natives of Olmville and Wakefield claim them as transient inhabitants of their parishes, while Williamsbridge will tell you to follow along Margenta avenue as far as it will lead you and the terminus will be the gypsy quarter. Evidently these gypsies, although hangers on to the great city, have not dropped the country habit of not knowing precisely where any place is located.

But if one is looking for the traditional gypsy camp he will never find these Dalmatian gypsies. The tradition is of caravans, groups of sodden men, lazy horses, spavined and broken kneed, a kettle on three sticks surrounded by dirty children, terrifying old women with straggling gray hair and fascinating young women who seek to deliver you over to the vengeance of their Rome. This isn't a picture of the modern gypsy life; at least it isn't the way these exiles from Dalmatia live.

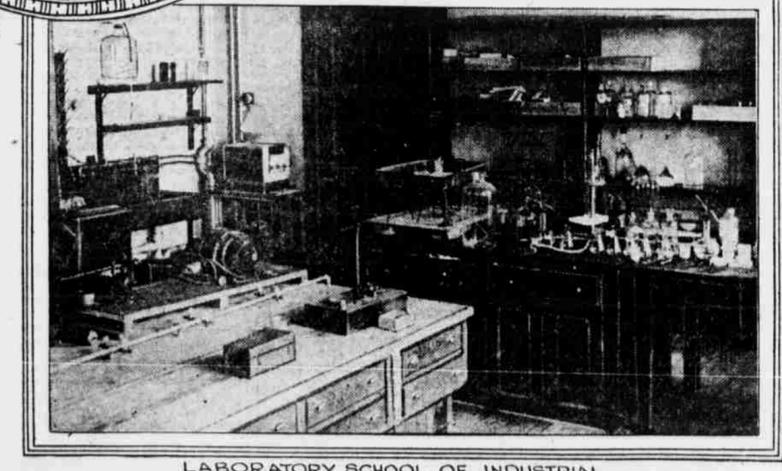
They have beasts, dogs, horses, a donkey or two and a mule, but they stamper in the depths of Bronx woods and they live themselves in houses which they rent, paying the rent every day. These gypsy houses are in the poorest corners of the straggling villages and present an appalling appearance of squalor out of which it is difficult to think the handsome gypsy women come. A few houses or huts they have built out of broken boards, pieces of tin or any kind of trash, but these hovels are built with hay. Three or four such dwellings are hidden away in Bronx woods. In the houses there is no furniture whatever. This is literal. A heap of straw in a corner may be a bed; there is nothing to prove that it is or is not. It has no covering, and the Dalmatians, like more traditional gypsies, sleep in their clothes. They like a grate fire and will pay a little more for a tumble down house if it is provided with this luxury, but most families carry about with them a brass pot for burning charcoal, like a Spanish brasero, and this is sufficient to warm them in winter.

When these people came to this country before the entrance of the United States in the war, efforts were made to keep them out and they effected an entrance by mere stolidity. The men were amply supplied with money, and it was then not practicable to get any answer from Dalmatia as to their morose, so on no legal ground, either as paupers or as moral menaces, could they be shut out. Reinforcements to the tribe have been sent back to Europe, but for all that anybody actually knows, those who are in the country mean to stay.

If nomadic by habit, they restrained their propensity for several months. Now by certain signs it seems probable that they are going away from Westchester. Indeed, it is said that forty of their number have crossed into New Jersey since last June. Although by conditions and perhaps by policy these people are not crowded together in one quarter, they are a sure fraternity, interdependent and ruled by race spirit and custom. Are they Egyptians, from which race all true gypsies are supposed to come? There isn't a sign of it in their looks or habits. The people who viewed their incursion with suspicion now say that the band has behaved in a manner superior to any other band of gypsies that have quartered themselves at former times in Westchester, which has always attracted their race.

Men Don't Work.
The men do hardly any work, occasionally weaving small highly colored mats and baskets; the women, leaving together in groups of four and six, wander about the country selling these or trading them for eggs and chickens. If they steal, they do it cleverly, not having been caught at it yet. When the women are out hustling for a living, the men stroll about the little wood, feed and water the beasts, and some of them are persistent fishermen. They will lie on their stomachs all day over the Bronx stream dipping a line and bait in it, and occasionally lifting out something that might grow to be a fish if it were given plenty of time.

Meanwhile the children, dirty, unkempt, half dressed, wander everywhere, not ostensibly begging, but on the lookout, like Autolycus, to snatch any unconsidered (or unguarded) trifle. They are always on the street near the place where their mothers will appear on their return, and their first cry is for chocolate. To visit the encampment is productive of little real knowledge of these people. One might spend days there and get nothing but incorrect impressions. It is like being in a city where one is unable to hold any communication except by signs with the inhabitants. Not that the Dalmatians have not picked up English, for they have. Here are a few of their words caught by sound: "Gachy" or "gachio" is the term indifferently applied to woman, wife or girl. Chocolate is "Callardie." When the little black imps surround their homecoming mothers that is the word they incessantly cry: "Callardie, callardie!" "Sivano" or "scivano" is their word for a writer and they applied it to their visitor, who, they seemed to realize, had come to visit them to get "copy." For photographer and camera they have no words, but plenty of detestation; they will not permit a picture to be made of themselves or any of their belongings. These gypsies are very particular what they eat and they give to the poor people, Americans, who live near them any cooked food that has been given to them. It is apparently not their custom to eat anything that they have not cooked for themselves.



LABORATORY, SCHOOL OF INDUSTRIAL HYGIENE.

Fishes That Bear Heavenly Names

THE sun fish, taking its name from the largest heavenly body of which we have any knowledge, is naturally selected for first place. It is easily captured, but getting it out of the water is another matter, for the sun fish frequently weighs 500 pounds or more. Some years ago a large specimen was exhibited in the New York Aquarium. It weighed about 450 pounds and was five feet long or rather round, as the sun fish is almost entirely one huge head and looks something like an old fashioned millstone. Its Latin name is *Mola*, which means millstone. It has fins to assist it in controlling its motions in the water, but it almost never swims upright, seeming to prefer lying on its side and letting the passing waves wash it from place to place.

When closely approached the sun fish slowly sinks out of sight. In the warm waters around the Florida coast and Cuba it is usually harpooned, not because of its gameness in struggling to escape, but rather on account of its weight. There is a smaller namesake of the ungainly sun fish of the ocean with which almost every small boy is familiar. The little sun fish that is found in practically every creek and river in the country is a favorite catch of even many expert anglers. It, too, is almost round, if we eliminate the fins and tail, but it is a beautiful fish, and reddish orange tints that usually follow the fins give it a rather fine appearance for so small a fish. It looks something like a large, flat perch. The moon fish is a member of the collective family of fishes commonly called pilots. It is a food fish and, along with the rudder fish, is sometimes seen following vessels to gather up the refuse that is thrown overboard. Its flesh is rather coarse in texture, and for that reason it has not been very popular as a table delicacy.

The star fish naturally seems to follow the moon fish. Almost everybody is familiar with the little five finger star fish thrown upon the beach. When taken up it dangles helplessly in the hand, but if the history of that one fish particularly were known it probably would tell of countless numbers of oysters and other edible mollusks it has killed and devoured. On looking at a star fish you will notice that the mouth is at the very centre of the rays or arms, and it is through this mouth that it devours shellfish of every kind.

Even though the oyster may close his shell tightly upon the star fish's approach it cannot escape, for the star fish calmly proceeds to wrap its arms around the shell and waits for the oyster to have open house again. When this happens the star fish is quick to attach itself to the unfortunate oyster and begins to take it into its stomach in a very peculiar manner. The stomach of the star fish comes out through its mouth and wraps around the oyster, holding it firmly in this manner until digestion takes place. Larger specimens of star fish have been seen which have taken the whole shell into their stomachs, and finding it some trouble to discharge after its inmate was digested the shell remain as a part of their bodies. Star fish are one of the fisherman's worst enemies and before more was

known of them the fishermen would merely tear them in half and throw them back into the sea. They were thus unknowingly making more star fish, for this peculiar thing would simply grow new arms on the two halves and be ready for mischief again. They have been found with only one arm left, the others having been lost by accident, but even with one arm they seem to get along without any inconvenience. The movements of the star fish are exceedingly graceful, as they glide along with a smooth and velvety motion while slipping over an uneven surface. There are many varieties of star fish, none of which has been found of any use for decorating the centre table in the sitting room or the what-not in the library. "And now we come to the angel fish. After hearing its awful history you will probably conclude that its proper berth should be in the lower regions instead of the heavenly place for one of those inmates it is named. Whoever gave it this angelic name must have had in mind the fallen angel, his Satanic majesty Beelzebub. It is as hideous a fish as is to be found in the waters and grows to a very large size. Being one of the flat fishes it stays near the bottom, where it sits up and devours all the mud fish, and in fact anything living that scurries across its path. Its skin is very rough and thick, sometimes being used as a sandpaper for dressing down wood. Though a species of shark its mouth opens out in front of the head instead of below as with other sharks, and it is furnished with a generous supply of rather long and sharp pointed teeth. The length of a full grown angel fish frequently reaches eight feet.