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FUNGI. A Talk About Toad-stools. (Written for the TRIBUNE.)

"There's a thing that grows by the fainting flower, And springs in the shade of the lady's bosom; The lily shrinks; and the rose turns pale When they feel its breath in the summer gale.

Almost everyone knows what are mushrooms, and our intention now is to have a little talk about them and other fungal growths. It is ordinarily supposed that every fungus except the common mushroom is poisonous; such however, is far from being the case.

Insignificant as the fungi may, and do appear to the ordinary observer, they perform, nevertheless, a vast and important work in the economy of nature. They, like every other class in the natural kingdom, are divided into groups, the various species of each group bearing such closely related characteristics as to prove them to be relative, while their differences are so distinct as to prove them to be distinct kinds.

Comparatively few care to study the works of Nature. Still, some find time profitably spent and derive great pleasure from the study of birds, insects and flowers; but how often will you come across a person who can find anything interesting in a toad-stool.

The structure of the fungi is marvelous; their growth interesting, and the vast variety of form and color, which they exhibit, is attractive to the eager eye. But when we come to the microscopic examination of these curious plants, we are more than ever surprised, and cannot refrain from exclaiming: How wonderful and beautiful is the structure of a fungus!

Late in autumn, when the flowers are gone and a few withered leaves, rattle among the naked twigs of the trees, many of those plants are in their prime; and, so again in early spring, when the tender buds begin to unfold, and springtime flowers begin to bloom, the fungi flaunt their many hues above the still brown herbage.

It is said there are upwards of a thousands known species of toad-stools. But that group, large as it is, covers only a small proportion of the fungus world. As before mentioned, there are many poisonous fungi. Some produce violent abdominal spasms, the very severity of which is sufficient to cause the death of the victim; some cause a swelling of the body and limbs, chemically changing and destroying the blood, and others again, taken into the stomach, grow there, causing the death of the sufferer in that way.

Not only are living objects sometimes forced to yield subsistence, but dead or decaying matter; each in its turn yields a rich feast to the fungus. The writer has good cause to remember the effect of the common mushroom. When at school he and another little boy collected a lot of mushrooms and ate them raw just before going to bed. After they had been in bed an hour or two, the mushrooms began to work. The boys had violent stomach ache and nausea, without being able to vomit. Then these sweet cherubs became frightened. They repeated their prayers, said all the texts they knew, and with considerable effort, they weakly sang all the hymns and pieces of hymns they could think of. Then they lay awake, talking at intervals, all the while being firmly convinced that

death was approaching. They were afraid to call any of the masters; for at that school there was a strict rule against taking anything into the bedrooms at night to eat. Sometime during the middle of the night they fell asleep, and awoke next morning feeling perfectly well. They felt rather frightened or awed for several days, but that feeling finally wore off and they forgot the occurrence, except for the fact that it taught them never to eat raw mushrooms again.

In the early part of this article it was remarked that fungi performed an important part in the economy of nature; as, in fact, do all other things pertaining to this world of ours. But, some will say, we can see use and beauty in the herbs and flowers and trees. The herbs many of them are good for medicine, the flowers delight our senses by their sweet scent and harmonious colors; the trees add picturesque beauty and freshness to the landscape, affording us cool and shady retreats from the hot glare of the summer sun; but of what use can a toadstool be? Its uses are various. Each fungus group has its distinctive habits; some kinds grow on the prairie, some in the woods on old logs, trees, and dead leaves; so we find them also growing and flourishing at the expense of organic structure. The fungi attack weak and sickly plants, and for the matter of that, healthy ones too; slowly but surely sapping their very life. The plant dies, and in some cases its parasite dies and decays with it; but that very decay is not lost, for other kinds of fungi grow, as if by magic, from the disintegrating mass.

Some fungi love dead trees and dead leaves in shady, damp situations. Most people have seen a white film or fiber just beneath the bark, or else prevailing every portion of old dead and decayed timber. Such substances are the spore or mycelium, from whence arises, under favorable circumstances, the fruiting portions of the fungus. This spore may, however, exist for years without maturing if the conditions of life are unsuitable.

What is known as "dry rot" (Merulius lacrymans) in timber, is caused by a minute fungus, which eats away, as it were, the fibres of the wood, causing it to crumble away. Even the common house fly is infested with a fungus (Empusina). The mycelium is developed within the fly and kills it, after which the hymenium or fruit-bearing part arises from the dead body. Caterpillars are subject to fungus growths. Prof. J. C. Arthur has discovered recently a new species of larval fungus (Automophthora Phytomyces) growing in the clover-leaf weevil (Phytonomus punctatus, Fabr.)

The larvae of this insect feed at night, remaining in concealment in the daytime but when attacked by this fungus they crawl as high as possible on some stem or stalk, before daylight, and coil themselves around it staying there till they die. Prof. Arthur says in his interesting article upon the subject, in the Botanical Gazette for January of this year, that the larvae are able to crawl about at 10 o'clock in the morning, when disturbed, but by noon they die and the rotoids fasten them to the support. Some hours afterwards the normal color (yellowish or pea-green) is changed to dull grey by the advent of the hymenium. The spores (fruit) are produced late in the afternoon. During the night they are discharged and by morning only a small, shrivelled, blackened mass is left to tell the tale. Thus, our readers will see how quickly a fungus can kill. Fishes often fall victim to fungi. Only the other day the writer picked up along the river, three species of fish that had been killed by these plants. In two of the specimens, one a silverside, the other a "bull-pout" the hymenium (fruit-bearing portion) covered the whole body like a thick brush of dull grey hair, each fibre being terminated by a little knob containing the spores. The interior of these fishes was one mass of whitish fibres, or what may be called the roots of the fungus.

Our commonest cereals are not exempt. Every one knows what is ergot in grain. It is a fungus known as Cordiceps purpurea. It attacks rye most frequently. Flour made of ergotted grain is injurious, and if taken in quantity causes gangrene. One year the greatest proportion of the rye grown along the coast of Normandy, in France, was ergotted. The poor being mostly dependent upon this for subsistence, were obliged to eat it. Terrible diseases ensued, the sufferers died in the agony of torture, the limbs of many dropped off from very decay before death came to their relief. For some time the scourge was attributed to supernatural causes; but at last suspicion fell upon the flour. Its effects were tried upon a dog, and the result pointed to where the evil lay.

Terrible as this ergot is, in the hands of science a very valuable medicine is produced from it. The gypsies use a mysterious poison on which they confess is procured from a fungus which many suppose may be related to the ergot. Among the many jealously guarded secrets of the gypsy race is the art of preparing the "drei" or "dri," a most deadly destructive agent, for which medical science knows no antidote. Analysis detects no noxious properties and the most careful microscopic examination shows it to consist of an apparently harmless vegetable substance. The drei is, then, as will appear from what follows, merely a brown powder, collected from a species of fungus, forming the nearest connecting link between the animal and vegetable kingdoms. The powder consists of minute spores. These fungoid spores possess the peculiar property of being further developed, only by actual contact with living animal matter, (as when swallowed,) they then throw out innumerable greenish yellow fibres, twelve or eighteen inches long. When the drei is administered, usually in a warm drink, they attach themselves to the mucous membrane, germinate, throw out millions of fibres, which grow with awful rapidity, first producing hectic fever, then cough, at last accompanied by incessant spitting of blood, till death inevitably supervenes, usually in about a fortnight or three weeks' time. In Italy there was a case of this kind in 1860. The patient was attended by physicians accustomed to deal with cases of slow poisoning. No suspicion of foul play was entertained until the day after the decease, when, an autopsy being held, revealed the cause of death. The fibres, the growth of which had ceased with the cessation of the animal life and heat that had supported them, were already partially decomposed; had another day or two elapsed no trace of the foul deed would have been left. We could quote many other instances of the destructiveness of fungi; we could enumerate many more curious and interesting things concerning them, but space does not permit. The mould that gets into our bread, cheese, ink, vinegar, and a host of other things all belong to the fungi race. The fungi help to absorb decaying substances, and aid nature in converting dead matter into rich material from which new and more highly organized structures may arise. They aid in the formation of the rich loam, found in the woods, in which gardeners love so well to plant their favorite flowers. Many of the fungi are excellent as food; but the writer agrees with Horace who says "The meadow mushrooms are in kind the best; 'Tis ill trusting any of the rest."

GEN. SHERMAN.

Written for the TRIBUNE. The limited space permitted in the columns of the TRIBUNE, a faint outline only, can be sketched of the life and services of the greatest soldier of modern times. Preceding the late war, Gen. Sherman was president of the Military college at Baton Rouge, in the state of Louisiana. The attitude of the Southern leaders in the states of Louisiana and Mississippi towards the government, caused Gen. Sherman to resign his position, proceed to Washington with the view of placing his services at the disposal of the government. It has been long since conceded that the grim, determined leader is very positive in his opinions. When the call was made for 75,000 volunteers from the several states to suppress the rebellion, Gen. Sherman considered 500,000 a more approximate number, but Sherman was considered to be off. Events followed thick and fast, and congress and the country, the press and the army, came to the conclusion that Sherman was about right. He had recently come from the South-knew the preparations going on in that section, and the temper of the people. He was besides, a graduate of West Point, and while yet a very young man had served with distinction 12 years in the army. In the second year of the war the opportunity Sherman sought fell to him, and he lost no time in showing those great qualities which subsequently distinguished him on so many hard fought battle fields.

At Shiloh, he bore the terrible onslaught with tenacity, skill and the most undaunted courage and firmness. Gen. Grant in his report of the fighting on the 6th says: "A casualty to Sherman that would have taken him from the field that day, would have been a sad one for the troops engaged at Shiloh. And how near we came to this!" On the 6th Sherman was shot twice, once in the hand, once in shoulder, the ball cutting his coat and making a slight wound, and a third ball passed through his hat. The blint of the battle fell on McClellan and Sherman the first day; the timely arrival of Gen. Buell changed the tide of battle on the second day and resulted in the defeat of the Confederates. History is too often perverted. The contradictions in reports of commanders fully attest this. Gen. Buell is everywhere recognized as a most able and well trained soldier, and most certainly deserved better treatment than he received at the hands of our government. In all the battles of the Southwest, Sherman participated, and by the sheer force of genius and great abilities fought his way up to the greatest and most important commands. His great march from Vicksburg to Chattanooga, thence to Atlanta, to Savannah and northward to the Potomac, is one of the largest and most successful ever made by an army. From Atlanta to the sea is the greatest military movement ever completed, and surprised at the time the world in its grand conception, execution and completion.

"Cutting loose from his base of supplies and sustaining his army in the country through which he passed fighting his way, and driving before him the ablest General of the Confederacy, is, in itself, a feat without parallel in the annals of war. Sherman's Banners have become subject for song and story. The system of foraging adopted in Sherman's line of march has no precedent. So extensive in its operations, and is perfect in every detail." Sherman was especially open and outspoken in giving his views, whether asked for or not, but having once freed his mind, verbally or by letter, as in the case of the Vicksburg campaign in opposition to the turning movement as it was finally made, he dropped his contention there, and loyally, and cheerfully without grumbling or criticism, set vigorously about performing the duty assigned to him. It is but fair to add that Sherman always had decided views. He was then as now, a man of great abilities and great attainments, not only in the art of war, but in nearly everything else; inshort, to use his own words, he was "a great deal smarter man than Grant," could see things quicker and more clearly. Knew more of war-history, law and new it, and perhaps Grant knew it also, and yet there was never any rivalry or jealousy between them. On the contrary a feeling of friendship and confidence existed. When after the capture of Forts Henry and Donelson, Grant found himself superceded by Halleck, and there-by placed in a subordinate position he talked of resigning his command in the army. No, no, said Sherman have patience, and events will bring matters round all right, and so they did. In like manner when Sherman

made his incomparable march to the sea, it was designed to place him on the level of rank with Grant. Sherman soon as he heard of it, promptly wrote to John Sherman to stop it, at the same time intimating to Gen. Grant his having done so, adding that he would have no rivalry or competition come between them. Grant in reply said if such a thing happened he would cheerfully give him Sherman the same cheerful, willing support he had always received from him. There is no phase in Sherman's career shines out so brightly as this feeling of unwavering loyalty to his chief. Some of the war correspondents continue to spit a little venom at Gen. Sherman because he found it a necessity not to impart information which possibly might reach the enemy. He rather told them on more than one occasion he would prefer seeing them in uniform, musket in hand, doing the duty of true and loyal citizens. From this the reader will perceive one of the characteristics of Gen. Sherman. There still lives a sorehead or two who thinks Gen. Sherman is responsible for the burning of Columbia, S.C. They might as well, and with equal veracity, charge Gen. Butler with burning the wharf and ships, cotton and coal at New Orleans, which was blazing before Gen. Butler arrived in the city. The fair and manly way Sherman received the surrender of his able antagonist, Gen. Joseph E. Johnston is sufficient to show a generous, and noble spirit, a great mind, and a fine disposition. He stood firmly with Gen. Grant in resisting secretary Stanton, who aimed at arresting Generals Lee and Johnston, and putting them on trial for treason, and in so doing, give vent to the feeling of the Union army. Sherman's greatness during the rebellion, his matchless abilities on momentous occasions, nervously active, quick, comprehensive, wary, and ever vigilant, displaying a skill in combining his forces, and moving to be in time, brimful of expedients, fertile in resources, informed in the minutest details, has given him fame and a reputation that remains unchallenged. "War is cruelty," he said. "It means destruction. On the heads of those who so unnecessarily plunged the country into the vortex of rebellion rests the guilt, blame and consequences." Of the private soldier, he said: "You cannot expect all the virtues for \$13 a month." It is estimated that the number of men called under arms by President Lincoln from the inception to the close of the great conflict amounted to 2,759,049, of whom 2,656,053 were actually embodied in the Union armies. And on the Confederate side 1,100,000 during the same period, giving a total of 4,000,000 from a population of 32,000,000, a thing unexampled in the history of the world. In case of a foreign war with our present population and no longer any Federal or Confederate, but all under one banner, there is ample security for the government and laws under which we live. This firm feeling of security, is best exemplified, when we look back to the end of the late war and see a quarter of a million of veteran soldiers pass in review before the great leader, whose name stands at the head of this article, and at once quietly and peacefully return to their homes, to pursue life in the quiet paths of honest industry. General Sherman is now on the retired list, but his great popularity has not diminished. There have been two Generals in our army, whose names are often confounded, viz: Gen. W. T. Sherman and Gen. T. W. Sherman. I am not aware of any relationship existing, except what is conferred by same name. In the great northwest, the late General of the army, has a host of friends, and a warm place in the hearts of a great many. On every occasion he has a kind word and helping hand for Montana. Well and truly has Major Maginnis, our late delegate to Congress, styled him the magnificent Sherman. J.

Gov. Foraker of Ohio lately sent a message to the legislature calling attention to the manner in which the rich citizens avoided taxation. The wives of these people now boycott Mrs. Foraker by refusing to attend her receptions. An earthen pot filled with gold coin that the cashier of a local bank values at \$12,000 was turned up by the plough a few days ago by a farmer at work in his field at Batesburg, S. C. The coin is old and quaint, and bears evidence of having come from different nationalities. How it found its way into the field or when it was deposited is not conjectured.

Aluminum is to be the metal of the future, and in a few years it will displace iron and steel and revolutionize the industrial arts. Such is the prophecy of a prominent machinist and engineer, who also asserts that the world contains ten times as much aluminum as iron; that it is three times stronger than Bessemer steel, will not corrode, is very ductile, is a third lighter than cast-iron, and the raw materials for making it are not worth \$20 a ton.

The Washington correspondent of the Louisville Courier-Journal fears that liquor and labor are going to make the orthodox parties a good deal of trouble in the near future.

Canadian Indians. If the stories about the Indians of the Northwest being armed by Fenians or by Socialists get any attention in Canada it is due to misgivings about Indian disaffection. Before the settlement of that region the Indians were rich, having by means of the buffalo food and clothing in plenty, and limitless and beautiful country. Now, not having learned to work, they barely live on the grudging dole of politically appointed agents. Education to industrial pursuits, which is the only deliverance from serious danger, will, we fear, be slow under politically appointed farm instructors. The evil of our Indian and half-breed problem lies in our wretched system of government patronage.—Montreal Witness.

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