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PROFESSOR WÄTZOLDT, the director of the Elisabethschule (a girls' school in Germany), has addressed a most serious warning to parents and guardians on one of the evils of the present system of teaching girls. It is on the subject of what Wagner has contemptuously called *Hammermusik*. The professor begins by pointing out that the terms "musician" and "pianoforte-player" are not at all convertible. Then he refers to the illogical conduct of so many parents, who, for the sake of their children's health, ask them to be excused certain subjects of the school course, while they encourage them in the most excessive exertions at the pianoforte. Now, there is no subject which, if taught seriously, makes such a demand upon the store of nervous energy of the body as instrumental music. The brain, the eye, and the hands are all exercised at once: hence the frequent injury to health in the case of girls who have not a strong constitution. The professor has collected some statistics which show that more than half the pupils are taught the pianoforte, and that after their tenth year they spend twice as much time daily at it as at their other home lessons. Many girls complain of feeling tired, absent-minded, fidgety, of headaches and sleeplessness; and these complaints grow worse as they grow older. In all cases where the parents could be prevailed upon to diminish the hours of pianoforte practice, or stop it altogether, a marked improvement in general health was the invariable result. Herr

Wätzoldt, therefore, recommends (1) that pianoforte instruction, should not begin until the age of twelve; (2) that only girls of sound health, and who show some talent for music, should be made to play. We also agree with the final observations of the professor, who must be a true lover of genuine music. "It is an indubitable fact," he says, "that nine-tenths of the girls, after years of arduous practice, only attain to a certain automatic technique, which not only has no relationship with art, but is an actual hindrance to true musical perception. Teachers and medical men should do all in their power to stop this pianoforte strumming, which kills all true feeling for art, and renders a normal bodily development impossible. We know how difficult it is to fight against the fashions and vanities of the day; but, if it is only shouted from the house-tops that true art and culture have nothing whatever to do with mediocre *Klavierhammern*, there will be some, at least, in the maddening crowd that will pause and reflect; and these, by a lucky chance, sometimes become leaders who set a better fashion to the unreflecting masses."

PULMONARY CONSUMPTION IS MORE TO BE FEARED in every community than any other disease that affects mankind. Cholera, yellow-fever, and small-pox — diseases that paralyze with fright entire countries — are exceedingly limited in their results, in comparison with the slaughter of consumption. Last year Florida was panic-stricken from the havoc of yellow-fever; but during the same year consumption destroyed more than twice as many lives in the little State of New Hampshire, and not a tremor ran through the body corporate. The average annual death-rate in this country, from cholera, yellow-fever, small-pox, typhoid-fever, diphtheria, and scarlet-fever, all combined, does not reach the enormous total of deaths from consumption. It is time that some determined and systematic effort be made to lessen this disease which is now regarded by so many as preventable. Among the general sources of infection there is one, at least, that should be removed, or, if not wholly removed, greatly lessened by legal action, and that is the sale of tuberculous food-products. Such foods, chiefly in the form of tuberculous meat and milk, particularly the latter, are undoubtedly extensively sold to unsuspecting consumers; and that the results are not infrequently lamentable, no sanitarian doubts. The general government has taken no measures to restrict this abuse, nor have the individual States. To illustrate: the New Hampshire State Board of Health says that very recently complaint was made to the Board of Cattle Commissioners that some disease existed in a herd of thirty cows in a certain town of the State; and, under the assumption that the disease might be pleuro-pneumonia, the government, upon notification, sent a competent veterinary surgeon to inspect the herd. The inspector immediately diagnosed tuberculosis, had an infected cow killed, and the post-mortem examination revealed tubercles in nearly every organ of the body, including the udder. The inspector reported that about seventy-five per cent of the herd was already infected. All, or nearly all, the cows were being milked, and the product being sold daily to a milk-dealer for distribution among his customers. The dairyman, ignorant of the character of the disease, was bringing up a baby upon the milk of a single cow in which the disease had advanced nearly to its fatal termination. Under the laws of New Hampshire, neither the Board of Cattle Commissioners nor the State Board of Health has any authority to deal with tuberculosis in cattle in a way necessary to restrict its spread among other herds, or to prevent the dangers to which it subjects the human family.

THERE ARE CONNECTED with the public-school system of Cincinnati, classes for the instruction of deaf-mutes. Two of these classes receive their education through the well-known methods of signs or finger-movements; while at the Sixth District School on Elm Street, above Fifteenth Street, there is a separate school of

some thirty pupils, who are being taught to readily understand every thing said to them by watching the movements of the speaker's lips, and are themselves in turn taught to speak and read aloud through the oral method. This class of scholars was organized some three years ago, and resulted in the formation of a society for the improved instruction of deaf-mutes. About one year ago the society succeeded in having provision made whereby the classes should form part of the public-school system. There should be better provision made, however, for the development of this branch of the public-school system. More room is needed for the pupils; additional instructors are required; and, beyond any question of dispute, this work, so well begun by private subscription, should be fostered and cared for out of the school fund. There are now being made efforts to have schools located in different parts of the State, and at the next session of the Legislature there will be presented a bill in which the State will be expected to pay for the education of all deaf-mute citizens of the State by this oral method.

DANGER LURKING IN DECOMPOSING ANIMAL OR VEGETABLE FOOD.¹

MUSCARINE as a product of putrefaction has already been alluded to by me in my last report for the chemical department of the Agricultural College, and in foreign scientific journals, where the case has attracted some attention as furnishing facts previously unknown. My connection with the occurrences reported originated through the death of four persons from the consuming of fish-containing-food in a slightly putrid condition; and my analysis of the food was undertaken at the solicitation of the police department of the Hokkaidō Chō.

Two adults and two children living in Chitose died suddenly with symptoms of narcotic poisoning. Post-mortem examination, however, failed to satisfactorily account for death; but the appearance of the organs, together with the ante-mortem symptoms, were considered by the officiating physicians to resemble poisoning from the poisonous mushroom (*Agaricus muscarine*).

Specimens of the food eaten by the deceased were therefore sent me for chemical examination. The articles received were two; namely, a variety of edible mushroom, and a native food called "*sushi*," consisting of a mixture of fish and rice with a little *saké*, which is allowed to ferment and become vinegar before the mixture is eaten. The fish was *gnoi*, one of the most common and wholesome of Japanese river-fish. In the former of the two substances subjected to examination, no trace of alkaloid or other injurious substance could be detected. The "*sushi*," however, reached me in an advance stage of putrefaction. (This food is usually eaten in a condition decidedly "strong.") I was therefore compelled to recognize the uselessness of attempting the elimination or recognition of alkaloids by the usual methods of procedure, and to admit the extreme probability of the presence of some ptomaine as a product of decomposition. The methods pursued and the results obtained may possibly require a brief introduction, that the facts involved may be the better recognized. Only the briefest possible *résumé* of the facts necessary for a better consideration of the questions involved is here admissible. The relations between alkaloids and albuminoids are known to be most intimate. The latter, acted on by certain micro-organisms, undergo a decomposition known as putrefaction, and the life-function of certain of these organisms results in the conversion of albuminoids into alkaloids; this latter group of compounds consisting chiefly of poisonous substances, until recently supposed to be exclusively of vegetable origin. Though numerous instances of poisoning through the consumption of food undergoing the process of putrefaction are recorded, and as long ago as 1822 Garpert and Stick made known the existence of a specific poison in decomposed animal matter, it was not till 1877 that really definite knowledge was evolved from the facts accumulated. The Italian chemist Selmi then first isolated a basic compound, of alkaloid character and toxic properties, of unmistakable putrefactive origin, and named by the discoverer "*cadaves alkaloid*," or "ptomaine."

In 1880 the Italian minister of justice appointed a commission of chemists and pharmacists to investigate the entire field thus opened, and formulate the facts gathered. The work thus begun has been continued by the investigators of different countries, until there are now known and isolated not less than twelve of these alkaloids of putrefaction, seven of which have been made known through the labors of Dr. Brieger of Berlin since 1883. It is chiefly to this investigator that we are indebted for the enunciation of reliable methods of elimination and recognition.

The method adopted by me in the investigation undertaken was in most respects identical with that recommended by Brieger, the modifications being only such as were suggested by the somewhat peculiar nature of the substance and the circumstances demanding the examination; the ptomaines thus far eliminated being for the most part insoluble in ether, while the latter removes large quantities of organic matter, the presence of which renders subsequent purification more difficult. I first subjected the mass to one hour's extraction with warm ether in an automatic extraction apparatus of my own device. The extract thus obtained was set aside for future examination; and the residue, slightly dried, and free from fats and other ether-extracted matter, was heated with water acidulated with hydrochloric acid for two hours, the temperature being kept below 100° C. The solution thus obtained was evaporated to a thick sirup over the water-bath, an acid re-action being carefully maintained, and the residue extracted several times with absolute alcohol, until the addition of alcohol failed to precipitate more nitrogenous matter. The fluid solution was then evaporated to dryness, the residue taken up in 90 per cent alcohol filtered and precipitated with platinic chloride. The precipitate thus formed was then treated with an excess of water; the alkaloid-platinum double salt, if present, going into solution, from which the insoluble platinum compound was separated by filtration. The solution was next subjected to a stream of hydrogen sulphide till all platinum was precipitated, the solution being then neutralized by sodium carbonate, and evaporated to dryness. This residue was repeatedly washed with absolute alcohol, and the solution obtained evaporated to dryness over the water-bath and then taken up in water. This solution should now contain the pure hydrochloride salt of any alkaloid extracted from the original substance by the acidulated water.

Allowed to slowly evaporate over sulphuric acid, fine laminar opaque crystals were formed, which were found to be soluble in alcohol and in water, but insoluble in ether. The aqueous solution gave with phospho-molybdic acid and with mercuric-potassium iodide amorphous precipitates. Mercuric chloride produced a white amorphous precipitate, crystallizing after some time. With gold chloride, a bronze-colored non-crystalline precipitate was obtained.

Platinum bichloride yielded a fine slightly crystalline precipitate of great insolubility. Excess of bromine-water produced a reddish-brown precipitate, soon disappearing.

The identity of the compound with muscarine, the poisonous constituent of the "toadstool," seems to be thus established, and is further confirmed by the evidence of the post-mortem on the victims of the consumption of the food from which the alkaloid was isolated. The official report of the examining physicians mentioned muscarine symptoms. No mushrooms were, however, found in the stomachs, though, because of the symptoms, some were furnished me for analysis. The further confirmation of elemental analysis has not yet been possible, since the total amount recovered was not more than sufficient for analysis: it was therefore deemed inexpedient to resort to the destruction of what might, under the circumstances, be required as evidence. A combustion analysis will, however, ultimately be made, and the results recorded. The ether extract made before the treatment with acidulated water, was subsequently found to contain an alkaloid yielding white crystals over sulphuric acid, and a crystalline precipitate with gold chloride. I have as yet, however, been unable to establish the identity of this compound, and therefore reserve further details, together with results of efforts to "cultivate" these products of decomposition at will, for some subsequent report.

Muscarine, so far as I am able to ascertain, has not heretofore been recorded among the ptomaines isolated and named, although

¹ Report by H. E. Stockbridge, Ph.D., of the Government Agricultural College, Sapporo, Japan.