

the middle and the lower-middle class which took place during the second half of the nineteenth century. A new reading public, five or six times as numerous as the old, has lately been brought into existence—a public whose appetite and leisure for reading, owing to the rapid increase and diffusion of wealth, have altogether outstripped its knowledge and its power of assimilating true literary culture. But, tho wanting in taste and knowledge, this public is not wanting in curiosity. Entirely untrained in scientific or theological thought, it can not help thinking about religion in its relation to modern knowledge. Conscious of the novelty and the limitations of its own circumstances, it is eager to enter into the conditions, the life, and the tastes of the leisured classes; and any book which, in a popular manner, professes to lay bare for it the mysteries of science, religion, and society appeals to some of the keenest of its mental tastes and ambitions. It is to this new, and as yet half-educated public that writers like Mr. Caine and Miss Corelli are able to offer themselves, undetected, as serious thinkers, with a real comprehension of life—as being specially familiar with science, history, and theology, the *ethos* of churches, and the manners of ‘tip-top’ drawing-rooms. Such writers as these have never had such a public before—a public with brains enough to read novels and money enough to buy them; possessed of sufficient education to make it eager to be taught the truth, provided it be by the easy methods of the novelist, but with too little education to enable it to discriminate true teaching from false. Such a public is the natural prey of intellectual impostors.

“The conclusion of the whole matter is, in our judgment, as follows. The effect which the growth of the reading public in England—the conversion of what was once an aristocracy into a huge heterogeneous democracy—has had thus far on the literary quality of our fiction, has, if we judge that fiction by any serious standard, been, on the whole, injurious to a very high degree. It has, in the first place, enabled writers who never could have written well to acquire, by pleasing a public imperfectly cultivated, a popularity which tends to perpetuate, as a standard of treatment and style, errors and vulgarities which would otherwise have condemned them to deserved oblivion; and, in the second place, it has tempted writers capable of better things to lower their standard of excellence in order to achieve popularity by condescension to popular taste. At best, it has tempted them to be impatient of the leisurely and conscientious care necessary to produce really classical literature, since the merits of such literature would repel rather than attract their patrons. The only novelists who can resist these demoralizing influences are those whose literary self-respect forbids them to consider the multitude, or those who have been rendered by circumstances independent of its pecuniary patronage. It is, then, these two classes of writers to whom we must, at the present juncture, turn for the preservation of the novel as a serious form of literature; and we must look forward meanwhile to the days—we may hope they are not far distant—when the deepening of education and a growing familiarity with great literary examples will enable the masses to exercise their literary franchise with more taste and insight than they now display.”

NOTES.

THE highest price ever paid for a first folio Shakespeare was received at a recent sale in London, where a copy in fairly good condition brought \$8,600, the record price.

INQUIRIES recently made by the *London Bookman* show that there are not more than forty novelists in England who can live in a reasonable way on the profits of their books alone, altho eighty-five live on the combined receipts of their royalties and serial rights. Only fifteen or twenty receive an important part of their incomes from American royalties, while only three or four can usually count on getting more from America than from England.

MR. WILLIAM E. FOSTER of the Providence Public Library has given some further facts concerning the “Standard Library” of the world’s best books lately established by him in that institution. In reply to the criticism that \$10,000, the supposed sum necessary for this collection, could be better spent in some other way, he states that the total cost of the 1,013 volumes was \$1,195, two-thirds of which were already in the general library. He adds: “The use made of the ‘Standard Library’ thus far has served to deepen our sense of its value, in emphasizing the permanent rather than the ephemeral in literature. Yet, on the part of the readers themselves who use this room, there is no such ulterior purposes (if such it may be called) present to their minds. A glance at their absorbed faces will show that it is enough for them that these authors are yielding them keenest enjoyment.”

SCIENCE AND INVENTION.

AUTOMOBILE RACING.

THE greatest long-distance automobile race on record, from Paris to Berlin, of which the daily press has contained extended accounts, was more sensational than satisfactory in the opinion of the American mechanical expert, Dr. Robert Grimshaw, who writes about it, from Germany, to *The American Machinist*. The distance was about 750 miles, over all kinds of roads, good, bad, and indifferent, and the route was patrolled by hundreds of stewards. Seventy-two machines were in at the finish, and the winner, M. Fournier, who received costly prizes offered by the French President and the German Emperor, covered the distance in between 16 and 17 hours. The lessons of the race, according to Dr. Grimshaw, are valuable, but somewhat unexpected. He enumerates them as follows:

“The first is, that the manufactures of such conveyances have not succeeded in their attempt at producing machines which will stand every-day wear at high speed, such as is achieved by the locomotive, the marine engine, and other mechanical combinations which are at work all around us, and which stand use and abuse with little complaint or breakage. With every new type of locomotive engine for railway purposes there is usually found some one element of trouble common to all; it may be that the cross-head runs hot, or the staybolts break, or what not. This defect shows itself on all machines of the same type, and may be done away with by changes in design or construction, leaving the new machine serviceable. But in the automobiles of the same type—sister machines, so to say—there seems to be no one part more tender than another, because all seem to let go with impartial frequency—frame, gearing, engine proper, generators, subsidiary parts, tires. ‘Spares’ must be carried to an absurd extent. Despite the speed which has been shown by some of these machines, the gross horse-power compared with the work, as represented by the product of weight and distance, is high; and compared with the weight and revolutions the net horse-power is low. That is, the friction, both of the conveyance and of the engine and gearing, is high, and this largely owing to the fact that the whole structure is stiff where it should be limber, and *vice versa*.

“The fact that, taking the productions of any one maker, there are so many rapidly succeeding and widely differing ‘models,’ proves (1) that the builders are not sure of themselves, and (2) that the conditions of ordering, the relation between amateur driver and half-amateur constructor, are such that prolonged experience with any one type is almost impossible. Every purchaser wants something entirely different from the preceding ones; each time an entirely new design has to be made. Ship-building—even warship-building, where the hull and armament plans are turned over to the engine designer with the cool demand to utilize the remaining space for his boilers and engines—is nothing to the conditions here.

“The second lesson is that automobile racing, as a sport, is no sport. To sit for eight hours in a cramped position, in leather clothing, with mask and goggles, and endure the physical discomfort arising from wind and dust and jolting, and the mental strain arising from the necessary watchfulness, is no fun; and adding to this that the racing medium, considered in itself, is utterly unsympathetic and devoid of ambition and eagerness in the competition—where is your sport? This is especially the case where general conditions of such a race preclude any ‘brushes’ between competitors. It is like a boat-race where there is not room enough for two crews ‘side and side,’ and each rows solemnly over the course, and back, in his turn.

“The third lesson is, that even were automobile racing sportsmanlike when the conditions were favorable, these conditions can not again be made favorable. For weeks beforehand the course between Paris and Berlin was placarded with notices of the coming race, and rules laid down to insure the safety of the competitors and of the general public. Committeemen with blue and with yellow flags were on hand at short distances apart; mounted police were strung along the road the entire distance—and for all that a man and a child, among the spectators, were

killed. Outside of that, the general public, however much excited and interested, was decidedly impeded in its every-day work.

"The accidents to machines and drivers were so numerous as to be impossible to record. I will only say that in attempting to pass a machine ahead, one of the two German automobiles, owing to the dust cloud, and perhaps to defective steering, was run into a tree and ditched, and one of its occupants had a broken arm, leg, skull, and ribs, and will probably lose one eye.

"Taking it 'by and large,' this race has probably done more harm than good to the entire automobile industry. It has demonstrated (at the cost of two human lives and many thousands of dollars) that the machines are dangerous and unreliable at high speeds, . . . and the entire poetry of the thing—what little there was—has been taken out of it. The real value of the automobile has been shown to be in its adaptability to slow and reasonably rapid conveyance on ordinary roads under ordinary conditions of traffic, and builders will do well to 'get in out of the wet,' and stop building machines for races which are torture to those taking part and dangerous both to competitors and spectators—and which, furthermore, in all probability, no government will allow to be repeated."

CAN CATTLE TRANSMIT CONSUMPTION TO HUMAN BEINGS?

CATTLE are peculiarly prone to tuberculosis, and it has always been supposed that their form of the disease was the same as that to which the human race is subject. On this belief rest all the precautions that are being taken to-day by boards of health to see that men, women, and children do not contract disease by eating the flesh and drinking the milk of tuberculous animals. Something of a sensation, therefore, has been created by the statement of Dr. Robert Koch, the German expert, before the Tuberculosis Congress in London, that tuberculosis in man and tuberculosis in cattle are radically different diseases. That cattle can not take the disease from man, has, he says, been absolutely proved, and he believes that the converse is true. If so, what has been supposed to be one of the chief sources of contagion is shut out, and it should be easier to rid ourselves of the scourge than has been thought. Dr. Koch believes that this is the case. The importance of this discovery, if it is to be accepted, is of course very great. It was thus commented upon by some Washington scientific experts, according to a despatch in the *New York Herald* (July 24):

"The importance of the discovery is recognized as being twofold. It not only does away with the fear generally entertained that tuberculosis may be contracted by persons consuming meats or milk from animals affected by the disease, but it will probably lead to a modification of the existing regulations providing for the destruction of such meats and milk. For this latter reason the subject is one in which the Department of Agriculture takes a lively interest.

"The Secretary of Agriculture, Mr. Wilson, fully recognizes the importance of the discovery and its possible effect upon the regulations of his department, as well as upon the restrictions imposed by the German and other European governments on American meats, on the ground that there is danger of the introduction of tuberculosis by allowing them to be imported."

Dr. Alonzo D. Melvin, the acting chief of the Bureau of Animal Industry, said:

"I shall be much interested in obtaining full details of Professor Koch's discovery and learning the methods of investigation by which he reached his conclusions. It would seem to be very difficult for him to have arrived at positive results without experiments on human subjects, which he can not have made. It may be, however, that he has had opportunities of observing persons who have consumed meat and milk from animals which it has been discovered subsequently were affected with the disease. In our work we have acted on the theory that the disease could be communicated to human beings, and the regulations of the department have been framed on that theory. That it can be

communicated to other lower animals is not disputed by Professor Koch, and our experiments have shown that it can be. We have recently been conducting a series of experiments with a herd of cattle near Washington which had become affected by the disease. The report of these experiments has not yet been received at the department, but they have shown that the disease can be communicated to other lower animals, such as guinea-pigs. These animals, when fed with milk from the diseased cows, have developed tuberculosis."

In the congress itself, and among experts abroad, Dr. Koch's announcement has been received with a good deal of skepticism. Dr. Paul Brouardel, of Paris, who read a paper urging international legislation for the prevention of the disease, openly expressed his disbelief in the truth of the report. In an interview published in *The Daily Mail* (London), Lord Lister is represented as having said 'that he was absolutely unable to believe the statement of Professor Koch that human beings could not get consumption through drinking the milk of diseased cows, the evidence to the contrary being far too overwhelming. Henry Chaplin, who presided over the congress on July 24, is stated by *The Tribune* (New York) to have been "so astonished by this revolutionary doctrine that he blurted out the truth that the Government, which had been zealous and fussy in enforcing sanitary regulations against foreign cattle and meat, has not been equally rigorous at home. He frankly confessed that when it was notorious that thousands of British cattle, even those of the best breeds, had tuberculosis, he had not understood how anybody was left alive in England. The mystery," he added, "was explained if the theories of the officials were incorrect and tuberculosis could not be communicated from animals to man."

Boards of health are of course reluctant to admit that the precautions they have been taking are useless, and the general impression seems to be that these will continue to be necessary even if Koch's contention be accepted. Says the *Philadelphia Press*, in an editorial (July 24):

"By 1895 the civilized world had by legislation and executive order entered on the suppression of tubercle in cattle supplying milk and the prohibition of the sale of the meat of such cattle. Public utterances by commissions engaged in this work were, naturally, much more emphatic than the statements of scientific men. In 1895 an English royal commission summarized the facts by saying:

"We have obtained ample evidence that food derived from tuberculous animals can produce tuberculosis in healthy animals. In the absence of direct experiment on human beings, we infer that man can also acquire tuberculosis by feeding upon materials from tuberculous food animals."

"From that day to this that has been all that could accurately be said. The New York State Board of Health said, September 19, 1896, with nearly equal accuracy, that 'a living germ called the tubercle bacillus is the only cause of tuberculosis. Milk of cows which are tuberculous may contain these living bacilli and may cause the disease in human beings who use it. . . ."

"The chief evidence of the transmission of tubercle from cows to human beings has rested on the cases of children. . . . The strongest proof was summed in a report lately made to the British Medical Council that 'the mortality from tuberculosis in early childhood is not decreasing as at other ages, and the opinion that this is due to infection by milk appears well founded.'

"Meanwhile laboratory evidence accumulated that the human and bovine bacillus were not identical in shape, tests, or increase. Cattle are relatively insusceptible to human tuberculosis. It is extremely probable that Dr. Koch has carried this to full proof and developed the difference to be one of species. If, however, tuberculosis can not furnish bacilli which gives human beings the disease, the cattle bacilli render cattle diseased. Infection once begun infects the entire herd. . . . Unless people choose to eat diseased meat and drink milk with bovine tubercle containing, as was found in Boston, 80,000,000 germs to the tumbler, tuberculous cattle must continue to be sternly destroyed."

The medical point of view is well represented by the following