

## SCIENTIFIC TEMPERANCE.

came upon me that he wanted me, that he was beseeching me to come to him. I went—he was still unconscious. I sent Wilberforce away and watched by him myself. Randolph, at dawn he awoke to consciousness—he told me all his awful tale—he said he had murdered you—I believed it was true. He was dying—dying in darkness and in dread, and he prayed for my forgiveness as if his salvation hung upon it. Randolph, Randolph, how can I tell you? I cannot, no, I cannot—no one could understand.” For a moment she pressed her hand upon her eyes, looking up again in a few seconds with a calm glance that was like a smile. “He was dying, Randolph, and I forgave him—I forgave him freely and fully—and he died in peace. Stop, that is not all. Randolph, as I knelt beside his bed, praying for the erring spirit then taking its flight, I felt that you were with me; I had never before felt the strange overshadowing presence that I did then—you were there, your own self. I heard your voice far away, yet clear and distinct, ringing through immeasurable space. I heard the words you spoke—‘Monica! Monica! My wife!’ I think Conrad heard it too, for he died with a smile on his lips. Randolph, I am sure that you were with me in that strange, awful hour. I knew it then—I know it better now. Randolph, I think that love is stronger than all else—time, space, death itself. Nothing touched our love. I think it is like eternity.”

A deep look of awe had stamped itself upon Randolph's face. He put his arm round Monica, and for

a very long while they stood thus, neither attempting to speak or to move.

At last he woke from his reverie, and looked down at her with a strange light shining in his eyes.

“And you forgave him, Monica?”

She looked up and met his gaze unfalteringly.

“I forgave him, Randolph; was I wrong?”

He stooped and kissed her.

“My wife, I thank God that you did forgive him. His life was full of sin and sorrow, but at least its end was peace. May God pardon him as you did—as I do.”

There was a strange sweet smile in her eyes as she lifted them to his.

“Ah, Randolph!” she said softly, “I knew you would understand. Oh, my husband, my husband!”

He held her in his arms, and she looked up at him with a sweet, tender smile. Then her eyes wandered dreamily out over the wide sea beneath them.

“There is nothing sad there now, Randolph. It will never separate us again.”

He looked down at her with a world of love in his eyes; yet as they turned away his glance rested for one moment upon the lonely grave he had been brought to see, and lifting his hat once more, he murmured beneath his breath—“He rests in peace.”

Then drawing his wife's hand within his arm, he led her homewards to Trevlyn, whilst the sun set in a blaze of golden glory over the shining sea.

THE END.

## SCIENTIFIC TEMPERANCE.

AN INTERVIEW WITH DR. BENJAMIN WARD RICHARDSON.

BY OUR SPECIAL COMMISSIONER.



DESERVEDLY famous as a logical advocate of Scientific Temperance and a genial preacher of the laws of health, there is yet nothing of the ascetic about Dr. Richardson. In fact, if any one were to ask us to describe this eminent man of science in one word, we should

say he seems the very embodiment of health and happiness. The agonies of neuralgia or the tortures of mental depression seem never to come nigh to him. With all his profound learning and his persistent and close study, there is nothing of the pedant; and with all his deliberate denunciation of alcohol, there is, we repeat, nothing of the ascetic about him. As one sees him at home, the thought rises in the mind: Here is a man who thoroughly enjoys life, in a healthy, rational, and wholesome manner—enjoys it, aye, even to the very finger-tips.

And why should he not? If every one were able to live as he does, in accordance with the laws of life and of health, there would be far fewer melancholy folk. So we think as we mark his buoyant cheerful-

ness as he is busy in his study. Those people who sneer at abstainers as sour-tempered and unsociable can never have come within the range of Dr. Richardson's cheery companionship.

He is a busy man. “You must excuse me for being occupied while we talk,” he says. “I have to lecture to-night, and I am just looking through some of the diagrams.” And ever and anon a call-pipe warns him that a patient or a visitor wishes to see him.

We are conversing in his study, a finely-proportioned apartment on the ground-floor, looking out on Hinde Street, just where it opens on to Manchester Square. Here have been forged some of his notable thunderbolts launched at the drink traffic. The room is walled with books.

“Yes,” says the doctor, as his eye ranges lovingly over the numerous and well-filled shelves—“yes, I have about four thousand volumes, all good literature. I love books. They always are good companions, and they never quarrel.”

Beside the fire-place is a series of shelves filled with MS. books, containing reports of speeches, addresses, criticisms, &c. Just in front of him is the

shelf of his own volumes, which now include some thirty notable and real additions to standard English literature.

"That," said he, touching one small book with pardonable love and pride, "that has had an enormous circulation—nearly three hundred thousand; it has sold wonderfully in America; it has been translated into Dutch, and, curiously, it is the only book allowed in the Dutch prisons except the Bible." This unique little volume is "The Temperance Lesson Book."

There are three es-critoires, or writing-tables, in the room; one is a richly carved old oak "davenport"—a gift from fellow-graduates. Another is for the *Asclepiad*, a quarterly journal of medical science and research, written entirely by Dr. Richardson. A recent number contained a history of the advances in medical science during the reign of the Queen.

Though a hard worker, Dr. Richardson believes in recreation. He enjoys the refined pleasures of literature and the fine arts, and quite agrees with Professor Huxley in holding a high opinion of a good novel, though books of biography are his favourites. Cycling is his principal out-door amusement, as the splendid machine, all shining with polished nickel, which we may see in the entrance-hall, testifies.

"Yes; I can do my thirty-four miles a day with ease," he says, "though I am not a young man" (he was born in 1828), "and could do double that distance if necessary."

Opening out of the study is a little back room for "minute researches." The doctor calls it his "clinical room." Here is a magnificent microscope, presented to him in 1868 by over 600 medical men. From the walls look down the faces of old friends, Graham, Forbes, Faraday, Owen; while in the large dining-room on the other side of the hall, with windows looking on to Manchester Square, is a fine bust of George Cruickshank, of whom Dr. Richardson was a great friend, and an upright statue in terra-

cotta by Birch of Harvey, the discoverer of the circulation of the blood.

"Well, now," said he, "you want me to tell you how I came to take up my position on the temperance question. In 1863, and for a year or two before, I had been making some original researches into the properties of a rare chemical substance named Nitrite

of Amyl. At that time I lectured on Physiology at the College of Dentistry, and Mr. Morrison of Edinburgh, who was a member of the Council, brought this Nitrite of Amyl to the College, and it was handed to me to experiment upon. The late Professor Guthrie had shown it to Morrison, telling him that, in distilling it, it caused flushing of the face. I soon discovered that it had an extraordinary effect upon the circulation, that it quickly made the face a bright red, owing to the rapid filling of the blood-vessels, and that it speedily sent up the beats of the heart.

"There! I feel it now," added the doctor, after breathing the vapour for a few moments from an inhaler. "I feel the glow!" And, sure enough, his cheeks were suffused with a blood-red crimson!

"Well, I read a paper on the subject at Newcastle in 1863; it was considered of great interest, and I brought it up next year. Then

I went on to inquire into the Methyly series, and so step by step continued, reporting every year until, in 1866, I began with the Alcohols. It was at one time supposed there was only one of these, but there are now known to be several. Now, the first great fact that startled me when examining into the Alcohols was that they unquestionably lowered the temperature of the body. I did not then know that any one else had noticed this before me; but I know now that two or three others—Dr. John Davy (brother of Sir Humphrey), Dr. Rae, the Arctic explorer, and Dr. Lees, of Leeds, had all severally suspected this fact; but they had not proved it by experimental research. My great point was a demonstration by scientific instruments—by the perfect



*Faithfully Yours  
Dr. W. Richardson*

thermometers now made. I proved my point not only on men, but on the lower animals—especially on pigeons, which show changes of temperature rapidly—and I was able to prove to demonstration that alcohol reduced the temperature of the bodies of animals.

"I announced this at Birmingham in 1866. There was a good deal of exception taken to it. Dr. Heaton, of Leeds, was of opinion that the experiments might be doubtful because they were not all conducted in the same temperature; and Dr. Helburne King, of Hull, thought that as one thermometer had been used throughout there might be some error. I thought myself this was rather a point likely to obtain accuracy. But still, I deferred publishing my address in order to make further inquiries.

"Everything confirmed my previous statements. After a temporary flush on the surface of the body, due to the action of the alcohol on the blood-vessels, there is a reduction of temperature, which reaches its maximum at a period of complete intoxication."

"Then how is it, doctor, people say alcohol warms them?"

"Because they feel the action on the surface," was the prompt reply, as though Dr. Richardson had often been asked that question before, and was quite prepared to reply to it.

"It is just like putting your hand before the fire," continued he, placing his hand momentarily before his bright stove, which the chilly morning rendered welcome. "You get heat on the surface, and feel it. And there is another illustration I have often used: it is like putting your hand into snow; your fingers are numbed, but in the reaction which takes place, the blood is driven to the surface, and you get the sensation of heat.

"Well, then, that was the first step—the startling fact that alcohol lowers temperature. Now for the second. This came from the study of anæsthetics. From the time of their introduction in 1846 I had been much interested in them. I remember as 'twere but yesterday sitting with fellow students in the anatomical theatre of Anderson's College, Glasgow, waiting for our professor, Dr. Moses Buchanan. He was delayed, and when at length he appeared he was so moved by the news he had heard that he could scarcely deliver it: viz., news which had come from America that surgical operations could be performed without pain by inhaling the vapour of ether, and that the experiment was about to be performed that day at the Royal Infirmary! Little more was thought of then. The students trooped in a body to witness the sight.

"Soon afterwards I began to make an inhaler, which gained me the friendship of the late Dr. John Snow, one of the earliest and most skilful administrators. Here is an inhaler made in 1849" (fetching one from a drawer in the clinical room) "for the better inhalation of ether. Then I began to test other agents for anæsthesia, and altogether I have introduced fourteen anæsthetic substances, one of which, methylene, has been, and still is, largely used. I am now on

research for another which I hope will be best of them all.

"In watching the action of alcohol, I found there were just the same four degrees or stages as in the action of anæsthetics: viz., simple excitement without insensibility; excitement with commencing insensibility; insensibility absolute; and, lastly, death-like insensibility. I came, therefore, to the conclusion that alcohol does not act after the manner of a food, but of a chemical substance like an anæsthetic. This then was the second step.

"This was followed up by tracing the changes and the modifications which take place in the body from the continued use of alcohol. I was always a close student of the Registrar-General's Returns, and I was struck by the enormous mortality of persons dealing in alcohol; a tenth part of the deaths are due to its use. This is now a well-sustained fact. I connected it with the changes of organs of the body induced by alcohol, and extended the research by tracing the action of all the manageable alcohols, besides the common one, with particular reference to the effects of solubility and weight; and I concluded that fatal diseases could be definitely induced by alcohol—slow as well as acute poisoning could arise from it, with degeneration and complete change of the structure of the heart, the liver, the lungs, and other internal organs.

"We have now, then, reached the third step, or third conclusion: viz., that alcohol is a prolific cause of death, and of great harm to the internal organs of the body; it is, in fact, in its ordinary use, a slow poison."

Interrupting the thread of the narrative a moment, we suggested the question—

"What is the alcohol in common use?"

"The Ethylic. This is the alcohol invariably found in intoxicating drinks. It would be called common alcohol, and as it is more pleasant to the taste than any of the others its action is more insidious.

"A very singular series of circumstances," continued Dr. Richardson, "seem to have led me to my position. Thus, for fourteen years I was physician to the Hospital for the Diseases of the Chest, and from observations there I had come quite independently to the view that there was a small class of consumptives of middle age whose disease is due to alcohol. I called it Alcoholic Phthisis, or the Consumption of Drunkards."

All these things brought together led Dr. Richardson to deliver his first lecture to medical men on the subject. It dealt with the Physical Action of Alcohol, and was delivered in London on December 7th, 1869.

"There!" said the doctor, taking a handy MS. book from a shelf by the fire-place, and pointing to a page, "there it is, you see; there is the report in the *Medical Times and Gazette*; and"—running his finger along the columns—"there is the passage that has been so much quoted, and caused so much discussion and controversy:—

"Speaking honestly, I cannot by the arguments yet

presented to me admit the alcohols through any gate that might distinguish them apart from other chemical bodies. I can no more accept them as foods than I can chloroform, or ether, or methylal. That they produce a temporary excitement is true; but as their general action is quickly to reduce animal heat, I cannot see how they can supply animal force. I see clearly how they reduce animal power, and can show a reason for using them in order to stop physical pain or to stupefy mental pain; but that they give strength—*i.e.*, that they supply material for construction of fine tissue, or throw force into tissues supplied by other material—must be an error as solemn as it is widespread. The true character of the alcohols is that they are agreeable temporary shrouds. The savage, with the mansions of his soul unfurnished, buries his restless energy under their shadow. The civilised man, overburdened with mental labour or with engrossing care, seeks the same shade; but it is a shade, after all, in which, in exact proportion as he seeks it, the seeker retires from perfect natural life. To resort for force to alcohol is, in my mind, equivalent to the act of searching for the sun in subterranean gloom until all is night.

“That gives my argument in a nutshell, and every day I live I am more convinced of its truth. I am as sure of it as that two and two make four, and I arrived at it by a chain of logical reasoning and scientific research which has never yet been successfully disputed. My feet are planted on the rock of truth in this matter.

“Now came the struggle, whether I should continue a ‘moderate’ drinker or whether I should declare myself. And I determined to declare myself, and give up the use of alcoholic drinks altogether. I found I worked better for the determination and was every

way healthier, and have never seen any reason to regret it, either in myself or others.

“You must understand, I did not at first give up prescribing alcohol in my practice. But then I found I never knew what I was giving, so I prescribed it pure, mixed with water in proper proportions, just like any other drug. Commonly it is called pure spirits of wine. Then I knew exactly what it did when prescribed. But I gradually began to give it up, even in that form, and now I scarcely ever prescribe it.”

“What would you recommend as a substitute?”

“I don’t believe in substitutes,” was the doctor’s prompt reply. “They deceive, morally and physically. For faintness I always prescribe a recumbent position, fresh air, cold water to the temples, and for a drink, hot milk and water or beef tea. It is fifteen years since I became an abstainer, and I have never seen an injury or failing of any kind from the adoption of Total Abstinence. I have never gone in for what may be called the enthusiasm of the matter; I take my stand on physical principles.

“On the whole, I think public opinion is coming round to our view. Everything is being given up but ‘moderation;’ on that point I think people are still deceived. They consider they are practising moderation; they are really producing disease insidiously.”

The statistics of the Inland Revenue Returns show that the consumption of alcoholic liquors is steadily declining. And without in the least degree disparaging the noble work of many other men and women in the Temperance Cause, yet one of the most potent influences in that decline of the drink traffic has been the Scientific Temperance so logically wrought out and so persistently advocated by that genial man of science in Manchester Square.

## TRIUMPHS OF TRADE.

### THE SEA.



If it be true, as Goethe once said, that “the eye only sees what it brings with it the power of seeing,” it is easy to understand why trade should be dull and prosaic to many minds. They are ignorant of its past, and their imaginations cannot be touched into activity by simple and present

things. Battles they may enjoy—in books; crusades will fire their minds, apart from their vast influence on trade; and the far-away and the unreal will seem to them poetic and delightful. Trade triumphs, however, are behind and about every great historic movement, and they seem, when surveyed in their long sequences, to leave little else for the historian, the geographer, or the poet. To live, men have streamed into Europe, crowded to America, and pushed into Africa and Asia. Cold and heat, hardship and privation, have been borne in the great quest for food, land, and wealth, ever since the world began. To call such records dull, is to libel the human race. It is in the reading, the deciphering of them, that the difficulty lies, and in the selection of effective illustrations from so wide a field.

The sea was to primitive man a dreadful and a little-known wilderness. It seemed to disjoin men, to hinder