

Armoured Men

If Their Heroic Heads, Why Not Their Hearts?

By DR. C. W. SALEEBY.

(From the London Daily Chronicle.)

Late last summer, after the ghastly failure of our "victories" at Loos and Neuve Chapelle, many of us who count every soldier sacred urged that our men should be armoured. The French had evidently profited by their helmet, and no other reply than armour to the machine-gun was then or yet is in existence.

The recognized answer of the soldier to the surgeon had been that the weight of armour reduces mobility and so involves more danger than it averts. To this one pointed out that modern surgery, which was made in England, enable the Listerian pupil to save not only the life but even the limb or other injured part, in a large majority of cases, provided that the injury be not in itself mortal. We ask—or rather, Sir Arthur Conan Doyle and I, who are not surgeons, asked on their behalf—that the authorities should armour only our soldiers' vital parts, and the surgeons would go bail for the rest. The factor of weight would thus be diminished beneath consideration.

Accordingly it was decided to imitate the French helmet. This task was undertaken in a fashion so bad and disastrous that my attempt to publish it here at the time was forbidden. But in one of the reviews in November I argued that the French helmet might be much improved upon, and suggested experiment as to kind of steel, curvature of crown, and internal lining with respect to type of wound that might occur, naming Professor Arnold of Sheffield, Sir Joseph Thomson, and my illustrious friend, Sir Victor Horsley, as authorities who should be respectively consulted. A member of Parliament drew attention to these three demands in a question in the House and was told that they would be attended to.

The Wonderful "Soup Plate."

All I asked, and more, has been devotedly done by the Ministry of Munitions. A point I missed—having only had the French helmet to study, at that time, through a shop window—was its construction in three parts, a radical error, by no means conservative of the soldier's skull. Our helmet is thus made of one piece, being none other than a sheet of tested steel, moulded into the uncromely but blessed form "of a soup plate." But as to my three points.

The only steel that serves is manganese steel, again made in England. Sir Robert Hadfield, of Sheffield, put his brains, for no less than a decade, into the making of this most wonderful alloy, into which alone we can safely put our soldiers' brains to-day. Our helmet, weighing only two pounds, is bullet-proof to a Webley automatic pistol at five yards; every helmet now supplied to the troops must be, and is, proof against a shrapnel bullet, forty-one to the pound with a striking velocity of 750-ft. per second. Wearing my precious specimen of this helmet, from which I can scarcely bear to be parted at night and which I owe, as a kind of memento, to the Ministry of Munitions, I have been freely and repeatedly lashed over the head with a heavy poker, without injury. It can be laid on the floor and thus struck with all one's might, and though the line of the blow may be depressed, this amazing steel does not give.

Accordingly I now call upon all the hatters and outfitters who have long been displaying and selling helmets and body shields, not tested, not made of manganese steel, and deadly to the wearer, to withdraw all such murderous rubbish forthwith. Reputable hatters have offered our offices, at a guinea apiece, things that may have cost anything between eighteen pence and two shillings, made of corrugated material—of all the imbecilities—which splintered when struck, and were in every way worse than worthless. All soldiers' condemnation of armour, based upon their experience with such things, or with the first helmets supplied to the troops, upon which reports were, of course, asked for, is to be set aside as irrelevant. The authorities should forthwith prohibit altogether the sale of this untested and destructive rubbish. At the Ministry of Munitions I have seen piled up scores of riddled helmets of this class. They should be tested, as I demanded last November, upon skulls post-mortem, and condemned accordingly—not upon the living heads of our heroes. As for body shields, last November I protested against some on sale. Many have been,

and are, made of mild steel. Such are bought, tried, condemned by officers at the front, to whom steel is just steel, and so no progress is made.

Secondly, the shape of the helmet has been considered. The French helmet struck me as having too vertical a front. If we give the projectile a smooth, rounded, oblique surface to strike, we immensely aid the inherent resistance of the steel. Our helmet is accordingly low in pitch, and is much less likely than the French helmet to be imitated in women's headgear, but it serves its purpose better. Obviously the shape of a policeman's or fireman's helmet would be unsuitable here, and every fraction of an inch that the helmet rises above the scalp is a disadvantage.

Importance of Cranial Surgery.

But, thirdly, we cannot simply clap a cap of steel upon a living head and be content. Here we must have the very best knowledge of cranial and intracranial surgery that the world can afford, so that we may know what to fear in the way of concussion, contusion and fracture, and how to guard accordingly. Of these matters I know scarcely more than of metallurgy, my functions depending solely upon my knowledge that there are such things as cranial surgery and metallurgy. Even such little profundity of learning may be useful, however, when people are to be reckoned with who, probably as the result of the most expensive education anywhere obtainable, do not even know that there is such a thing as knowledge. Sir Victor Horsley, the incomparable pioneer of cranial surgery, and the greatest surgeon of our century, was, of course, the man to name as a consultant. He saved others, himself he was not concerned to save.

Accordingly, in the British helmet we have really a double structure. It is, first, a soft cap, bounded all round its edge with thick rubber studs—now made hollow for greater resilience. This cap has a double lining of felt and wadding, so that even if the helmet, at point-blank range, may be pierced, the scalp is guarded from the steel. Upon this padded cap is poised the casque of steel. The interval be-

tween the two serves for ventilation, especially now that we have inserted some netting in the crown, so that there really is a route for the air. Even so, perhaps, our ventilation is inferior to that of the French helmet, which has an aperture for the purpose under the charming crest that runs sagittally over it; but that aperture is a weak place and not worth while.

How to colour such an object? If we simply paint it khaki or otherwise, it reflects the sun's rays, and the moon's rays still worse, to the wearer's disadvantage. The surface is now sanded and roughened so that it can no longer act as a mirror. My friend Professor E. B. Poulton, of Oxford, pointed out very early in the war that the flat round discs which constitute the absurd caps worn by our men, are well calculated to reflect the light and reveal themselves. As the greatest living authority on the protective colouration of animals, clearly he was the man to consult, none the less as his own splendid son, who has given his life for us all, would doubtless have been saved had he worn such a helmet as our men have to-day. The helmet is fixed with a strap under the chin, and that is now made adjustable, like a boy's cricket belt, but without the metal point of an ordinary buckle. Also, as the edges of the helmet were injuring the temples of the next men's heads, in the close company of the trenches, a steel binding is now attached all round to blunt the rim and avert such accidents.

Our soldiers have one serious, tragic, magnificent fault. They are too brave. A young colonel in Staffordshire, presiding at a recent lecture of mine to officers, said he preferred his cap to the helmet I was demonstrating. He had been at the front for fifteen months, and that was the extent to which he had been intimidated. Mr. Philip Gibbs, in one of his recent dispatches, tells how the men sometimes did not trouble, when charging, to put their helmets on. They had them ready for an emergency, as it were—not knowing an emergency, it seems, when they were in one. The place of this helmet is on the head. Our officers pick it up by the edge between finger and thumb and tell me it is heavy. Then they put it on and wonder where the weight has gone.

A major in Essex asked me yesterday whether I had formed a company for this thing. Well, in any case, doctors do not patent things, and I have done nothing to patent. I merely pointed out that there was such a thing as knowledge, which should be consulted. Some day, when we begin to discuss education, I will tell the public how we were making that helmet before the utility of knowledge—all made in England—was suspected.

The Canadian Milling Industry

Output 30 Per Cent Over Last Year

The monthly commercial letter of the Canadian Bank of Commerce states that the milling companies, during the twelve months ending with August, their financial year, have done an abnormal business, from which satisfactory profits have been derived. The output was 30 per cent greater than in the previous year, and the greater part was exported. For the twelve months ending May last, the latest period for which trade returns are available, exports of flour amounted to 6,764,583 barrels, valued at \$37,352,859. The excellent quality of last year's crop made the surplus wheat readily marketable, with the result that the amount carried over is not more than 30,000,000 bushels. In addition, an unusually large proportion of the crop was ground into flour at home, with resulting benefit to home industries, and the additional quantity of subsidiary products was readily absorbed by the home market. There has been a yearly increase in the volume of foreign business transacted by the Canadian mills, in spite of variations in the amount of the crop and of the wheat exported. This progress has been hampered somewhat by the lower freight rates on wheat than on flour but, despite this disadvantage, the annual gains are substantial. They are shown in the table following, which gives the value and quantity of wheat, flour and bran sent abroad in each fiscal year since 1910:

Exports of Wheat, Flour and Bran.

	WHEAT.	
	Bushels.	Value.
1910	49,741,350	\$ 52,609,351
1911	45,802,115	45,521,134
1912	64,466,286	62,590,563
1913	93,166,009	88,608,730
1914	120,426,579	117,719,217
1915	71,913,385	74,293,548
1916	157,745,469	172,896,445

	WHEAT FLOUR		BRAN.	
	Barrels.	Value	Cwt.	Value.
1910	3,064,028	\$14,859,854	1,796,318	\$1,842,620
1911	3,049,046	13,854,790	1,872,089	1,850,219
1912	3,738,836	16,034,064	1,595,950	1,499,447
1913	4,478,043	19,970,689	1,662,338	1,603,003
1914	4,832,183	20,581,079	2,077,713	1,789,939
1915	4,952,337	24,610,946	1,038,134	946,331
1916	6,400,214	35,767,044	1,787,398

Although the crop this year will be smaller than usual the millers anticipate more than a normal volume of business accompanied by higher prices, due to the serious shortage of wheat on this continent and in Europe.

THE U.S. COTTON CROP.

The Interstate Trust and Banking Company, of New Orleans, estimates this year's cotton crop in the United States at 12,690,000 bales. The company's estimate of 1915 fell within 5,000 bales of the recently reported commercial crop. The estimate is presented as follows:

State—	Bales.	State—	Bales.
Arkansas	950,000	Mississippi	1,000,000
Alabama	900,000	* No. Carolina	775,000
Florida	35,000	So. Carolina	1,000,000
Georgia	2,000,000	† Tennessee	575,000
Oklahoma	950,000	Texas	4,100,000
Louisiana	430,000		
Total			12,690,000

*Includes Virginia. †Includes Missouri.

This table is to be understood to include linters and not to indicate the commercial crop.

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