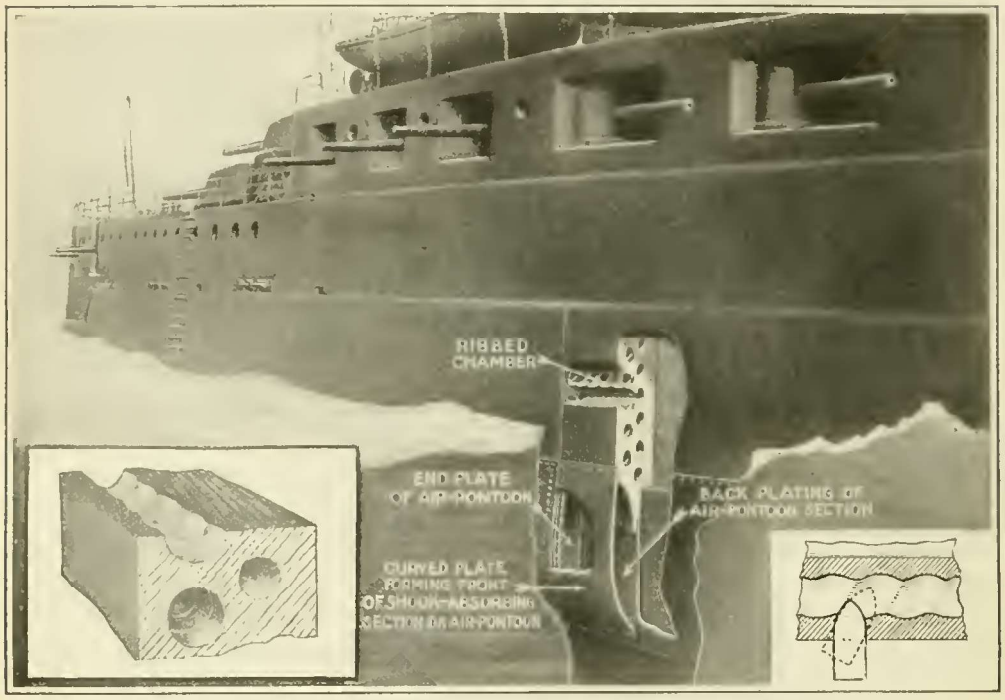
Protecting a Battleship with a Belt of Air



A new battleship armor is built on the principle of the shock-absorber. The corrugated chambers, backed by others of smooth-bore, first deflect the shell, and, when it explodes, the air takes up the shock and the expanding gases are carried off by the chambers, which are destroyed but save the hull itself from destruction

READ the accounts of the battles fought off Heligoland and the Falkland Islands, in which ships protected by heavy side armor were sunk by gun fire at ranges of five miles and the question must occur: What is the good of armor? If twelve and more inches of steel can be penetrated by the fifteen-inch guns of a British battle-cruiser at distances of miles it would seem as if victory in sea engagements is a matter of hitting power rather than of protection. That armor of some kind is necessary would follow from the fact that naval architects are very close students of naval history and that they promptly apply in the construction of fighting ships the lessons taught on the proving-grounds and in battle. That the heavy gun seems for the time being to have gained the ascendency over armor is proved by the fact that in battle-cruisers high speed and enormous striking power are considered more important than steel sides; for the armor belt of a battle-cruiser is only twelve inches—hardly sufficient protection against anything but projectiles of low caliber and low striking energy.

Inspired by these considerations, Louis Gathmann, whose experiments in hurling high explosives against armor on proving-grounds attracted much attention some sixteen years ago, has invented an entirely new system of armor protection which deserves consideration. His object is to obtain not only protection, but lightness; for the heavier the armor of a ship the fewer must her guns be or the weaker her engines on a given displacement.

In carrying out his ideas Mr. Gath-

mann would provide a ship with a chambered shell-resisting section and with a shock-absorbing section, the first above the second, as the accompanying illustration shows. The chambers of the first or shell-resisting section are really horizontal tubes, the front series of which are spirally ribbed. "Should a projectile penetrate the hard face of the armor," says Mr. Gathmann, "it would force its way through the line of least resistance, and thereby glance upward, downward or sideward as the case may be, turning or tilting the projectile, thereby destroying its penetrating power; such shells may fracture or explode, but without penetrating the armor."

A fifteen-inch shell carrying high explosive generates gases on exploding which exert tremendous pressure. That pressure must be absorbed, or else it may breach the ship below the armor belt. So, Mr. Gathmann attaches to the lower edge of his chambered belt a series of air chambers or pontoons, each independent of the other.

Study the illustration which accompanies this article and you will see that this shock-absorbing section consists of five walls: a downwardly-extending portion of the armor belt; a rear plate to which that downwardly-extending portion is bolted; a curved front plate, and two end plates to enclose the pontoon or chamber.

The pontoons seem flimsy, and in reality they are. But they are intended to be destroyed. The pressure of the gases from a huge shell will disrupt one, two, perhaps three shock-absorbing or pontoon sections, but the rest will remain intact. The air within the chamber will have a cushioning effect. Water will rush into the compartment, but the pantoons will still remain in place.

Rapid gathering of flowers without injuring the stems can be accomplished with this instrument

An Instrument for Plucking Flowers

A NEW German invention seeks to simplify the tedious and fatiguing labor of picking flowers and seeds. The instrument, already patented, which is here illustrated, consists of a sheet-metal tube combined with one-blade shears. The lower front part of the tube is formed as a seven-pronged fork and this fork is advanced towards the flower to be gathered from below it. The flower is caught by the prongs and is cut from the stem by a knife above the fork that works upon a light pressure on the handle of the shears. When separated from the stem the flower falls through the tube into the bag underneath.

The rapidity and ease of gathering reduces the expense. It is also claimed for this instrument that the plants are not damaged as in hand-picking, in which twigs and branches are easily injured and the entire plant is frequently torn out of the ground. Good service has also been done by the device in gathering seeds. The difficulty here in hand-picking is that the dry pods are often crushed and the seed scattered, while by the new method the seedpods fall uninjured into the bag and no seeds are lost. It is also hoped that the instrument, which is the invention of an apothecary of Colditz named Meyer, may prove serviceable in hop-picking.

The flower-cutting instrument has been found particularly effective in cropping dandelions when the plants are young and the flowers only a few inches high. For this kind of work the device is operated along the ground like grass-cutting shears, and as fast as the metal receptacle fills it is tipped and the severed flowers fall into the bag.