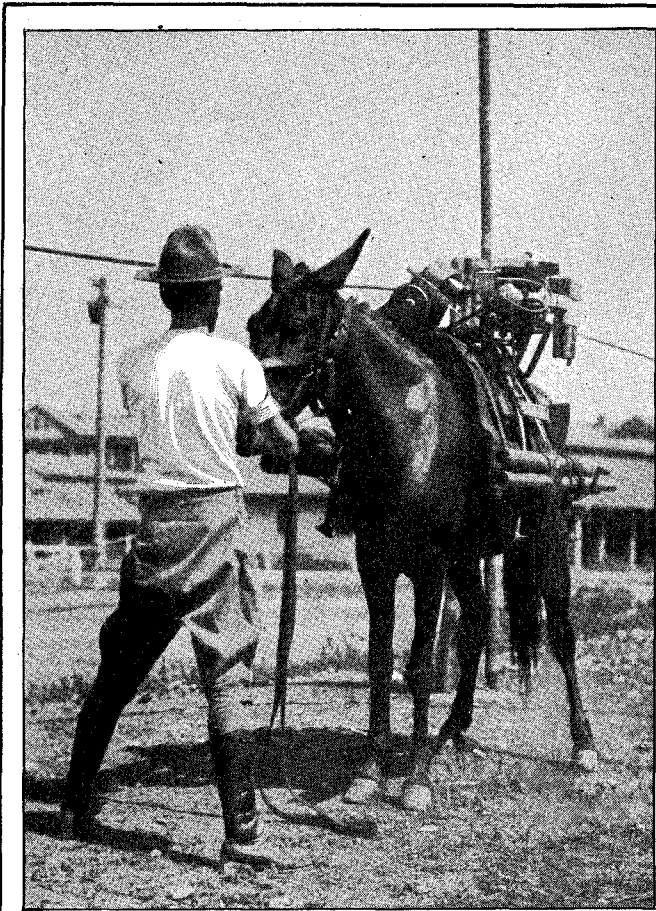


dangers incident to close captivity. The ultimate domestication of a herd will in the end, however, be the most successful one."

One of the best of the deer family for this purpose, Mr. Sidman tells us, is the Virginia or whitetail deer. The wapiti, or Rocky Mountain elk, also offers a promising field. Both the elk and deer, says Mr. Sidman, are browsing and grazing animals. The elk seems to prefer a mixture of grass and browse, while the deer eats nearly every kind of vegetation. They are also fond of nuts, and will eat lily-pads, leaves, lichens, and mosses.



THE PORTABLE WIRELESS OF THE BORDER.

Generator and frame of the "pack-set" apparatus on a pack-mule.

Under these conditions, with plenty of range there need be no apprehension concerning the food-supply. He goes on:

"The flesh of the elk, altho somewhat coarse, is superior in flavor to most venison. That of the bulls is in its best condition about the time the velvet is shed, while it is poorest in October. The meat is best when it has been left hanging for four or five days before it is used.

"The increase of elk under domestication is equal to that of beef. Fully 90 per cent. of the females produce healthy young. An adult male elk weighs from 700 to 1,000 pounds; a female from 600 to 800 pounds. The percentage of dressed meat is greater than with cattle, and can be produced in many sections of this country at less cost a pound than beef, mutton, or pork.

"There are in several sections of the United States herds of both deer and elk. Individual owners, as well as associations, have also established large private preserves in many parts of the country and stocked them with deer and other big game. The objects have been to preserve the animals and to provide sport for the owners. In the free life under the protected conditions generally provided deer have done remarkably well, the increase being even more rapid than in small parks. There can be no doubt of the success of ventures in propagating the Virginia deer under natural conditions as wild game, as has been proved by the experience of a large number of hunting clubs and private owners.

"The production of venison and the rearing of deer and elk for stocking parks offer an interesting field for experiment, as well as remunerative returns for the investment of capital.

It is believed that with favorable legislation much otherwise waste land in the United States may be utilized so as to yield profitable returns, and also that this nutritious meat, instead of being denied to 99 per cent. of the people of the country, may become as common and as cheap as mutton."

## DONKEY-BACK WIRELESS FOR WAR

THE USES OF A "PACK-SET" of apparatus for wireless telegraphy in border operations by the militia are described from actual experience by George T. Droste, a signal electrician of the New York National Guard, in *The Wireless Age* (New York, April). The experience of the Guard with this type of telegraph on the Mexican border ought to be of the greatest value in the operations of our new Army. Mr. Droste's account, which he calls "On the Texas Border with a Pack-Set," includes a number of suggestions for bettering the service, and contains a somewhat comprehensive analysis of the workings of pack-sets now in use. He writes:

"In my earliest experience during July, when we did nothing but listen in for whatever went through the air and without any definite policies, using different operators, experienced and inexperienced, in the art of radio propagation, nothing of any glory was accomplished. By sending out different sections on detached service to surrounding districts and conducting a main business of about three to four messages a day, consisting of reporting 'present' in the morning and 'good-night' in the evening, we finally were put on details that carried on a more substantial business. . . . .

"Our distances between stations, being about eighteen to twenty-five miles, were a larger stretch when the poor detectors and the enormous amount of man-power expended are considered. However, we triumphed by covering the work, if not by radio completely, then partly by radio and buzzer—it being our duty to get the work through. So by using private telephone-lines as buzzer-wires without any special orders, we succeeded in establishing records for the ½-kilowatt sets under continuous service conditions that were never known to the New York Signal Corps before, being heard continuously by regular Army stations at Hidalgo, Fort Ringgold, and Brownsville—distances of about twenty-eight, forty, and sixty-eight miles, respectively.

"My final detail was to conduct the station at McAllen. This started a new era for pack-set work, as we were called upon to work with the main Army stations which were established for some years and carrying on a daily business that required experience to keep up with. To do this, I was provided with an experimental engine and generator never before tried out with any continuous success.

"Numerous heartbreaking attempts to make various belts stand the strain of transmitting the energy from the engine to the generator, and preventing the engine from getting hot, took up our time, and we still carried on the entire official business for the Sixth Division, which passed between Fort Sam Houston at San Antonio, 250 miles away, and Brownsville, Texas, by intercepting it and acknowledging receipt of it. This demanded undenyng attention and sacrifices from all the operators in the station, as repetitions were not forthcoming. For us they came only once, and we showed that we were able to cope with the situation and seldom lost a message. Our record consisted in not having lost a message by interception for a continuous stretch of a month with an average of ten to twenty-five messages a day, each consisting of fifty words or more.

"This service finally established us in the eyes of the regular Army stations at Fort Sam Houston and Brownsville. Altho militia stations were established at Fort Ringgold, Harlingen, Hidalgo, Lanogrande, Del Rio, and other points on the border.

"On the night of December 11, 1916, we were forced to close the station, owing to the fact that we were about to be sent to our homes in the North, and, much to our regret, had to sever our aerial connections with the men of the regular Army . . . with whom for two months we had been in continuous radio communication. We felt that we had gained their confidence because of being fully able to handle their work direct, notwithstanding the handicaps of experimental apparatus. . . . .

"Summing up the entire experience, we feel that so far as radio work goes for the Signal Corps, we established ourselves in the eyes of the regular Army, and that our successes will go down in the archives of their experiences of working with the militia."



## THE HYGIENE OF TYPE

THAT SOME of our books are "physiological scandals" is the opinion of Dr. Arthur E. Bostwick, Librarian of the St. Louis Public Library. Writing in *The Yale Review* (New Haven) on "Books for Tired Eyes," he explains that the scandal consists not in the subject-matter nor in the manner in which it is treated, but in the diminutive size of the type in which the books are printed, which constitutes a menace to our eyesight. Dr. Bostwick's library now contains, he tells us, a department of "books in large type," but it has been the labor of years to get together a few hundred of these—a sufficient commentary on the indifference of the general public to the conservation of vision. In an editorial review of Dr. Bostwick's article in *The Journal of the American Medical Association* (Chicago, March 24), the writer notes with astonishment that students of hygiene have had so little to say about small type as a cause of eye-strain. He says:

"Strangely it has remained for others than the students of hygiene to call attention to the unfortunate make-up of much modern printed matter from the standpoint of acceptability to the eye. It requires little serious reflection to appreciate the fundamental importance, for eye health, of the legibility of type. The librarian of the St. Louis Public Library, Dr. Arthur E. Bostwick, is the latest to bring the seriousness of the situation to public attention. Tired eyes, he says, belong for the most part to those who have worked them hardest; that is, to readers who have entered on middle age or have already passed through it. At this age we become conscious that the eye is a delicate instrument—a fact which, however familiar to us in theory, has previously been regarded with aloofness. Now it comes home to us. The length of a sitting, the quality, quantity, and incidence of the light, and, above all, the arrangement of the printed page, become matters of vital importance to us. A book with small print, or letters illegibly grouped or of unrecognizable shapes, becomes as impossible to us as if it were printed in Chinese.

"Legibility is not merely a matter of the size of type. Form, heaviness of face, the width of the margin around the letter, position in the letter group, and the shape and size of adjoining letters also require consideration. For 'tired eyes' the size factor would appear of overwhelming importance except where the other elements make the page fantastically illegible. Such, all too few, studies as have been made on this subject, particularly in relation to school children, for whom alone the need of large type is recognized in relation to the undeveloped eye, indicate, according to Bostwick, that 10-point type is the smallest size fit for any one, however good his sight.

"The recommended sizes of type run from 30-point, for 7-year-old children, to 10-point or 11-point for persons more than 12 years old. Bostwick remarks that this would bar much of our existing reading matter. In the gathering for 'tired eyes' of a decidedly unique collection of books in large type for the St. Louis Library, 14-point was decided on as the standard. Out of nearly 400,000 volumes it was found by diligent search that only 150 would answer this description. The final result of the St. Louis effort has been an accumulation of a few more than 400 volumes, despite the fact that 1,000 publishers in this country are annually issuing 11,000 volumes, to say nothing of the British and Continental output.

"In view of the omnivorous reading habits of the American public, one other factor deserves notice here. The possible influence of short lines on legibility deserves consideration in the propaganda for sane typography. Quoting Bostwick, we may recognize that the eye must jump from the end of each line back to the beginning of the next, and this jump is shorter and less fatiguing with the shorter line, tho it must be performed oftener. The adaptation of the eye to a standard length of line is surely not without moment. New lengths, as one finds them in special

magazines or other publications, are not so easily read. Bostwick ventures the opinion that the reason for our continued toleration of the small type used in the daily newspapers is that their columns are narrow, and still more, that these are everywhere of practically uniform width. If books, magazines, and reading are to remain as our inheritance, what better conservation movement can we initiate than one to ascertain and introduce rational standards for the printed page?"

## THE COMING OF THE AUTOMATIC STOP

IF THE MINDS OF RAILWAY EMPLOYEES can not be trusted to work promptly and regularly to prevent accidents, machinery must be devised to obviate the necessity of depending on these minds. If the best roads in the country can not guarantee their passengers safety under the present signal system, it would appear to be time to change the system. That even railroad men are thinking and arguing in this way is proved by the trend of an editorial on the recent rear-end collision at Mount Union, Pa., printed in *The Railway Age Gazette* (New York, March 9). The editor apparently thinks that the adoption of an automatic-stop system is inevitable. He thinks we should have had it before now, if the railroads had not been afraid of the necessity for a wait of "perhaps two to five years" before the legislatures and courts would let them raise the money. Says *The Gazette*:

"This disaster presents the issue very clearly. The engineman and the fireman are not only the products of a

careful system; by the usual standards they would be classed as creditable products. They are clear-headed, free from objectionable qualities, and impress the observer as honest men devoted to doing their duty. The officers of the company give them a good character. If this system of education and discipline will not insure safety, what system will?

"The successful use of stops on the New York Subway, and on a number of electric roads, raises a presumption in favor of the principle (backed by twelve years' experience) which the railroads are bound to acknowledge, or to show unfounded. Asserting the use of stops to be unwise on their lines, they have a duty to prove their case more convincingly than they have done thus far. The difference between the Subway lines and the ordinary steam road is not well understood by congressmen, editors, and others. The example of the Chicago & Eastern Illinois in using an automatic stop for years, with satisfaction, and yet not succeeding in popularizing it, is, to the public, confusing.

"The facts ought to be explained. The experiments which have been made here and there during the past five years have failed to afford the public much enlightenment. The Government has pursued a rather perfunctory course, and the railroads have seemed to be very unsympathetic. The inventors, as a whole, have given us wheat and chaff badly mixed, and no responsible power has done any satisfactory sifting of the mess, or even begun the job.

"This situation calls loudly for cooperative, constructive action. And do not railway officers aim at the highest safety of their trains, without regard to what the public asks for? They do, undoubtedly. But, according to the attitude of the governments, State and Federal, as judged by their past conduct, a railroad which should spend five million dollars—a thousand or two thousand dollars a mile—to safeguard its trains from one single danger—that of rear collisions—would have to raise the needed money by selling stock or bonds; and then it would be forced to wait, perhaps two to five years, until the situation could be made clear to commissioners, legislators, and courts, before it could begin to recoup itself for the expenditure. This necessity of waiting a long time does not excuse the killing of passengers; but it helps to explain why the automatic-stop problem has baffled so many."

This line is in 10-point, for readers over twelve.

This line is in 14-point, for tired eyes.

This is in 30-point,  
for seven-year-olds.