

## TRAINING THE CHILDREN FOR THE AIR AGE.

How Boys and Girls Are Taught the Principles of Aviation by Means of Kites, Model Aeroplanes and Balloons

PHOTO BY PAUL THOMPSON.  
Schoolboys Patching Up a Kite After Collision with a Tree.

A Home-Made Monoplane Making a Successful Flight.

LOOKING forward to the time when everyone will fly, efforts are now being made through out the country to teach school children the elementary principles of aeronautics.

In several of the public schools of New York special classes have already been established where boys and girls from ten years up receive regular instruction in the subject, and where they are encouraged to build new types of aeroplanes.

In Cincinnati the Ohio Mechanics' Institute has inaugurated similar classes which are attended by nearly a thousand boys.

Perhaps the most thorough course of all is the one conducted by the West Side Young Men's Christian Association, New York, which has been taken as a model by other institutions.

The course of study, lectures and demonstrations are under the direction of Wilbur R. Kimball, the aeronautic expert.

The aim of the school is to train men for the coming industry of airship building and the "air age." The course of study is designed to prepare owners and prospective owners for participation in aerial sports; to train aero chauffeurs and mechanics; to teach practical men the principles of construction and flight, and to prepare writers, advertising men and salesmen to specialize in the new field.

Some idea of the wide scope of the subject may be gathered from an outline of the course of study, which is given as follows:

Law of Gases—Buoyancy, action under varying temperatures and pressures; the atmosphere; hydrogen; motion; air currents; use of barometer, thermometer, manometer, stadiometer, etc.

Resistance and supporting power of the air—Law of motion and application of force; parallelogram of forces.

Shapes of Surfaces—Planes; curves; solids (square, round, fish shape); use of each; head resistance.

Kites—Use of various varieties. Lift and Drift—Flight, propellers and motors.

Soaring and gliding flight; ways of birds in the air. Screw propellers.

Motive power.

Power-driven Models—Actual demonstrations of working models of aeroplanes, helicopters and vibrating wing machines; designs of various types.

Man-carrying Apparatus—Working dimensions of apparatus capable of sustaining man; materials used; strength necessary as shown by tables; arrangement and action of various parts; general data.

Superposing Surfaces—Comparisons between monoplane and biplane. Equilibrium—Varying conditions of atmosphere due to whirlwinds and irregular currents; compensation for advance centre of pressure.

Control—Steering apparatus of various forms; means of control; rudder, auxiliary planes, etc.

Transmission Systems—Direct connection; gearing; chain, drive, cable and flexible shafting.

Dirigible Balloons—Size and material of envelope; gas systems of suspension and application of power; problems of steering and equilibrium.

Surely this is a formidable list of topics—far above, one would imagine, the capacity of the average school child. And yet many of the youngsters have so far mastered the principles of mechanical flight that they have been able to construct,

entirely unaided, aeroplanes, biplanes and other heavier-than-air machines which have filled every requirement.

In most cases, of course, the models are little more than copies of the famous types in actual use by real aviators, but in many instances the young students have perfected types of their own invention and have made successful flights.

"Our object," explained one of the assistant directors of the Y. M. C. A. course, "is to encourage interest in aviation. Every time one of our members has an idea he is encouraged to make a model and see what it will do."

"In our class, of course, all of the instruction has to be by lecture. We keep up with the best data that can be procured on the exploits and theories of the best aviators, and explain everything to the students as thoroughly as possible."

"For instance, one night we will discuss the theory of the plane as the basis of a flying machine. Then we may have an evening devoted entirely to propellers. Then we take up engines and motors, and so on. So far we have not found it expedient to take the boys themselves up in the air; for the present it is sufficient to teach them the laws of flight and the mechanical principles upon which the flight of heavier-than-air machines must be based."

"Experiments with new types invented by the boys themselves are encouraged, and it is quite possible that some valuable knowledge may be thus obtained which will prove of benefit in real aviation."

"Although we are mainly interested in teaching the young ideas how to fly, the class is by no means restricted to children. As a matter of fact, as far as the sphere of the air

is concerned, we are all infants, and our classes are therefore open to the man of forty as well as the boy of fourteen."

As a result of this general activity in aerial instruction, the streets and parks frequently contain groups of school children engaged in flying every type of aerial craft, from box kites to the most complicated power-propelled biplanes.

Boys and girls take up the pastime with equal vim, and as it serves to keep them out in the open air, the sport is a hygienic one, at least, even if it serves no other purpose.

The illustrations on this page show school boys and girls, photographed at random, engaged in trying out their home-made models.

### Up-to-Date Jokes

Owner looking closely at student—  
"Williams, you are a trifle over weight. Can't you lighten yourself a little?"  
The Jockey: "Got on my lightest suit, sir. Ain't it a bit to-dar, and 've just trimmed my finger-nails."  
Owner—"Well, go and get shaved."  
"Ferdie never takes you anywhere any more."  
"No! I promised to be a sister to him."  
"Well?"  
"And now he treats me like a sister."  
"How did the girls' sparring match turn out?"  
"It was very brief. Mabel fainted and Gertrude fainted."

"I see Nat Goodwin has been forbidden to carry in New York State." "Well, Nat's still got forty-five other States left."

WE PAUSE FOR REPLY.  
Don't go by first impressions. What would you know of the beauty of oysters if somebody in the dim dawn of civilization hadn't stopped to pry open a shell?

controlling herself. "Poor fool! You robbed me of my money and then married my sister. You're doing just as well for me as for me to-day. All this wouldn't have broken my love for you, Jim Burrows. I didn't find out the day you were still found my poor sister deserted, and dying of starvation, then my love turned to hate. Men are bad—all!"

"I brought up the child!"—  
"Child? I haven't! I know it! I've seen her to-day—Hetty's voice, her child!"—struggling to his feet.

"They're at the gate," she said. "Will you be taken? There's the shrubbery!" pointing to the rosebush.

"Give me the revolver! Hetty's child! It wasn't my fault! I deserted her. Before Heaven, Meg, I was lugged! I loved her, if ever—but the child, Meg; you must never let her know! Oh, Heaven keep it from the girl!—in a hoarse whisper. "The game's up!"—as a knocking came at the door. "The revolver—quick, Meg!"

A dark form stood between them. "It shall not be!" said the Rev. Paul, quietly; and he took firm hold of the woman. She was handing "The game's up!" more; be a man and face it! Heaven will help!"

A hoarse oath and the convict flung himself headlong across the veranda across the lawn and into the dusky line of shrubbery beyond. Before those in the room could realize, there was a shout, a sharp struggle. Then a shot rang out.

"Now you can understand why you never could marry my niece, Mr. Botell." Miss Grewe was lying on the couch of convalescence, white and feeble after a long illness. The shock of the convict's death had been too much for her, they said. Had Rev. Paul had hidden away in the room could realize, there was a shout, a sharp struggle. Then a shot rang out.

"I can only understand," he said gently, "that nothing on earth will keep me from wedding the woman I love, unless it be your wish. Won't you be my Aunt Margaret, too?"—taking the thin hand in his own. "Your life shall be brighter; I will be all a son could be! Won't you trust her to me?"

Margaret Grewe gave in. She drew him down to her, and there were tears in the dark eyes as he kissed her faded cheek.

"Your name is Paul—ah, I know! I've heard it daily. She is in the garden, Paul; go and find her!"

"Loved" waited the woman. Then, THE END.

## "271" By William Walenn

A TALL, silent figure in a brown holland dress was gesticulating frantically at the roadside with a parasol. The Rev. Paul Botell, coasting swiftly down the long Livermore Hill on his bicycle, was suddenly roused to the fact that this performance was for his benefit—a warning.

But it came too late. He was startled to perceive that from side to side of the long, steep road, which lay white and shimmering in the afternoon sun, stretched some unusual upheaval of the macadam surface. His dismay was complete when the unbusiness-like condition of his brake flashed on him—a long standing neglect. His choice lay between talking the roadside ditch or charging the obstruction—he chose the latter.

It was some minutes before he realized what had happened. He was then lying on his back, trying to say with a feeble smile he was "all right." The anxiety and distress evidenced by the luminous, gray eyes and quivering lips bending over him, caused a sudden thrill that went far to pull him together.

It was unaccountable to the Rev. Paul, especially in his dazed condition, why, after that one glimpse of these eyes, their fair owner should betake herself hastily to the other side of the road. Not appreciating the change, he struggled into a sitting position.

"Are you feeling better?" she called to him.

"Well, I hardly know the damage yet"—stretching himself. "No bones broken. What's this?"—putting his hand to his head, which was wet.

He swayed a little, and the pine trees and slim, brown figure opposite seemed to swim round.

"You're not going off again?" she implored, with clasped hands, but still keeping her distance. "I've done all I can, and—now I'll go and send help."

"It's very good of you, but please don't," urged the Rev. Paul. "Perhaps I can rise if—if you will be so kind"—stretching out a hand towards her.

"Oh, I mustn't! I ought not to speak to you even"—with a glance, half shy, half pitiful, from under long, dark lashes.

"Why, in the name of goodness, must I not be spoken to?" said the reverend gentleman, astonished.

"Because—because you're a man!" in a voice so low he scarcely caught it. What he did catch, though, was one glimpse of the sweet girl-face, with color flaming up in it as she turned and fled precipitately down the hill.

He sat watching the flying figure

until lost to view beneath the shade of a clump of pines further down the hill. Then he tried to rise, but, after a brief survey of things he sank back with an aching head.

"A fine old pickle for a chaplain of H. M. Convict Prisons to be in," he groaned.

The morning following the accident the Rev. Paul was lying full length on a couch in his own bachelor domicile, with a bandaged head. Through the open window a massive pile of grey-stone buildings, with blank walls heavily buttressed, loomed dull and gaunt in the sunlight. This was Livermore Convict Prison.

"The fact is, my dear Paul, yours is a case that has a serious aspect," said Dr. Burgoyne, the prison surgeon, surveying his patient critically. "In fact, I diagnose heart affection rather than broken head."

"Doc, do please be serious. Really, she was very charming though."

"No doubt," said the doctor, picking up the bandage, which he had removed before putting the necessary stitches or two into the reverend gentleman's scalp. "The young lady to whom this neckerchief belongs evidently bound your head up, sir? Ah! As I expected. Name in corner—Dorothea."

The Rev. Paul flushed up in a manner strongly confirmative of the doctor's diagnosis.

"The dear girl! She must have done it while I was insensible. Who is she, Doc?"

"Niece of a sort of she-brigand named Grewe, living in the Yarr cottage, close to where you got your spill. The aunt's a man-hater of a confirmed type. Practices with a pistol, they say—waiting for a man. It's an Adamless Eden; no man has penetrated within the sacred precincts in my time. Plenty of money, apparently. One deaf servant, the sole link of communication with the outside world. There you have it—the Grewe mystery! You're a newcomer or you'd know. Hallo!" as a couple of gunshots rang out.

"It sounds as if some lag were trying to dodge a bullet again"—going to the window and thrusting his head out.

"What a terrible thing!" observed the Rev. Paul, more concerned with his meditations than the episode outside, "for that sweet-faced girl to be condemned to such a life. It certainly accounts for her strange behavior yesterday. I—I shall call." He went on, breathing hard with indignation. "I feel it a duty, and I shall give that woman, the aunt, a piece of my mind!"

"You won't," said the doctor, bringing his head in again. "A pound to a penny, old chap, you don't catch a sight of either—the aunt or the divinity. What is it, my man?" as a prison official appeared hurriedly at the door.

"Governor says, sir, will you come quick? Warden Bolt injured—revolver went off in struggle with 271."

"Right, I'll come. You know him, Paul—No. 271—that case I told you of drafted here from Portland last month. A clever rascal, educated, cynical. Must have been a desperate blackguard. You should take him in hand."

"Rev. Sir—Please understand I receive no visitors. Your call is no doubt intended as a courtesy. It would be an intrusion if persisted in, and treated as such."

MARGARET GREWE.

A fortnight later the Rev. Paul had walked the four miles to Yarr Cottage with the strong determination to carry out a self-imposed duty. The servant had been induced to take his card in while he waited outside the locked gate, and the above note had been the result. My compliments to Miss Grewe, and say I shall, of course, respect her wishes; was his reply, delivered through the bars of the gate loudly, for the benefit of the deaf domestic.

"One may as well conform to the usages of polite society even with a she-brigand," he thought, with a laugh, as he proceeded slowly up the hill again.

Where a little stretch of dark woodland fringed the road, the Rev. Paul turned off, and, entering, proceeded to make a detour which should, he judged, bring him in the rear of the Yarr cottage domains. Presently he paused, for there was borne to him on the wings of the wind the soft warbling, the trill, of a girl's voice.

It never occurred to the Rev. Paul that it could belong to any other girl than the one present in his mind, so, when, with noiseless footsteps on the moss-grown turf, he came upon her unnoticed, he was not surprised. An eagle stood in front of her. Her pose as she bent over it in her clumsy drapery was graceful, artistic. She had placed herself where a break in the wood gave a superb view of green meadow sloping down the hillside to the little River Yarr, with a gleam of water, then valley and hill and the hazy blue distance.

Suddenly she looked around. Yes, under the deep shade of low-growing foliage was somebody.

A strangely uncertain gleam the Rev. Paul cut in his gray Norfolk suit as he came forward. He was square built, manly, with a brown, curly head,

but he was fidgeting the cap in his hand with nervousness.

"How can I excuse myself?" he said; then, with sudden dismay, "Oh, but you're not going to run away?" for she was scrambling together palette and colors feverishly. "I shall be deeply pained if you go through my intrusion. I owe you thanks and apologies. I have here something of yours rummaging in his pockets over at the prison. And you, I have must listen, please, or I shall go myself."

She paused. A deep flush stole over her features, but the apprehension on them was giving away to something approaching a smile.

"You will listen a moment? I must introduce myself—Paul Botell, chaplain and motor."

Learned, are Miss Dorothea Grewe. Very informal, I know, but you don't mind?"

She shook her head silently, but there was a laugh in the gray eyes now. She turned to the easel.

"Miss Grewe, this is not quite kind—your silence," he said, after a moment or two.

She beckoned with a taper finger, and, to his amazement, he saw she was writing. He looked over her shoulder.

"Please excuse me. I am under a pledge not to speak to you, or any man. It is absurd, I know, but not my fault."

The Rev. Paul smiled, exultant.

"I understand," he said. "I may convey my thanks to you verbally, then? I shall never forget what you did for me while I lay there insensible. I wish I could prevail on your aunt, on whom I have just called, to allow me to visit."

"Oh, please don't; it would be a bitter experience. My aunt holds such peculiar views with regard to"—

Here something half written was scratched through vigorously.

"Ah, I know," laughed the Rev. Paul. "My poor sex has got itself into disgrace with the lady. Probably some heart affair of old standing—don't you think?"

"I don't know," she wrote. "My Aunt Margaret has never told me anything about herself, though I've lived with her ever since I can remember, except when I was at boarding school."

He could not see her eyes, veiled by the long lashes, but on the slip she handed him he read:

"I think you should go now, without reviving, please, any more of the old customs. Yarr Cottage and Aunt Margaret are only three minutes from here; indeed, you are trespassing on

my aunt's property."

She offered him her hand quite frankly.

"He may come again?" he pleaded, as he took it.

She looked away with a little smile; then, humming a few bars of "Robin Adair" softly, as if to herself.

He laughed with a little nod.

"There will be a frequent listener, Miss Dorothea. Good-bye."

And his heart sang to him gaily as he wended his way back to the high road through the wood.

But the course of the Rev. Paul's love affairs was to justify the well-known proverb. For a couple of months all flowed smoothly; the gathering of paper slips went on apace, for the observance was strictly kept.

Then the awful day arrived when Miss Grewe came upon the culprit, heads and hearts together over the easel.

"You have never spoken to him, Dorothea, since your promise!" she exclaimed bitterly, in reply to the girl's trembling excuses. "A quibble, child, a paltry quibble! If this reverend gentleman—I presume it is Mr. Botell—whose visits I decline—has a shred of honorable feeling he will go at once, never to intrude again."

But the Rev. Paul had no such intention. Humbly, yet firmly, he faced the irate lady.

"The fault, if any, is mine, Miss Grewe. I must beg your forgiveness a moment while I—"

"I wish to hear nothing!" interposed the lady, curtly. "Will you please go!"—pointing vaguely in the direction of the wood behind him.

Later, Dorothea came down from her bedroom, red-eyed, but with a secret elation at heart. As she stole into the sitting room she was aware dimly of a form length on the sofa. In a moment she had flung herself down beside it.

"Oh, aunt; don't, don't! I will do whatever you wish! Oh, what shall I do, what shall I do?"

It was Aunt Margaret weeping for the first time in Dorothea Grewe's experience.

Two days had elapsed since the scene in the wood, and Aunt Margaret had maintained complete silence.

Presently when the light had faded and the air grown chilly, there came to Dorothea's listening ear the quick throb of a motor. She thought she heard a man's step in the little hall below, and, cautiously opening the

door, she crept down the stairs.

"His voice!" The lamp-light was low, but enough to see.

"Go back!" said the Rev. Paul firmly. "Must see you, aunt; it is urgent!"

"What is it?" she asked in a whisper. "Convict escaped; a sad business. He has been traced; the cordon is drawn round here. I motored down at once for your sake, Dorothea."

It came upon him—on them both—like the breaking of a flood. She stood two steps above him, the light touching dimly her graceful curves. He stretched up his arms.

"Is it to be for life, darling?"

She leaned towards him, the love-light in her eyes. Their lips met.

"Tell me, dearest, in that sweet voice I've heard so little, you love me?"

"Yes, Paul; from the first, I think!"

He held her for a moment closely, unresisting.

"Go back, darling, keep out of this! I'm a trespasser—forced my way in through the fence. Where's your aunt?"

She pointed to a door, and she went along the passage and knocked; then entered. There was no light within. He peered around a moment, irresolute.

"Miss Grewe!" he said.

No response; but, through the wide open casement came voices, hushed and broken. Instinctively, he stood back. Slowly, breathing heavily, came two across the veranda, a woman supporting a man. They entered; he staggering and groaning, sank, a huddled heap on the sofa.

The woman crossed to the door swiftly and locked it, not seeing the still figure in the shadow of the old high-backed piano. There was the ring of glass.

"Brandy, Jim!" in a whisper.

"That's good!" he gasped, a moment later.

The first for ten years, Meg! Enforce sobriety, eh? with a husky surge.

The pulses of the listener stopped almost. He knew them now—No. 271 and Miss Grewe. Like one in the grip of nightmare he listened.

"Light!" growled the man beneath his breath as a distant hubbub arose. "The place is surrounded; they'll search it! Where can you put me, Meg? Quick!"

The impulsive figure against the twilight, made no sign of having heard.

"In that drawer, Jim," came the woman's voice, low, steady, cutting, "is a revolver—loaded. I've kept it for you."

A sardonic laugh from No. 271.

"Pretty present for the man you loved!" waited the woman. Then,