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Title: Bill Bruce on Forest Patrol

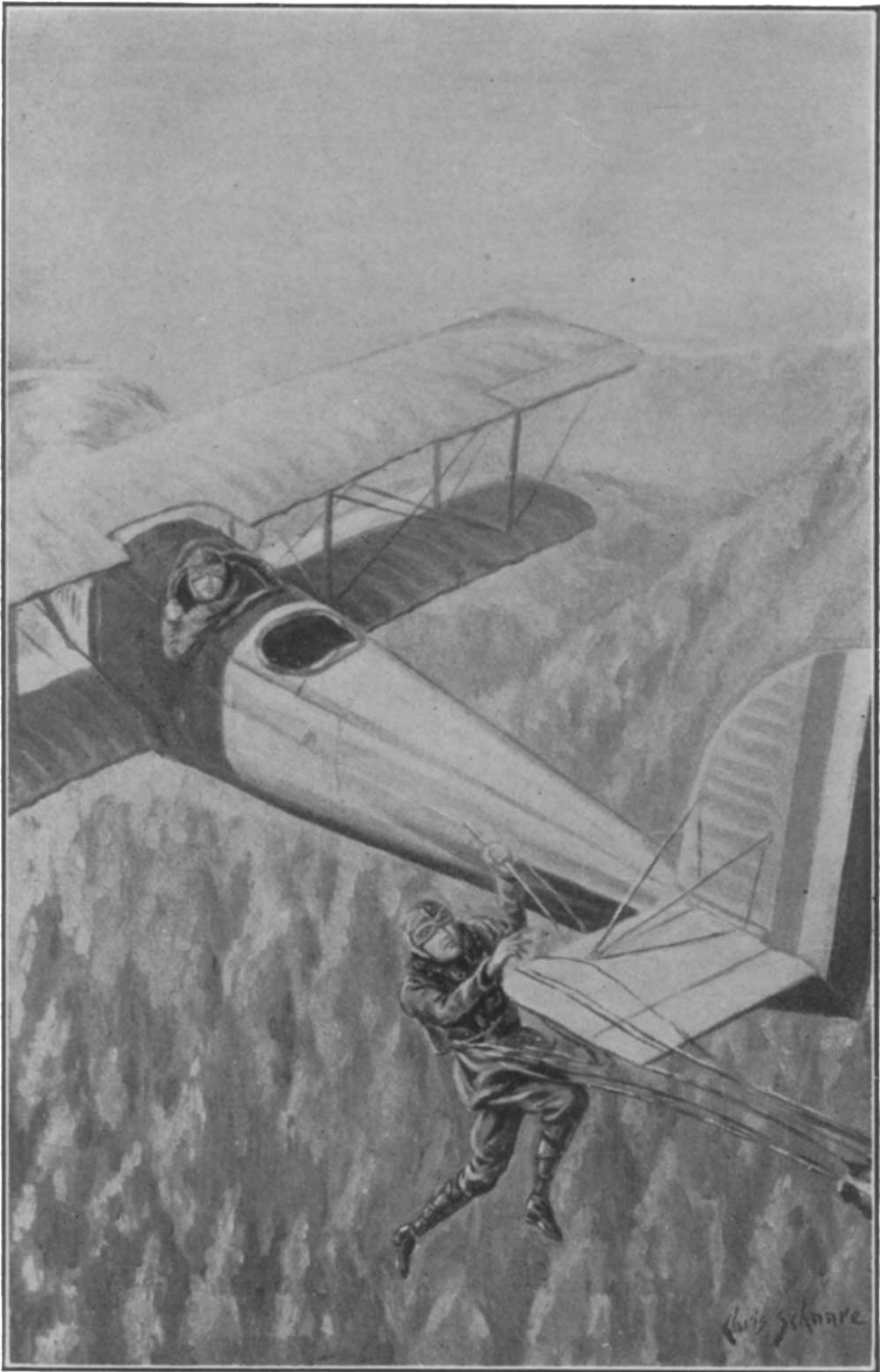
Author: Henry Harley Arnold

Release date: February 28, 2015 [EBook #48377]

Language: English

*** START OF THE PROJECT GUTENBERG EBOOK BILL BRUCE ON FOREST PATROL ***

E-text prepared by Roger Frank



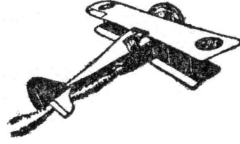
Bill worked his way backward toward the tail group.

BILL BRUCE ON FOREST PATROL

By MAJOR HENRY H. ARNOLD
AIR CORPS

Author of

"Bill Bruce and the Pioneer Aviators,"
"Bill Bruce, the Flying Cadet,"
"Bill Bruce Becomes an Ace,"
"Bill Bruce on Border Patrol,"
"Bill Bruce in the Trans-continental Race," etc.



A. L. BURT COMPANY
Publishers—New York
Printed in U. S. A.

THE AVIATOR SERIES
ADVENTURES OF A YOUNG AIRPLANE PILOT
FOR BOYS 12 TO 16 YEARS

By MAJOR HENRY H. ARNOLD
AIR CORPS

Bill Bruce and the Pioneer Aviators
Bill Bruce, the Flying Cadet
Bill Bruce Becomes an Ace
Bill Bruce on Border Patrol
Bill Bruce on Forest Patrol
Bill Bruce in the Trans-continental Race

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BILL BRUCE ON FOREST PATROL

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CHAPTER I—A VACATION IN THE WOODS

“Wake up, Bill, there’s a big fish on your line.”

“I should worry,” replied Bill as he lay on his back on the bank of the McKenzie River. “Let him do the worrying. I am having a marvelous time just lying here thinking how wonderful it is to be here in the Oregon woods. Perhaps in a day or two I will get sufficiently accustomed to the big outdoors, the gigantic trees and the wildlife to get enthusiastic over a fish. In the meantime, let him bite.”

Bill Bruce and Bob Finch were officers in the United States Army Air Service. They had been boyhood friends in Flower City, Long Island. At the outbreak of the World War they had enlisted as Flying Cadets and had been sent to the Ground School at the University of California, at Berkeley. They had both finished the ground work and then completed their flying training at the aviation field near Lake Charles, Louisiana.

A West Indian hurricane broke the monotony and routine of their training at the flying school and Bill was sent as a test pilot at an airplane factory. Bob had been sent to the aviation field at Mineola. Bill’s new duties required that he test out the latest type airplanes produced for the squadrons in France. It was here that he ran afoul of the dastardly work of a German sympathizer.

While Bill had been at Berkeley, another cadet by the name of Andre had become rabidly jealous of Bill. Andre had tried to discredit Bill and make out that Bill had cheated in an examination. Andre was fired. While at the airplane factory Bill had several narrow escapes, when airplanes which he was testing were found to be maliciously damaged. Andre was the culprit. He was caught, convicted, and was being taken to the penitentiary, but escaped.

Later Bill was sent to France, presumably with plans of the latest type airplane being produced, the Le Pere. While on board the ship, as Adjutant, he made frequent inspections to insure that the regulations concerning lights on deck were being carried out. On several instances he escaped being assaulted on the dark decks by a very narrow margin. His cabin was searched and it was quite evident that someone was endeavoring to secure the plans.

Finally, as the ship was nearing the coast of Ireland, Bill saw someone flashing lights from the deck. He tried to catch the miscreant, but was not successful on account of the darkness. The next day the ship was torpedoed. As the small boats were floating around, the sub came to the surface and took someone from one of the boats aboard. It was Andre. The Germans then tried to find Bill Bruce, but were prevented by the timely arrival of the U. S. destroyers.

Bill served at the front in the 94th Pursuit Squadron with Freddie Rickenbacker. He shot down his first plane, however, before joining up with the squadron. He was shot down between the lines in No-Man’s-Land and had several thrilling escapes during combats in the air, but came out of the war with a wound, several decorations and the title of “Ace.”

Following the war, Bill served on the United States-Mexican border with the Ninth Squadron. The work of the squadron required that they make frequent aerial patrols to prevent the

smuggling of liquor, dope and aliens into the United States. Here again they ran afoul of Andre, who was masquerading under the name of Andrajo. Andre had organized a large gang of cut-throats for the one and only purpose of smuggling.

The squadron helped the border officials materially in uncovering this work. They were assigned the part of the border extending from San Diego, California, to Yuma, Arizona. Captain Lowell Smith was commanding the squadron and Bill Bruce was his senior flight commander. The pilots had been able to catch an airplane in the act of transporting dope, had broken up Andre's attempt to make a forcible entry into the United States with four hundred Chinese, and thus had broken up the gang of renegades.

In the Fall, Bill had entered the trans-continental airplane race from San Francisco to New York and return. Bill met Andre again before and during the race. Andre sneaked across the line at El Centro and removed all the safety wires and cotter keys from the controls of Bill's plane. For a while it looked as if Bill would not be able to get to San Francisco in time to participate, but he arrived the evening before the start.

Once in the race, Bill thought that he was entirely out of Andre's reach, but on the return trip Bill's plane was completely burned at Buffalo. Andre had again shown his hand. Bill secured authority to fly another plane, and after many difficulties and much hard flying won the race in spite of the fact that he landed at the finish with a dead engine. It had been a most spectacular and uncertain race from start to finish. Bill had won it by inches.

After the race the Ninth Squadron was relieved from border duty and sent to San Francisco for duty. Here they established a new airdrome along the shores of the bay almost within hailing distance of the Golden Gate. During the Winter and Spring, the pilots had been kept very busy with routine flying. It was now June and Bill Bruce and Bob Finch had taken a few days' leave to get away from military routine. They had driven to Oregon by automobile and were spending their time fishing along the McKenzie River.

"A fine young fisherman you are," said Bob as he ran over and grabbed Bill's rod. "Did you come up here to fish or to day-dream?"

"Both," answered Bill as he watched Bob struggle with the fish.

It was very evident that it was an unusually large fish, for it was putting up a hard fight. The rod bent almost double when the fish made a run for freedom. Bob was forced to let out more line to keep the fish from breaking the leader or snapping the rod. Bill was entirely satisfied to watch Bob's endeavor to land the fish.

The stream was in general clear of snags and rocks, but there was one large tree trunk with several branches in the water toward which the fish always headed. To make matters more complicated, the banks of the river were lined with small bushes.

"I should say that it was a large fish," said Bill after Bob had vainly tried for several minutes to bring it in. "It will get away from you yet."

"Why don't you come here and take your own rod then?" asked Bob.

"You are getting along very well. I wouldn't think of depriving you of the pleasure of landing the first trout," said Bill as he stood up and walked over to the place where Bob was working with the rod.

"Get the net," called Bob. "I am getting it in close enough for you to catch him."

The bank had a drop of about five feet. Bill took the net and stood looking for a place to get down to the water's edge without getting his feet wet. He walked a short distance upstream and then slowly worked his way down to the water.

"You poor boob," said Bob. "How can you get the fish way over there? There are a dozen bushes between us."

"Swing your rod around this way," called Bill.

"Come closer, I am not fishing with a telegraph pole."

"Give me time," said Bill. "This bank is slippery and I am liable to get wet."

"Hurry up," answered Bob. "I can't keep working this fish forever."

Once more the fish gave a violent pull on the line and Bob had to give it more line. Then he had the job of gradually reeling in the line as fast as he could while the fish darted around in large circles in the water. Once it made straight for the old tree trunk and both young aviators were sure that the line would get afoul of one of the branches, but by careful manipulation Bob managed to get the fish back into open water.

Bill meanwhile worked his way along the bank toward Bob. The point where the line entered the water came closer and closer to the shore. Bill reached out with his net, but could not quite stretch far enough.

"Bring it in a bit," called Bill.

"Your rod is almost bent double now," replied Bob. "Do you want me to break it?"

"Well, you're the fisherman of this crowd," said Bill. "It was you who suggested a vacation in the Oregon woods. I admit that I don't know how to use this net. What do you do with it, immerse it gently in the water under the fish or make a wild swoop with it and scoop up the fish?"

"How do I know?" replied Bob. "I never saw one before."

"I would rather have a shotgun and then I would be sure of getting the fish," said Bill. "Don't slow up on bringing him in while you are talking, for now that you have him this far, we ought to have fried trout for lunch."

Bill stood on a stone near the bottom of the bank. There was just room enough for one of his feet. The other was dangling over the water. He was holding on to a small bush with one hand and leaning out over the water with the net in his other. Bob gradually worked the fish in closer to the shore.

"Bring him in closer. Reel in on your line," called Bill. "I can't stand down here forever."

"I am trying to," replied Bob. "There he is; catch him."

The fish was now in close enough to be seen. It was a large fellow and must have weighed

about two or three pounds. For a while Bill could do nothing but watch it as it worked its way back and forth against the taut line.

"Well, do something," called Bob.

Bill then gave a violent swing with his net. As it hit the water with a splash, Bill lost his balance and fell prone into the water. For a while, line, net, fish and Bill were all tangled up in one small space. Bob did not know what to do. If he slackened up on the line, the fish would escape. If he didn't, Bill would probably break the line.

"Get out of there, you will make me lose the fish," yelled Bob.

The water was not deep and Bill came up after the splash in a kneeling position. He blew the water out of his mouth and nose and looked around. It was at that moment that Bob had called to him.

"You don't think that I am here because I am enjoying it, do you?" he replied.

Then it was that Bob realized that the tension on his line had ceased. The fish was gone. Evidently the splashing around in the water had been enough to slacken the line and the fish had taken advantage of the opportunity to make its getaway.

"Well, the fish is gone," said Bob. "You are a fine help. Come on out of the water."

"What's going on here?" called a deep voice from the bank.

Bob looked around to see who had asked the question. He saw a tall, lithe, dark-complexioned man in a grayish-green uniform. He wore a broad-brimmed felt hat, with the crown coming to a peak, and had a badge on his shirt.

"We're fishing, and Bill fell into the water," said Bob.

In the meantime Bill scrambled up the bank.

"I am the District Forester. My name's Cecil. Have you a fishing license? Have you a campfire permit?"

"What I should have had was a bathing permit," remarked Bill as he started to wring the water out of his clothes.

CHAPTER II—THE FORESTRY SERVICE

"I am Lieutenant Finch, and this is Lieutenant Bruce. We both are members of the Army Air Service," said Bob when Bill had ceased speaking. "We have fishing licenses, but no campfire permits. We just arrived here this morning and haven't had occasion to light a fire so far."

"Babes in the woods," remarked Cecil. "It is obvious that this is your first visit in a National Forest. No one is permitted to light a fire for any purpose in a National Forest during the forest fire season without a campfire permit. It is fortunate that I ran into you when I did, otherwise you might have been picked up by one of my rangers and then it would have cost you something as a fine. First I will fix up the permits, and then I will tell you something about these forests."

Cecil then made out campfire permits for each of the two young aviators. He then gave them a large size "Help prevent fires" slogan to put on the windshield of their car.

"Let's sit down," said Cecil.

"You are both officials of the United States Government and, as such, should know something about our forestry service and what it does," he continued after they had seated themselves on a log overlooking the river. "As you look at these giant trees around you, they probably don't mean much to you. That Douglas fir over there is close to two hundred years old. Some of those pines close by are just as old. You can see that the lowest branches are over a hundred feet above the ground. The tops of those trees are over three hundred feet above us. An entire forest of those trees can be destroyed in a few hours through the carelessness of a man who is enjoying a vacation in the woods."

"I never knew that trees grew so large," said Bill. "I have seen the giant Redwood trees in California, but I thought that they were freaks of nature—that they were abnormal in timber life."

"These trees are not as large in diameter as the California Redwoods, but there are a great many more of them," replied Cecil. "We have mile after mile of trees as large and larger than these in Oregon and Washington. In order to protect these trees, the government has set aside certain forest preserves which are called National Forests. There are 152 National Forests in the United States. Each of these National Forests has a supervisor in charge. He has under him wardens, rangers and lookouts. These men all work to detect and suppress fires."

"That is a large organization," said Bill. "Why are so many men needed?"

"The forests in the United States cover a large area," replied Cecil. "About twenty-nine per cent of the land area of the United States is covered with timber. This timber is valued at six billion dollars. Think of that. The Forestry Service has as its duty the protection of that government property."

"I never knew that there was so much timber in this country," said Bob. "We saw quite a lot as we drove up here, but six billion dollars' worth is way beyond my comprehension."

"There is a vast amount of timber here in the Northwest," said Cecil. "In fact about one fourth of all the timber in the United States is located in Oregon and Washington. In spite of the fact that this timber is worth money, most of the fires in the forests are caused by the carelessness of man."

"You don't mean that they deliberately set the woods on fire, do you?" asked Bill.

"They don't mean to, but the results are the same," replied Cecil. "A camper forgets to put out his fire, he throws away a cigarette butt without extinguishing it, or he lights a cigar or pipe and throws the match down on the ground and the spark ignites the surrounding dried leaves. Then a fire is started in the woods. That is the reason for the campfire permits. It gives us a check on the people who come into the forests. We also have a chance to warn them about the dangers of

forest fires and caution them as to the means that they should adopt to eliminate any chances of fires."

"That's very interesting," said Bill Bruce. "Heretofore all that these woods have meant to me was just so many trees. Now I see the whole timbered area in a different light. Can you tell us how you go about locating a fire and what you do to put it out?"

"We have established lookouts on the highest peaks," said Cecil. "Each of these lookouts has a map. As soon as he observes a column of smoke in the forest, he takes a sight on the fire and notes its bearing. The adjacent lookout does the same thing. As a result we have an intersection of two lines which gives the location of the fire. In the case of a small one, the local warden will gather together a few men and go and put it out. In the case of a large one, the forest supervisor mobilizes as many men as he can from the surrounding country and they try and localize it. In this way it burns itself out."

"What do you mean by a small fire and a large one?" asked Bill.

"A small one is usually caught as soon as it starts," replied Cecil. "A large one may cover thousands of acres and take hundreds of lives. The Hinckley fire in Minnesota burned over 160,000 acres, destroyed property valued at twenty-five million dollars and took the lives of four hundred and eighteen people. That was an unusually large fire. The Idaho fire covered larger acreage, but did not take as many lives. That fire burned over two million acres and burned eighty-five people to death. Recently we have managed to get the fires under control before they get anywhere near that large."

"What per cent of fires are caused by carelessness?" asked Bob.

"About eighty-five per cent of the 28,000 forest fires occurring each year are due to human carelessness," explained Cecil. "Each year we hope that the number will be smaller, but the automobiles are bringing more campers into the woods all the time. We are trying to educate our visitors up to the point where they will consider the trees their property as citizens of the United States and will guard against their destruction just as if they were privately owned. You probably have noticed the signs posted up everywhere cautioning people to use every care to prevent fires."

"Can you always extinguish a fire with man power?" asked Bill.

"It is sometimes very hard in the case of some of the larger fires," replied Cecil. "At times when we are about to throw up our hands in despair, a providential rain will save the day. Then, on the other hand, we may have a bad thunder storm and find as many as twenty or thirty new fires burning where trees have been struck by lightning."

Cecil took out a pipe and lighted it. After he had the tobacco burning, Bill noticed that before throwing the match away, he broke it into two pieces.

"Why did you break that match?" asked Bill. "I noticed that it was no longer burning, and yet you seemed to be particularly careful to break it before throwing it to the ground."

"All real woodsmen use that means of being sure that they are not dropping a spark when they think that the match is entirely extinguished. There is no doubt of the match being out by the time that you have broken it in half. That's another thing, during certain extra dry seasons, we do not allow any smoking at all in the forests. I have bored you enough with this shop talk. May I join you in a little fishing?"

"By all means," said Bill. "We don't know much about it. In fact, do not know the kind of fish that we are trying to catch other than they are trout."

"You are liable to catch steelhead, rainbow, locklaven or brook trout in the river here," said Cecil. "What kind of flies are you using?"

"We aren't using flies, we were using worms," replied Bob.

"That's no way to go trout fishing," said Cecil. "It is not sporting. Give the fish a chance. You can get your limit with flies, so why use worms?"

"We didn't catch any with worms," replied Bill. "I thought that we were going to, when I fell into the river, but the big one that we had hooked broke away. We have some flies, but we did not know which to use."

"That's a rather hard question to decide," remarked Cecil. "Trout are particular creatures. One can never tell at what they will strike. Some days they will strike at flies similar to those you see flying over the water. That is, if white flies are flying low over the water, use an artificial white fly. However, that rule doesn't always hold good. I have been fishing when there were millions of live white flies all over the water and the trout would not even rise for the one on my line, but when I put a dark one on, I caught all kinds of fish."

Cecil walked back to the trail along the river and secured his rod and line from his car. Bill and Bob watched him carefully as he put on the reel, wet his leaders in the water and then threaded his line along the rod.

"I think that I will try a dark fly," he said, as he attached a leader to the line.

Both of the aviators were astonished when Cecil cast his line out onto the river. The line went out with his casts at gradually increasing distances until it was dropping his fly a good sixty feet from the shore. The fly landed on the water without the semblance of a splash. In fact, it alighted on the water very similar to the live flies which occasionally dropped to the water's surface. It rested for a moment and then Cecil brought it back with a slight movement of the arm and cast to another place. Bill was too much interested to do anything but stand and watch. Bob, on the other hand, watched for a few moments and then went some distance down the river and tried to emulate Cecil's graceful casting.

"One of the most important things to remember when fishing for trout, is to stay out of sight," said Cecil. "Trout are wary creatures and can see you long before you can see them."

There was a splash in the water near his fly and Cecil started to play the fish. He did it entirely different from the way that Bob had. He allowed the fish a certain amount of run, but consistently brought it closer into shore and then finally threw it onto the bank with a slight flip of his arm.

"Not so bad for a start," said Cecil, as he unhooked the fish and held it up for Bill to see. "A three-quarter pound rainbow. A few more of these and we will have enough for lunch."

"It looks easy enough when you do it," remarked Bill. "I think that I will try my luck."

"You can never learn by watching someone else," said Cecil.

"I will go upstream a little way," said Bill. "You will have lunch with us, won't you?"

"Thanks very much," replied Cecil. "I'll meet you here at twelve o'clock. Watch out for the steelheads. You will need a net if you get a real large one on your hook."

Bill walked a distance upstream and started to fish. He picked out a place on the bank where the bushes were low and sufficiently open for him to try casting. At first he had nothing but grief. His line became tangled in the bushes and overhanging branches from the trees. It kept him busy for quite some time disentangling his line. Once it was so badly tangled that he had to cut off part of it. Finally he managed to get it out on the water, but it landed with a splash and then only a short distance from the river bank.

The more he tried, the worse it seemed, and then he managed to make a good cast. His fly landed thirty feet or more out in the water. It had no sooner struck the water than a small trout grabbed the hook. Bill had a real thrill as he reeled the fish in. He brought it in so that he could see it swimming around in the water. Then evidently he became over-anxious, for he tried to throw it out on the bank, but instead jerked the fish loose and it was gone.

Later when he looked at his watch and saw that it was time to return, he had four small trout in his creel. He wound up his line as he walked back to the automobile. Long before he arrived he saw the smoke from a fire. Cecil was already starting lunch.

"How many did you get?" asked Cecil.

"Four," replied Bill. "How many did you get?"

"The limit," said Cecil. "Some of them are fair-sized fish. Some of them not so large, but just the right size for eating. Have you ever built a fire in the woods according to the approved method, which eliminates all possibility of starting a forest fire?"

"No, I never have," replied Bill.

"You should know how," said Cecil. "You are going to stay here in the woods for a while and it may save you a lot of trouble. I will show you now."

CHAPTER III—WOOD LORE

"Here comes Bob," said Bill Bruce as they walked toward the campfire. "I wonder if he had any more luck than I did."

"How many did you get, Finch?" asked Cecil when Bob joined them.

"I managed to catch seven, but you should have seen the big fellow which broke away just as I was about to land him," replied Bob.

"That's the usual fisherman's story," said Cecil. "You already have acquired one of the prime requisites of a regular fisherman. The largest fish always gets away. Let's see what you caught."

"That's a fine rainbow," he continued, as Bob pulled the fish, one at a time, from his creel. "That one is a salmon trout. When we eat it for lunch you will see that it is different from the others in that it has salmon-colored meat. You caught a variety: rainbow, salmon, brook and locklaven. Where were you fishing?"

"I must have walked five miles down the river," said Bob. "I followed up several streams for short distances, but I never seemed to catch more than one fish in any one place."

"That's natural," said Cecil. "I imagine that you were not very careful about showing yourself over the edge of the bank. You probably were seen by the fish before or as soon as they saw your fly."

"Mr. Cecil is going to show us how to build a safe and sane campfire," said Bill.

"That's a good idea," said Bob. "If we are going to be in the woods as long as we have planned, we ought to know how to build a fire that will not start a forest fire."

"I am glad to see that you have brought a shovel and axe with you," remarked Cecil. "You can never tell when you will need one or both in the woods. Some Forest Supervisors require all campers to be equipped with shovels and axes before they are allowed to enter a National Forest."

"Campfires are mighty easy things to start, but unless they are built properly, you can never tell when they are completely extinguished. The bed of pine needles, dried leaves and partially decayed wood in all forests burn very easily, and it is extremely hard to be certain that the fire has not worked its way under the surface. Many times people have left their campfires believing that they were completely extinguished when the entire area was honeycombed with sparks beneath the surface. The campers left their fire thinking that they had done their duty in regard to the rules and regulations concerning forest fires. Shortly after they had gone, the sparks would burn through to the surface and trouble would start for the fire-fighters. Such occurrences are not confined to tenderfeet alone, for some men with years of hunting and camping experience have been guilty of the same neglect.

"In building a campfire, the first thing that should be done is to dig up and clear away all the inflammable material in the vicinity of the bed of the fire. If possible, the fire should be laid on hard soil or rocks. Then a narrow trench toward the wind will furnish a draft. If you notice, I have not much wood on that fire. A lot of wood is not necessary for a hot flame. A small amount placed properly and renewed as required will give a concentrated heat. Never allow the flame to blaze higher than is needed for the cooking. When you have finished and are leaving the vicinity, if only for a couple of hours, be sure that the fire is out. You cannot put a fire out in the woods by throwing dirt on it. Go to the nearest stream and get enough water to thoroughly quench all signs

of fire. The water must sink down below the surface in soil like this and extinguish any sparks which may have worked under the surface."

"I see that you have your trout all ready for the pan," said Bill. "I think that I will clean mine."

"Do you know how to do it as a woodsman does?" asked Cecil.

"I never cleaned one in my life," replied Bill.

"I'll show you how," said Cecil. "It is the easiest way and also takes much less time. Bring your fish down to the river."

"There are lots of ways to clean a trout," remarked Cecil when they reached the water's edge. "From the forester's point of view, there is only one right way. Take the fish in your hand with its belly up. Cut a slit across just in back of its gills. Then all that you have to do is to put your finger into the slit, grab a hold of the center of the belly with the finger and your thumb and give a slight pull toward the tail. The trout is cleaned. Three movements are all that are necessary."

"It looks quite easy the way that you do it," said Bill. "Now I'll try it."

Neither Bill nor Bob could do it anywhere as smoothly as Cecil when they first tried it, but they became more expert as they practiced. Soon they lost their awkwardness and took but a few seconds for each fish.

"Now you have the idea," said Cecil. "It's a good thing to remember, for it takes but a couple of seconds for each trout. However, don't try it on fish of a coarser type, for it will not work."

"We have a steak that we brought with us," said Bill when they returned to the fire. "It probably will not keep much longer. We will have to cook it, too. Bob, you had better get another pan ready."

"Why not swing the steak?" asked Cecil.

"What do you mean, 'swing a steak'?" asked Bill. "Is that a way to fix it so that it will keep?"

"No, that's a way to cook it," said Cecil. "It always seems to taste better after being cooked that way. I don't know whether it is imagination or whether the fragrance of the burning wood really does permeate into the meat. Have you a griddle? If you have, we will try it."

"I'll get the griddle," said Bill.

Cecil took the griddle and suspended it by three wires so that it hung in a horizontal position. He then attached the wires to a tripod made from some saplings. By the time that he had finished, the trout had been fried and were placed along side the fire to keep warm. Cecil took the tripod and placed it over the fire. The steak was placed in the griddle and gently swung back and forth just above the tops of the flames.

"Get a stick, Bruce," said Cecil. "You can swing this while I do something else. As soon as the bottom starts to get brown, turn the steak. That will keep the juice in the meat. It begins to look as if we are going to have a real meal. I am sorry that some of my Oregon friends did not happen along with a venison mince pie. If we had one of them, we would be sitting on the top of the world."

"It is nothing more than mince pie made out of venison instead of regular meat," he continued when he saw the surprised expression written on the faces of the young aviators. "These Oregon people make them during the Fall and Winter. If you ever get a chance, be sure and taste one."

In the meantime, Cecil was busy arranging the plates, knives, forks and spoons on an improvised table on the top of an old tree trunk. Smaller logs were brought up for chairs. So it was that Bill and Bob ate their first meal in the woods. Trout, baked potatoes, bread, butter, jam, coffee and, best of all, the steak. It was as Cecil had said, "Better than when cooked in the ordinary manner." It seemed to have absorbed some of the pungent aroma of the burning wood.

Overhead the sun was masked by a roof formed by the thickly matted trees. The smell of the timber land permeated the air, a smell which one can only find in the forest. It seemed as if they were in the wilderness, where they were the pioneers blazing the trail for others to follow. To Cecil it may have been an old story, but to Bill and Bob it was the thrill that only comes with a new and enjoyable experience.

"It seems a shame that civilized people should be responsible for the destruction of such a place as this," said Bill after a while. "It's all so beautiful, so entirely different from what we are accustomed to. I'll bet that the Indians never burned the forests intentionally."

"I am not so sure about that," commented Cecil. "According to the best advices which we have, the Indians in some instances used to burn out the woods so that they would not be bothered by the underbrush when they were hunting. Once they started a fire, they never tried to put it out. It always burned until it reached a natural barrier and then burned itself out. However, ordinarily the Indians were very much afraid of a forest fire, as it destroyed their villages. So it seems that they liked to have the fires under certain conditions, but they wanted to apply the torch themselves."

"There must have been some mighty bad fires in those days," said Bob.

"The lightning has always been responsible for many bad fires as far back as we have any records," said Cecil. "Then, again, the early pioneers were not as careful as they might have been. There is one case on record where a young fellow was returning home after calling on a young lady who lived several miles away on another clearing. It was almost dark when he started home. He was either afraid to go home in the dark or was uncertain as to the proper trail to take. In any event, he set a match to a long burr of a sugar pine. That made a very good torch and served its purpose exceptionally well. However, when the first one burned so low that it was about to scorch his fingers, he lighted another one and threw the partly consumed one down alongside the trail. He continued this all the way home, and as a result there were many small fires, about equally spaced, burning through the forest.

"That young fellow was quite proud of his achievement. He had found a new means of illuminating the trail at night, but the early settlers were not so pleased with his accomplishment. There were not many of these pioneers in the locality and they had a mighty hard time in putting out those fires. The pine needles along the trail burned fast and furious for quite a while."

"How can you tell the age of a tree?" asked Bill.

"That can't be done until the tree is cut down," said Cecil. "Each year during the life of a tree a complete coating of fibre is formed around the trunk of a tree underneath the bark. These coatings take the form of rings and are called 'Annual Rings.' They are formed in regular sequence around the center. By counting the rings the age of the tree is determined."

"Why go to all that trouble?" asked Bob. "If there is one ring for each year and the rings are all the same size, why not measure the diameter of the tree and divide by the distance between the rings?"

"It would be much simpler if we could do it that way, but unfortunately the distance is not the same in any two different kinds of trees, or even in the same tree," replied Cecil. "There are many things that affect the growth of trees. For instance, if a young tree is crowded for light and room, the rings will be very close together. Then if the surrounding trees dies or are cut down and the crowded condition relieved, the young tree will grow much faster and the distance between two rings may be the same as that between seven or eight rings during the period of slow growth. Two trees growing side by side, although they may be of the same species, may have entirely differently spaced annual rings."

"How large do trees get?" asked Bill.

"That depends upon the species," replied Cecil. "One of the giant trees in the Sequoia National Park was undermined by a creek a short time ago and fell. That, as you know, was a Redwood. They made a cross section of that tree seventy feet above the base and it measured eleven feet in diameter. The tree was 280 feet tall and had a base diameter of twenty-one feet. The annual rings showed it to be 1,932 years old. Of course those trees are the oldest living things in the world.

"Other species do not get so large in the trunk but grow higher. You yourself remarked about that flagpole at San Francisco. That tree must have been over five hundred feet tall when it was standing here in these woods, and yet its trunk probably did not measure over fifteen feet in diameter. You can see some of the large Douglas fir and pines over there. They have not such large trunks but their tops are well up in the air. The average is well over three hundred feet. Take the Juniper, for instance; it is rare that we find one over ten feet in diameter. The foresters in Nevada made quite a news item out of one they found up in the mountains at the head of Broncho Creek. It was located at an altitude of about eight thousand feet and was a monster of its kind. For its diameter near the base was fifteen feet. It is rarely ever that we find a black walnut over fifty inches in diameter when fifty years old. An inch a year is a rapid growth for that tree.

"Well, boys, this is all very pleasant, but I must be moving along," he continued. "It looks as if this is going to be a bad summer for fires. The woods, as you can see, are well dried out, for we have not had any rain for several weeks. If fires start, they will be mighty hard to put out. As you may judge, I am a regular bug on this forest fire business. I like the woods and am always working to protect it. Nothing would suit me better than to be able to continue with you on your fishing trip, where I could really enjoy the woods, but I have to get up to the Supervisor's headquarters in the Cascade Forest. They had a bad fire there yesterday and it may be burning now. I may see you on the way back. Much obliged for the lunch. Don't forget to put out your fire."

"We are much obliged to you for starting us out right," said Bill as Cecil walked over to his car. "I hope that you can stop over with us. Good-bye."

The boys cleaned up after their meal and sat for a while loafing under the trees.

"Where will we spend the night?" asked Bob.

"Let's go up the river a little farther," said Bill.

They poured water on their fire and were packing their equipment in the car when Bill stopped working. He had caught the smell of burning wood. There was no smoke coming from his campfire, but the odor was unmistakable.

"Bob, there's a fire somewhere around here. I can smell it."

CHAPTER IV—DRAFTED TO FIGHT A FOREST FIRE

"There's no fire, Bill," said Bob. "You smell the smoke from our fire. When we put it out, it smoked terribly and the odor is all around us."

"No, Bob, our fire has been out too long. There's a fire somewhere near here sure as shooting. I can't see the smoke, but I can surely smell it."

"Well, what shall we do about it?" asked Bob.

"There's nothing that we can do for the present," answered Bill. "Let's pack up and get going. We ought to pick out some place above here on the river where we can make a good camp for the night."

They packed their equipment in their car and started up the road. The river was beautiful with the large trees on both sides. The sun was still high in the sky and here and there, where the road came out into the open, it seemed as if they had emerged from a tunnel. Everything was so much brighter. There was practically no wind and they came to long reaches where the river ran along for a considerable distance without a ripple. At other places the river ran over rapids and the splashing, bubbling water presented a decided contrast to the placid surface of the other parts of the river.

As they continued, the river became narrower, the valley in which they were traveling more confined, the sides of the mountains steeper and the vegetation thicker. They were gradually ascending into the mountains. Here and there they obtained a view through the trees of the country ahead or behind. The mountain sides were thickly covered with trees, which formed a beautiful green covering that followed the contour of the ridges and valleys. Once in a while they

saw an area which had been burned over at some previous time. The snags, tall, gaunt, white skeletons of what had been magnificent trees, were scattered through the second growth timber. Nature was trying to remove all traces of the fire with the small trees, but the snags stood there as grim reminders of the forest's former grandeur.

Here and there a pioneer had taken out a homestead and had cleared the ground in the immediate vicinity of his crude buildings. Usually some attempt had been made to cultivate part of the cleared area, but there were always a few sections still covered with the stumps of trees which had been cut. A couple of horses, several cows and some pigs roamed through the clearing as the nucleus of future herds of live stock. Bill marveled at the bravery of the men bringing their families to such a wild section of the country.

They came out on an open space where the river made a sharp curve. The road had been built on top of a steep cliff. Ahead of them was a narrow cut in the mountains through which the river flowed. Beyond the cut Bill saw what he thought to be a cloud of smoke. It seemed to be as thick and dense as a rain cloud. Bob stopped the car when Bill pointed at it.

"There must be a whopping big fire ahead of us," said Bill. "I guess that Cecil must have arrived there right in the thick of it."

"You must have an awful good nose, if you could smell that from where we were, five miles down the river," said Bob. "It's a fire all right, and looks as if it were a big one."

"Let's go on up and see it," suggested Bill. "It must be an awful but fascinating thing to see."

"All right, we are on our way," said Bob, as he started the car again.

As they drove farther along the road the cleared spaces became less frequent. The timber closed over the road and shut out the rays of the sun almost completely. There was no doubt now as to the presence of the smell of burning wood in the atmosphere. Finally they reached a point where they were under the smoke. The sun was almost entirely obliterated from view. It was just like traveling on a cloudy day. Prior to their reaching the smoke cloud, the sun had reflected itself from the bright leaves of the trees, but now there was just a red glow which marked the position of the sun.

"We must be getting close to it now," said Bob after a while. "The smoke is so thick that one could cut it with a knife."

"It's probably farther off than we think," replied Bill. "The wind is blowing from the East and bringing the smoke toward us."

"I think that we had better stop here," said Bob. "I don't want to lose this car, and if we get too close the fire may burn it up before we can get it out."

"We will probably run into the fire-fighters long before we get within the danger zone," said Bill. "With Cecil present, they probably have certainly gathered a large bunch of men together to fight the fire."

"We will go along a little farther and see what develops," replied Bob.

The road wound through the trees and followed the curve of the river so that they could not see very far ahead. The visibility was further restricted by the high bushes which bordered the road and the river. They were driving slowly along a particularly narrow curving section of the road, when Bob saw another car coming around a bend just a short distance ahead. Bob slammed on his brakes. It looked as if there was going to be a collision, for the other car was approaching very rapidly. There was no room to pass, for the river was close on one side and the other side was marked by large trees.

Bill and Bob could do nothing as their car had already stopped, but the other was still moving forward. Bill at first thought of jumping out, but he saw that the other car was slowing up and decided to stick with Bob. The other car came to a stop just as the bumpers hit.

Neither Bill nor Bob had looked at the occupants of the car, as they were too busy trying to make up their minds just how hard the two cars were going to hit. Consequently they were watching the car rather than the occupants. When they did look up, they saw Cecil at the wheel.

"Wait a minute," said Bob. "I'll back up and you can pass."

"All right," said Cecil. "That was rather close. This road is not very wide and it is far from straight. I am sorry that I did not see you sooner, but I was thinking about other things."

Bob found it rather difficult to back his car along the winding road, but he finally reached a point where there was room enough for the cars to pass. Cecil stopped his car as he came abreast.

"Where's the fire?" asked Bill.

"It's about four miles up the road," replied Cecil. "It's burning down the west slope of the next ridge."

"We thought that we would go up and see it," said Bill.

"I am afraid that you will do more than that," interjected Cecil. "You will have to go up and join the fire-fighting crew."

"We don't know much about fighting fires," said Bob. "But we will do what we can."

"You will never learn any younger," said Cecil. "Then, again, it is one of the accepted laws of the Northwest woods that anyone can be drafted to fight forest fires. We need all of the help that we can get on this one, as it has the earmarks of developing into a rip-snorter. Continue on this road for another three miles and then you will come to Sam Crouch's clearing. Turn there and leave your car at his place. Then take your shovel and axe and follow a trail that runs almost due east from his place. Out on the trail about a mile you will see the first of the fire-fighters. Report to the forest warden, Earl Simmons. He will give you something to do and tell you how to do it. I am on my way back to Portland. It seems that several fires have broken out in other parts of this district. I have to get back on the job. I am sorry that I will not be able to go fishing with you again on this trip. Good luck to you."

Cecil had gone almost before he had finished speaking. Bill and Bob watched the car disappear around a turn in the road and then all was quiet for a moment.

"There goes our fishing trip," said Bob. "I had hopes of finding a nice place somewhere along here where we could fish for a couple of hours and then make camp for the night."

"We thought that we were getting away from the constraining requirements of Army life, but we have apparently run into another service which has just as rigid demands," announced Bill. "I guess that our fishing trip will be postponed for a while. Let's go and see what it's all about."

Once more they started up the river road. The next three miles were covered very slowly as the road was not very wide and the curves were almost continuous. For a while they were afraid that they would not know Sam Crouch's place when they came to it, but they were soon disabused of the idea, for they did not come to any clearing. They were passing through almost virgin woods.

Bob watched the speedometer with a view of checking up on the distance. It showed that they had traveled three miles, but there was not a sign of a clearing. Bob stopped the car.

"Here's the three miles, but where's the clearing?" he said.

"Shove along a little farther," suggested Bill. "Perhaps your ideas of three miles from your speedometer and Cecil's idea are not synchronized."

"I don't want to run right into that fire," replied Bob. "The road may lead right through it. We are so close now that I think that I hear the flames crackling. Can you hear them?"

"I not only hear them, but also imagine that I can see them," replied Bill. "The fire is not far off, but drive around that next bend."

They turned the next bend and came out at the clearing. Bob drove into the cut-over area and stopped his car near the house.

"It's the right place, all right," said Bill. "I saw the name 'S. Crouch' on the mail box by the road."

There was not a soul around the house. The chickens and live stock, the growing vegetables in the garden and the farm implements in the yard indicated that the owner could not be far away, but he was nowhere in the immediate vicinity.

"Is anyone home?" called Bill at the top of his voice.

There was no answer.

"I guess that it is up to us to find that trail leading east from here without assistance," said Bill. "There is no doubt about our being near the fire now, is there?"

"You get the shovel and I'll get the axe," said Bob. "Let's see if we can find the trail."

"There appear to be a flock of trails leading out of here," said Bill as they walked along. "We are going toward the fire, and I hope that we are on the right one."

The trail wound around as it mounted the ridge. It was just wide enough for one man, so that Bill walked in front and Bob followed. The smoke became much denser, the crackling of the burning wood much stronger, and it seemed as if any moment they would walk right into the fire.

"Cecil said that it was only a mile from the Crouch house," said Bob.

"Well, we haven't walked a mile yet," replied Bill as he quickened his pace.

They reached the top of the ridge and rounded a turn in the trail. Bill stopped short, for directly ahead of him was a small, rotund man standing with his back toward them.

"Is Mr. Simmons anywhere near here?" asked Bill

"You bet your neck he is," replied the man. "I am Mr. Simmons. What can I do for you before you start work on this fire?"

"Nothing," replied Bill. "Mr. Cecil sent us up to help you."

CHAPTER V—A FOREST FIRE

"You are just in time," said Simmons. "I am sending out a crew to try and limit the southern movement of the fire. Have either of you ever fought a forest fire before?"

"Neither one of us," replied Bill.

"You'll soon learn," said Simmons. "Most tenderfeet coming up here for a vacation find it rather hard work and soon tire out, but you will be a help as long as you last."

Simmons turned and Bill noticed three other men standing by.

"Sam," called Simmons, "you can take these two youngsters and do that job. I will send those other men over to help Ridley."

"This is Sam Crouch," said Simmons as Crouch came toward them. "He will be in charge of you. All that you have to do is to follow his instructions. You had better get going, Sam."

"Go over to that pile of tools and get another shovel," said Sam. "One axe ought to do for both of you."

They started out down the side of the ridge. Sam Crouch had a shovel, some gunny-sacks and an axe; Bill was carrying the same load. Bob followed along with a shovel. Bill was rather put out that he had been called a tenderfoot. He was determined that he would show them that he had the strength and endurance of any of these so-called woodsmen. He would show them when they started to work on the fire.

Crouch soon left the trail and struck directly through the woods. He walked with a long swinging stride that covered ground rapidly. Bill found that it took everything that he had to keep up. The bushes were up to their necks. The branches caught the shovels and axes, but Sam never slowed down a bit.

The footing was none too good. They were going down hill and the pine needles were slippery. When they were not traveling on the needles, they were forcing their way through dense underbrush with tangled vines and ferns which caught in their feet and tripped them. At times Bill had difficulty in keeping Sam Crouch in sight. When Bill stopped to release his feet from a vine, Sam disappeared ahead, and then Bill had to hurry to catch up. Sam never showed the slightest indications of slowing down. It was always on, on, down the mountain side.

Occasionally they would encounter a tree trunk which extended across their line of march. If it was comparatively small, Sam would jump over it. If it was too large to climb over, he would turn along the trunk and go around the end. Bill had to admit that he was getting tired.

The mountain side seemed endless. Bill was sure that Sam had lost his way and was wandering about through the forest aimlessly. He could not see the direction that they were following, for the underbrush and trees overhead limited his view to the immediate surroundings. He saw Sam stop a short distance ahead. Now they were certainly going to have a rest. When he came up to the woodsman he found out his mistake. They had reached an extra large tree trunk bordering on a steep, rocky cliff which took some maneuvering to pass.

The sun was completely hidden by the smoke, but the heat was stifling. The crackling of the burning timber sounded as if it were a few feet distant. Bill jumped backward when he heard the first falling tree. The tree dropped with a crash which resounded throughout the valley. He could not imagine what had caused the noise at first, for it had come so unexpectedly. It reminded him of the first bomb that he had heard when the Germans bombed the airdrome from which he was flying in France—no advance warning, nothing to herald its approach, just the crash and “wham” of the exploding bomb. After thinking it over, he was sure that it was a falling tree which had caused the noise. There was nothing else around which could have caused the same shattering roar. It must have been a large tree, too.

They came out into the open and Bill obtained a view of the valley below and the opposite ridge. Crouch stopped to study the fire and make up his plan for fighting it. He stood awestruck, watching the terrible sight across the small valley. Bob came up and joined him. Both were tired, but the sight held them spellbound.

The fire seemed to reach from the bottom of the valley to the top of the ridge, and from one end of the mountain to the other. The exact limits were not discernible on account of the thick foliage. Smoke was boiling up with a rush over an area of about eight hundred acres. Down along the McKenzie there had not been much wind, but here around the fire a strong east wind was driving the smoke and fire before it. At times the flames shot up into the air at least a hundred feet and then died down and disappeared below the foliage. The smoke poured up incessantly.

Although they were still at least a quarter of a mile away from the near edge of the fire, the noise was deafening. Bill was watching a large tree in the midst of the fire. The fire had evidently been burning around it for some time, and it must have weathered prior fires which weakened its trunk, for it suddenly fell with a crash that sent a cloud of smoke and fire upwards with a roar. He could not tell which was the louder, the shattering crash of the tree or the roar of the flames. When the wind struck that column of smoke and fire, it scattered sparks in all directions and new fires seemed to start in parts of the forest hitherto untouched.

The fire had reached the tree tops in one section of the woods. Crouch called their attention to that particular area. It was a sight which would never be forgotten by either Bill or Bob. They were looking at one of the most terrifying of all kinds of forest fires—a crown fire. The flames seemed to be alive. They acted as if guided by some diabolical hand as they carried their destruction onward. They leaped from tree top to tree top with an incredible speed. At times their motion was almost too rapid for the eye to follow. A sheet of flames covered the tops of all the trees in that particular part of the forest so completely that the green foliage below was completely hidden.

“It’s a wonderful but appalling sight,” said Bill. “It fascinates me, but makes me shudder to see such widespread destruction. It is almost human in its method of operating. Think of the wasted force and power. Those giant trees are stripped and destroyed as if they were match sticks.”

“I don’t see what can be done to stop that,” said Bob. “It is far beyond control. It’s a monster of a fire!”

“Just stick around and you will be surprised,” said Sam. “Oak Tree Creek runs along the south end of that ridge. It has a wide meadow along portions of its banks. We will try and keep the fire from crossing that creek. I think that we can get away with it. Let’s go.”

They were off again. Bill was not so sure that he would be able to keep up with Sam. He was setting a mighty fast pace. If Sam worked as rapidly as he walked, Bill knew that it would take everything that he had to hold up his end. Once more they were tramping through the thick underbrush. The walking was hard, but it did not last very long, for they soon came out along a small creek.

The creek did not come up to Bill’s expectations. He had visioned a wide expanse of meadow land with a creek winding its way through the tall grass. What they actually found was a narrow creek which followed a natural cut through the woods. Here and there it ran through a small open space where the trees did not meet. These open spaces were the meadow land.

“I am going to start some backfires along this creek,” shouted Sam to make himself heard above the deafening roar of the fire. “We will have to watch them closely to see that they do not spread over to the other side of the creek. If the sparks blow across, put them out at once with wet gunny-sacks. I believe your name’s Bill?”

“That’s me,” said Bill.

“Well, Bill, you stay here and work along up the creek. I will drop Bob off up the creek about fifty yards. In some cases you may have to dig shallow trenches to stop the fire. In others the fire will stop itself when it reaches the green grass. We can keep the backfires under control and head them at the other fire. When the two meet our work is done. Get the idea?”

“How about the fire spreading west?” asked Bill.

“This creek runs into Cow Creek a couple of rods down,” said Sam. “Simmons has a whole flock of people working along Cow Creek.”

The backfires were started. To keep them headed in the right direction, Bill in some places cleared away the dried leaves, but in others it was not necessary, as the fires were started along the creek bank. At times he found entirely different conditions where he had to dig shallow

trenches to confine the fire. Bob and Sam disappeared into the woods, leaving a trail of smoke and flame to mark their trail. Bill was alone. He was terribly tired, so tired that he could hardly move.

He threw himself on the ground to rest. It was cool lying there and so hot working with the shovel digging trenches. The walk had not been an easy one, either. For a few seconds he took things easy and enjoyed the cool shade by the stream. Then a burning snag fell to the ground a short distance away. It was so close that Bill could see the column of sparks mount almost indefinitely into the sky. The crash of that snag jerked Bill to his feet and back to his job.

The fires were now all along the creek and the smoke was blinding. At times the backfires became unruly and he had to work at full speed to keep them under control. The heat became intense and everything that he had on was soaking wet. His arms and shoulders were so fatigued that he could hardly move them, but he kept on working.

Bill looked down the stream toward where he had started and saw that the fire was dying out. This gave him confidence in the work that he was doing. He could see that he was getting results from his tiring efforts.

His hands, face and arms were covered with black from the flying ashes and partly burned particles of wood or leaves. His skin was burned by the heat of the fire. His hands were a mass of blisters from the shovel and axe. It was the hardest work that he had ever done. How long he had been at it, he did not know. It seemed as if hours had passed since Sam and Bob had disappeared in the smoke.

One after another of the backfires joined with its neighbor. They gradually extended farther and farther away from the creek until there was a broad black belt separating the creek from the main fire. The backfiring had been a success in that area if not in any other. The main fire could not get across a space which had already been burned.

Bill continued to work up the stream. Soon he came to a place where someone else had obviously worked on a backfire. When he was sure that there was a continuous line of burned ground along the stream in his area, he went back again to be sure that no new fires had started while he was gone. Everything was as he had left it. His first fire-fighting had been a success.

The main fire was much nearer, but Bill no longer felt any danger from that. Let it come, it could not pass the wall which he had built across its front. Bill sat down along the creek to cool off and rest while waiting for Sam and Bob to return.

CHAPTER VI—BACK TO ARMY DUTIES

It had been a long, hard day for Bill Bruce. He had fished all morning and had rested a while after lunch, but since the time that Cecil had left, he had been working hard. The automobile trip to Couch's ranch had been only ten or fifteen miles and had lasted but a comparatively few minutes, but the hike through the woods and the fire-fighting were much different.

Exhausted by the hard hike through the underbrush and bushes, the manual labor of fighting the fire had completed the job and there was not a muscle in Bill's body which did not ache and pain. He had no idea as to the time of day. The smoke had obscured the sunlight so that he could not estimate the hour, and he was too tired to even look at his watch. He didn't care much, either.

As a matter-of-fact, it was late in the afternoon when he finally returned and sank down alongside the creek bank after his last patrol along the fire line. How long he had been sitting there he did not know, but it was beginning to get dark when he heard voices. The fire was gradually burning itself out. The sharp, ear-splitting crackling of the flames was much less audible. The smoke was just as thick as ever, but the terrifying aspect of the fire was gone. Simmons had done his job well. The fire had been conquered.

Bill recognized the voices as those of Crouch and Bob. He could not see them, but heard them talking as they approached the place where he was sitting. Bill jumped up in spite of his aching muscles.

"We left Bill along here somewhere," said Crouch.

"Hello, Bill," called Bob.

"Here I am," replied Bill.

"Well, we did our part," said Crouch when he came to where Bill was standing. "It looks to me as if the fire has lost all its dangers now. The men with Simmons can handle it from now on. Where is your car? If I remember correctly, you said that you were tourists."

"Our car is down at your place," said Bill.

"That's fine," remarked Crouch. "I know a trail through the woods along Oak Creek that leads out into the main road. By going that way we will not have to climb the ridge we came down."

"The sooner the better," said Bob. "You can't get back to your place too soon to suit me."

"What will we do with the forestry service tools?" asked Bill.

"Just bring them along," said Crouch. "They will stop by my place and collect them when they come out."

It was so easy to say, "Just bring them along," but every added pound made Bill's aching body feel like an open sore. He did not say anything, but raised the shovel and axe to his shoulders and stood ready to start. It was quite dark by this time, and following Crouch along the narrow trail was quite a task. The trail turned at all sorts of unlooked-for places. Limbs of trees and small bushes scratched his face and hands as they walked along. Once he ran into a tree before he saw it when the trail turned sharply.

Bill's feet seemed so heavy that he doubted his ability to walk another step. He turned around to look at Bob and could not see him in the semi-darkness. That made him feel better. Bob must

be as tired as he was. Sam Crouch was walking along with the same swing that he had used when they first met. The man was not human. It was physically impossible for a man to work as hard as they had for a whole afternoon and part of the evening and then be as fresh and energetic as Crouch was.

The trail through the woods seemed endless. Finally they reached the road and Bill hastened his steps to walk alongside of Crouch.

"Don't you ever get tired?" asked Bill.

"Son, I have been doing this ever since I was seven years old," replied Crouch. "This is just a routine day for me. I like the woods and am always waiting for an excuse to get away from people and communities. I probably would be better off if I didn't spend so much time hunting and fishing, but the different game seasons come so close together that I don't seem to have much time to do much else. Right now it is good fishing season. That will last pretty nearly all Summer. Then the salmon will start running up the river. Down in the valley we have good pheasant shooting. Occasionally we have wild pigeon shooting. In the Fall there is always good deer hunting. Then Winter comes along and I go out after bear and mountain lions. The snows shut me in for a while after that and I am forced to stay home for a few weeks. Taking it all in all, I do not have much time to work on my clearing."

"That's what I would call an ideal existence," said Bill.

As they talked, Bob came up and walked along with them. It did not seem half as tiring when they were talking as when they apparently covered mile after mile in silence.

"Have you ever seen the salmon run?" asked Crouch.

"No, I never have," replied Bill.

"If you get a chance, don't miss it," said Crouch. "By the way, where do you two fellows come from?"

"We are stationed in San Francisco," replied Bill.

"You ought to get good fishing around there," said Crouch.

"We haven't been there long enough to get any fishing," explained Bob. "We were stationed down in the Imperial Valley until a few weeks ago."

"What are you fellows, anyway?" asked Crouch.

"We are in the Army," said Bill. "We are in the Air Service."

"Do you fly airplanes?"

"That's our job," replied Bob.

"I'd rather hunt bears," said Crouch. "The highest that I want to get is up on the 'poop deck' of a horse. That's far enough for me to fall. Well, here we are at the shack. What are you going to do now?"

"Take our car and hunt for a place to camp," replied Bill.

"No use of your doing that. I am here all by myself. I haven't any beds, but I can give you a room and you can spread out your blankets on a couple of old mattresses that I have and sleep in comfort. You must be tired and ought to get a good night's rest. I can cook up some grub for supper and then you can turn in. What do you say?"

"It's too good to be true," said Bill. "If you hadn't asked me to sleep in your house, I would have rolled up in my blanket out here by the car and slept on the ground. I am just that tired. That was a mighty big fire, wasn't it?"

"Just a baby," replied Sam. "Only about eight or nine hundred acres. Why some of them cover that many thousand acres and we have several at the same time."

"I'll get out blankets and bags while you help get supper," said Bob to Bill as they reached the house.

Supper, the laying of their beds and the short talk after supper were like a dream to Bill. Both he and Bob were asleep as soon as they landed between their blankets.

"Say, are you fellows going to sleep all day?"

Bill sat up. The sun was shining into the room. It was late in the morning. His muscles were sore and he was stiff all over. Every movement that he made started new pains through his body.

"I thought that we might go fishing this morning," said Crouch.

"That's an idea at that," said Bill. "Bob, wake up, we are going fishing."

"You go fishing and let me sleep," said Bob drowsily.

"Come on, breakfast is on the table," said Crouch.

"All right, if I must," replied Bob. "I don't feel much like it, though."

"All the stiffness and soreness will be gone after we have been out for a few minutes," said Crouch.

So the days passed. The young aviators stayed several days with Sam Crouch and learned more about wood life and the art of fishing than they could have learned in several months by themselves. Finally the time came when they wanted to push farther up into the woods. It was hard to say good-bye to Sam, but they finally did, promising to look him up again whenever they came back that way.

"Here's something to take with you," said Sam as they were about to start away.

Sam handed them a glass jar. Bill looked to see what it contained, but could not determine anything from its appearance. Obviously it was some kind of dried meat. Sam saw the inquiry in Bill's expression.

"It's jerkey," explained Sam.

"What's that?" asked Bill.

"You don't know what jerkey is?"

"Never heard of it," replied Bob.

"I can't eat all the deer meat that I get during the hunting season, so I dry it for future use," said Sam. "This is dried venison. I think that you will like chewing it while you are fishing."

"Thanks very much," said Bill and Bob in unison as they started away.

That night they camped several miles away from Sam Crouch's clearing. As far as they could see, there was no settlement within miles. The fishing was good and they were more than satisfied when they finished their supper.

"This is really our first night out," said Bill. "We started out with the idea that we would camp every night, but have never done it before. What will we do with our stuff?"

"Just leave everything as it is until morning," replied Bob. "There's no one anywhere around here."

"I don't know whether that is the proper thing to do," replied Bill. "I guess that it doesn't make any difference, though, for we have to start back home tomorrow."

The boys rolled up in their blankets and were soon asleep. Bill was later awakened by the sound of something moving around his clothes. He sat up and threw the beam of his flashlight around. It finally rested upon an animal the likes of which he had never seen before. The animal was eating or nibbling one of his leggins. Bill jumped up, and with the movement there was no doubt as to the identity of the animal. It raised its quills until it looked like a large thistle.

"Bob," called Bill. "Here's a porcupine."

"Where?" asked Bob as he sat up.

The porcupine made no attempt to move away in spite of all the noise. It sat quietly as if it were in its own domain. The only difference was that it had stopped nibbling on the leather leggins. The aviators knew that they could not catch it in their hands, so looked around for something to wrap around it. While they were searching, the porcupine ambled away and was soon lost in the darkness.

"Well, he got away," said Bill, as they again rolled themselves in their blankets.

"He would have made a good mascot for the squadron," said Bob.

"Unique but rather sticky," said Bill as he dropped off to sleep.

About an hour later Bill was awakened again. He had the feeling that there was something rummaging in the camp equipment. He threw his flashlight in the general direction of where the supplies were piled and was almost frozen stiff with fright at what he saw.

A large brown bear was mauling among the boxes and cans trying hard to find something to eat. Not far off another bear was delving in the garbage pit. Then there was a terrible crashing and smashing as the first bear vented its rage against the pots, pans, and kettles. This woke Bob.

"What's all the noise?" asked Bob.

Bill didn't know whether to answer or to keep quiet. The bears were but a few feet away. If he said anything, it might attract the attention of the bears. If he didn't, Bob might call out again and then that would attract them. At the present time they were busily engaged in wrecking the camp and were not interested in either the flashlight or Bob's talking.

Bob did not need to get an answer to his question, for he looked in the beam of the flashlight and saw what was going on. What was to be done now? Neither one of the two young airmen could answer the question. Bill finally decided that something must be done, so jumped up and began clapping his hands and shouting.

The bear at the garbage pit stood up, but stayed where it was. It looked as large as a house to Bill, so he stopped in his tracks wondering whether to run toward or away from the bear. The other bear ambled off a few feet and then turned around to watch the proceedings. For a long time both Bill and the bear stood watching each other.

Bill again started shouting and then made another short dash after the nearest bear. It walked slowly away for a few more feet and then stopped and turned around. Bill began to lose his bravery just then, for the bear seemed to look him straight in the eye. The effect on the second bear was entirely different, for it made a dash to get away. The direction it took was rather unfortunate for Bob, for the bear headed right at Bob.

Evidently it did not see Bob stretched out on the ground, but Bob saw the bear coming and dropped down flat in his blankets. The bear did not have any designs against Bob, however, for it cleared him with a bound and was off in the woods. The shout that Bob gave as the bear reached his blankets was too much for the first one and it ambled off and disappeared in the thickets.

"This is no place for a white man," said Bob after the bears had both gone. "I am in favor of packing up and getting out right now."

"That's all right with me," replied Bill. "But I don't think that they will come back. I think that they are gone for the night."

"You can stay here if you want to, but not for mine; I'm on my way," said Bob.

"Well, we might as well move on," said Bill after looking at his watch. "It's only a couple of hours until daylight and that will give us a good start."

"Our vacation in the woods is over," said Bob "Now we go back to our routine flying."

"We have had a wonderful time, though, and I am coming back," said Bill. "I am going to find out from Sam the next time, though, what to do when bears invade our camp."

They started back to San Francisco very much impressed with the life in the forests. Each was determined to return as soon as he could, but neither realized that they would return almost as soon as they joined their squadron, but with an entirely different reason for the visit.

CHAPTER VII—WORKING WITH THE ARTILLERY

"How did you enjoy your life in the woods?" asked Captain Smith when Bill Bruce and Bob Finch reported for duty at the flying field at the Presideo at San Francisco.

"We had a fine time and found it very educational," replied Bill. "I never knew that there were so many different kinds of trees. We were very fortunate in meeting Mr. George Cecil, the District Forester. He is in charge of all the National Forests in Oregon and Washington. We

probably would have run into all kinds of trouble if he hadn't given us a start in the customs and manners of life in the woods. Then we were drafted to fight a forest fire, and say, boy, if you want to get action, join a forest fire-fighting gang. It is hard work, but the terrifying, destructive grandeur of a forest fire is beyond description."

"You didn't enjoy it any more than I did when those bears raided our camp when we were asleep," interjected Bob. "I wasn't the only one who was ready to start back home."

"I must admit that our education was not quite complete in that respect," admitted Bill. "Before I go out again, I am going to get someone to tell me what to do when a bear romps through your camp after dark."

"What did you do?" asked Smith.

"Just what a normal man would do," replied Bill. "I was scared to death when I saw the first bear and more scared when I saw the second one, but I tried not to show it."

"You have been having a vacation, and now you will have to get back to work," said Captain Smith. "We are observing the fire of the coast defense guns this morning. Bruce will take the first shoot and Finch, you take the second one. Sergeant Breene can use the radio, but you had better give him your sensings of the positions of the shots with reference to the target before he sends them down. You can get some idea as to the distance the shot falls from the target by the length of the cable between the target and the tug. You will shove off in half an hour. Your plane is having a new engine installed so that you will have to use Batten's."

"I don't know much about artillery adjustment," said Bill. "During the war I was a pursuit pilot."

"Now's the best time to learn then," replied Smith.

"Why the trick leggins?" asked Kiel, the Commander of the Second Flight in the Ninth Squadron.

"I had no choice," replied Bill. "A porcupine started to eat my best ones while I was up in Oregon. All my others need cleaning too badly to wear. These wrapped leggins are comfortable, even though they take more time to put on."

"I thought that everyone threw away those leggins as soon as they could after the war," said Kiel.

"It's a good thing that I saved these," replied Bill. "If I hadn't, I would have been waiting in my quarters now for my others to be shined and repaired. Then you would have had to take this mission. From my point of view, I would rather have had it that way."

"Well, Sergeant, how's the old bus percolating?" asked Bill when he came out onto the line and met Sergeant Breene.

"A new engine is being installed in yours," replied Breene.

"I know that, but how is Lieutenant Batten's? That's the one that you and I are going to take out on this artillery mission."

"I don't know anything about his plane," replied Breene. "His crew chief takes care of it."

"Well, get your flying togs, for we take off as soon as we can get the bus warmed up."

In a few minutes they were flying around over the reservation while they checked their radio with the ground station at the airdrome. The antenna wire hung two hundred feet below the plane and formed an arc with the lead "fish" at the end of the wire. The fish was a weight shaped in a stream line form so that the wire would ride steadily through the air and hang well down below the plane.

Breene sent out the call letters and then Bill and his observer watched for the O. K. panels. As soon as they appeared, Bill headed his plane out over the Coast Artillery radio station. Once more Breene sent out the call letters of the station. This was acknowledged by the panel signal, "understood." Then the airplane sent down a message giving the number of the plane, the pilot's and observer's names and the information that they were ready to observe the fire of the guns. Each item was repeated so that the ground station would be sure to get it. Finally the ground crew placed the panels in the position which indicated "battery ready to fire." Then Bill headed his plane out over the ocean.

It is a sort of lonesome feeling to fly out over the ocean in a land plane. The pilot always realizes that if his engine quits, he must land on the water, and that his plane will float for not more than four hours after hitting the water. Accordingly, Bill wanted to get as much altitude as he could and at the same time accurately observe the falling shots. If his engine quit, he would then be able to glide at least part way back to shore. There is always the possibility of having to swim after a forced landing in the water, as boats are not always conveniently available for rescue work.

Bill climbed until he reached five thousand feet. The tug and target were about twelve thousand yards from shore, and they looked absurdly small. He wondered how the twelve-inch guns could ever make a hit on the small pyramidal target built up on the float. The entire area over which the target would be moved had been cleared of ships. Off to the north there were two steamers running into the Golden Gate, and a third leaving by way of the ship channel. As far as Bill could see, there was no other sign of life between the shore and the Farallone Islands, some fifteen miles out.

Bill had barely reached his position abreast of the target when he saw the splash of a shell as it hit the water. The shell struck just short of the target and then ricocheted and made another splash beyond the target. It then bounded along the water's surface with ever diminishing leaps until it finally sank beneath the water's surface. Bill was so much interested in watching the shot that he forgot to hand back a sensing to Breene.

Bill was brought back to the business in hand when Breene tapped him on the shoulder. "Two hundred right, eight hundred short," Bill wrote on a slip and handed it to Breene. After a couple of circles around the tug and target, another shot splashed, but this time much closer. "One hundred left, two hundred over," wrote Bill on the slip that he handed back. Thus it went for

some time with the shots making a group around the target, which was moving along at a rate of about ten knots an hour.

It was interesting work and Bill enjoyed it. He was doing his best to send down corrections which would make it possible for the gunners to make a hit on the target, but either its motion through the water or the normal dispersion of the spots due to the ammunition would not permit of a direct hit being made. The tug cruised back and forth in the cleared area. The wind and tide evidently made it move faster in one direction than in the other, for the shots did not fall the same distance away during the two runs.

Occasionally Bill would fly the plane back over the shore to see if any additional instructions were being sent up to him by the panels. Each time the same panels were displayed, "Battery ready to fire." That being the case he must place his plane so that he could see the shots when they fell. Once he was sure that the guns had been fired but he had not seen the first impact with the water. The only location of the shell that he secured was after its first bounce from the water. He then sent down, "lost." This indicated to the firing battery that the observer had not seen the last shot.

Bill was out well beyond the tug when his engine started missing and then quit altogether. He wanted to glide into shore, but knew that he could not make it from five thousand feet. He had another chance for a quick rescue, and that was to land as close to the tug as he could. However, in order to do that he would have to glide through the section through which the shells were flying. He did not know what to do. Should he take a chance with the flying shells, or should he land in a safe sector on the water and trust that the tug would see him drop and come to his rescue?

He guided his plane in wide circles as he lost altitude. As he descended he could see that the battery had fired on the data sent in from Breene's last report. Would the battery stop firing when they failed to perceive any additional data, or would it keep on firing? Their last report had indicated that the battery was firing very close to the target.

Bill decided that he would not take a chance of getting hit by a thousand pound projectile. He would land as close to the tug as he could and stay out of the danger zone. As he dropped lower, he could see that the sea was rough. He had not been able to pick up the high waves from his high altitude, but now they were apparent. That would take skillful piloting or the plane would be completely wrecked when it came into contact with the water.

As he glided over the waves, Bill made up his plan for landing. The wind was in the same direction as the moving waves. He could not land in the trough between two crests, for that would require a crosswind landing. He would try and set the plane down between two crests.

The wheels were now just missing the peaks of the waves as the plane soared along. Just ahead was a rather high wave. Bill expected to drop his wheels into the water just beyond that crest. The plane dropped out from under him quite unexpectedly and the next thing that he knew he was swimming around in the water. Breene was not in sight. Bill came in closer to the fusilage and waited. Soon Breene appeared in the water in front of the wings.

"Can you swim?" called Bill.

"Not so much," replied Breene.

"Come around here and climb up on the fusilage," said Bill.

The lower wing of the plane had been torn almost all the way off. As far as they could see, the fusilage was still intact. The heavy 800-pound engine caused the nose of the fusilage to sink into the water. Thus the only parts of the plane above the surface were the tail surfaces, the top wing and the fusilage between the rear of the wings and the tail group.

Breene worked his way around the wreck until he reached the tail surfaces. Bill gave him a lift and Breene was soon sitting on the empennage almost entirely out of the water. Bill could swim well and stayed in the water, supporting himself by the rudder surfaces.

"This water is getting cold," said Bill. "Can you see anything coming this way to help us?"

The plane at that time was down in a trough and the crests towered twenty or more feet above them.

"Not a thing in sight," replied Breene.

"Wait a minute," he shouted as the plane rose up on a wave. "The tug is coming toward us full speed ahead. I hope that it has dropped its cable and is not pulling the target."

"It ought to get here before the old crate sinks," said Bill. "I am going to take off my shoes and leggins so that I can swim better if I have to."

Bill had just unwrapped about two coils of his leggins when he was interrupted by an extra heavy wave which almost submerged him. The plane was gradually sinking and he wanted to be ready for anything that might occur. He might have to support Breene if the plane went down before help arrived. In struggling to regain his grip on the plane, he lost the loose end of his leggins.

Just then the tug came into sight and dropped a small boat. Bill insisted that Breene be taken off first. Breene had no more been rescued than the plane gave a lurch and sank beneath the water. Bill turned loose the rudder surface but felt himself being dragged down. The loose end of his leggin was caught in the wires of the empennage.

CHAPTER VIII—NARROW ESCAPES

When Bill Bruce felt the pull of the sinking airplane on his leggin, he knew that he had to do some fast moving and some faster thinking to escape being dragged to the bottom of the ocean. He was submerged before he knew it. His only salvation lay in his ability to release himself from the leggin or in the cloth band breaking. In the meantime he was going farther and farther beneath

the water's surface.

It suddenly occurred to him that he might be able to unwrap the leggin by rotating his foot about the taut part extending upward from the plane. This procedure proved to be a success and in a few seconds he emerged. When his head came above the water he coughed and spit until he got rid of most of the salt water which he had swallowed. He had not been under the water long, but it seemed much, yes, very much longer than it actually was. He had been through a terrible ordeal and his escape had been a narrow one.

When Bill had brushed the salt water from his eyes, he looked around and saw the tug with its small boat standing near by. He swam to the small boat and was taken aboard. In a few minutes they were back on the tug and headed for the target.

"I want to pick up that target again," said Lieutenant Small, the Artillery officer in charge of the tug. "If you are all in, however, I will head into the harbor and dock. If you can wait for a while, I will pick up the target and cable and then we will steam back to the dock."

"I can wait for a while," said Bill. "I am all right. I swallowed a lot of salt water, but that won't hurt me any. How did you get to the plane so soon?"

"As soon as we saw your plane going down, I knew that something was wrong," said Small. "Ordinarily you fellows don't get down that low while you are out here. Then when you kept on going down, I told the crew to cut the target cable. They hacked it off with an axe and we went full steam ahead for the spot where you hit the water."

"It's lucky that you did, too," replied Bill. "I was under the impression that a land plane would stay afloat for about four hours, but I know now that it won't when it is damaged when it hits the water. That old bus did not float more than thirty minutes, if that long."

"We timed it," said Small. "It was just twenty minutes after you hit that we launched the small boat. Eight minutes later the plane was out of sight. I figure out that twenty-eight minutes covers the entire time that it was afloat."

"The plane must have been more badly damaged than I thought," commented Bill. "The landing gear must have torn off some of the fuselage when it hit. In any event, I am glad that you arrived when you did."

The tug had almost reached the target by this time. The crew maneuvered until they came along side the target and then caught the loose end of the cable. It was a long, tedious job to pull the end of the cable from the bottom of the ocean, but was finally accomplished. Once more the target was being drawn through the water at the end of the cable and the tug headed back toward the bay.

"What did you do with my plane?" asked Batten when Bill arrived at the aviation field.

"Don't you know?" asked Bill.

"We received a radio message from Breene telling us that you were going to land, but why pick out the ocean?" responded Batten.

"You talk as if I had landed in the water eight miles from shore through choice," said Bill, somewhat peeved.

Bill was wet and most uncomfortable. He had been through a trying, nerve-racking experience and could not see that Batten was joking with him.

"It was a good plane, anyhow," replied Batten. "Now I will have to break in another one. You had a mighty lucky escape and showed good headwork in getting away with nothing more than a wetting. I would hate to have to swim around in that cold water and wait for a slow old tug to come up and pick me up."

The days followed along with regular squadron work. More artillery observation, aerial gunnery and bombing and the maintenance of the equipment. Then one morning Captain Smith told the officers that they would have searchlight practice with the anti-aircraft artillery that night.

Night flying was not a new thing to any of the officers of the squadron, but none of them had ever before gone up with the one purpose of dodging the searchlights. The drill was to give the searchlight men practice in locating airplanes and holding the beam on them at night.

Early in the evening the planes were all out on the line but Bill's. The mechanics had not quite finished the work incidental with the installation of the equipment. Bill had just received a new airplane prior to his return from Oregon. The old engine had been replaced with a new one and then the radio, machine guns and bomb racks were put in place. Bill hoped that his plane would be ready for the night's flying. Sergeant Breene was sure that it would.

The searchlight truck was placed at one end of the field and the flood lights on the hangar were tested out. When it became dark, the lights were turned on and the airdrome was as light as day. Beyond the ridge, at the end of the flying field, the anti-aircraft searchlights were throwing their beams into the sky. It made a beautiful sight. Occasionally the beams from two lights would cross in the sky. The operators would throw the beams from one side to the other, sweeping the sky from the horizon in the north to the horizon in the south.

Smith took the first mission and his plane disappeared in the darkness. It was not until he turned on his navigating lights that the men at the flying field could locate him. He climbed his plane to an altitude of over five thousand feet and then turned off the red and green wingtip lights. As soon as he turned them off, the game of hide-and-seek commenced. The searchlight beams were thrown around in an endeavor to locate the plane.

Once in a while the plane would be caught in a beam and Smith would dive, slip or make a quick turn. This made it necessary for the searchlights to locate him again. It seemed as if they could not hold the plane, for it was very seldom that they kept it in the glaring light. When he flew with his navigating lights turned on, the operators had no difficulty in keeping the plane in the beams, but as soon as he turned them off, things were different.

Each one of the pilots took his turn after Smith had completed his flight. Some of them were not as adept in handling their planes as Smith had been and the beams played on their planes

longer. After talking with the other pilots as they came down, Bill was convinced that this aerial hide-and-peek at night must be wonderful sport. He was eager to get his turn.

"How about it, Breene, will we be able to get up tonight?" he asked.

"Everything will be ready in about fifteen minutes," replied Breene. "I have very little more to do. I had to connect up the bomb racks so that we could take up some parachute flares."

"That is not entirely necessary," said Bill. "The lights here on the airdrome will be sufficient to land by. However, I guess that we better have them. In case of a forced landing we might need the flares."

"You are scheduled to go up next," said Captain Smith to Bill. "Will your plane be ready?"

"Yes, sir," replied Bill.

"All right then, you will have the last flight, for it will be too late for any more when you get down."

Bill secured his flying equipment from the office and returned to his plane. Breene had finished his part of the work and the other mechanics had completed theirs. One of the men was climbing out of the pilot's cockpit when Bill started to get in.

The engine was warmed up and the lights tested. Everything was working in A-1 condition. Breene climbed in the observer's cockpit and the plane was ready to start. Bill taxied down to the far end of the field and turned the plane around. The beam from the field lighting set illuminated the ridge beyond the buildings so that the minutest details could be seen. Bill opened his throttle and took off.

The plane rolled a few yards and then was in the air. It climbed steadily and crossed the ridge with lots of room to spare. Bill turned back over the bay to get more altitude. The view which he saw was like a touch of fairyland. Directly beneath him lay San Francisco. The streets were outlined with their lights and could almost be recognized by name. The trolleys could be seen traveling through the city.

Here and there ferryboats threw their lights across the waters of the bay. The lighthouse on Alcatraz Island sent out its rotating beam, which illuminated the shore line all around that portion of the bay. The outline of the water was marked by the lights of the various cities and small villages located along its shore.

On the far side of the bay Bill could see several railroad trains coming into or leaving the station at Oakland. Beyond the Berkeley Hills the lights of the cities in the Sacramento Valley broke the darkness like stars in the sky. It was a beautiful sight, but Bill had other things to do. He headed his plane back toward the ocean front.

His course was farther south than he wished and he tried to change it by putting on right rudder. He soon realized that something had happened to the plane—something was wrong with the rudder controls. Bill was in a quandary as to what he should do. He kicked hard with his right foot but could not get any response from the rudder bar. It was solid in its position. He was now afraid to use his left rudder for fear that it also would get caught. If he kept flying on his present course, he would travel out over the ocean. That was not to be thought of. On the other hand, suppose that when he used his left rudder, the controls would lock in that position and he would have to keep turning to the left. The situation was critical.

Bill pressed slightly with his left foot and the plane responded. Furthermore, the rudder bar returned to a neutral position. He tried to get some right rudder, but it was just as solid as formerly. By this time the lights of the city were well behind him. He judged that he was about five or six miles out over the ocean.

The one thought that entered Bill's mind was that his controls might lock in place. If that happened, he would have to follow the course which the airplane took. Once more Bill shoved slightly with his left foot and the plane responded. He held the foot in place with a view of making a wide circle to get back to the landing field. He realized that the circle with such a small amount of rudder would be a very large one, but he could not take any chances of having the controls lock and the movement of the plane thus be limited to a small circle.

Landing fields were scarce in the bay region. The city of San Francisco was on a peninsula with the ocean on one side and the bay on the other. The land between was thickly settled and built up. It would be difficult to pick out a landing field in the day time and almost impossible at night. Bill's one chance lay in his being able to jockey his plane, crippled as it was, back to the airdrome.

CHAPTER IX—AN UNEXPECTED DUTY

The bay with its lights along the water's edge had now lost its beauty for Bill. The night had become an agent which seemed to add further dangers to the perils which already seemed to conspire against him. Bill's one idea now was to get his plane back to the landing field as soon as he could. He then would try and jockey his plane into a position which would eliminate the use of any right rudder in making his landing.

The circle which he was flying was an exceedingly wide one. It took him down the bay as far as San Mateo and he was loathe to make it smaller. There was always the chance that his rudder bar should lose all of its remaining mobility. He cut across the end of the bay and approached Alameda. He could see the lights on the field and wondered if he would make them safely.

The circle took him over the ferries plying between San Francisco and the East Bay cities. Goat Island revealed itself by the lights of the various buildings and the Naval Training Station. He was directly in line with the landing field. He felt more secure now, for, with everything going all right, he would not have to use any rudder to make the landing.

Bill throttled the engine and started to glide to the ground. He hoped that he would miss the

three hundred foot flagpole standing somewhere between his plane and the field. That caused him some anxiety for a while, and then he realized that he must have passed it. His plane was now a short distance from the lighting truck.

Bill leveled off and let his plane sink to the ground. As the wheels hit, he felt the plane veer to the right. Bill gave it all the left rudder that he could. The turn to the right ceased, but he had over-controlled and a left turn started. He tried his right rudder and found it to be ineffective as formerly. The plane turned rather sharply and ended in a ground loop.

Fortunately they were not traveling very fast when the ground loop took place, so that no damage was done. Bill did not even attempt to taxi up to the line. He stopped his engine and turned to Breene.

"What in the name of all that's good and holy did you do to this plane?" he shouted.

"What was the matter, Lieutenant?" asked Breene in reply.

"Try the right rudder and see what you think," responded Bill.

"Fry me for a porterhouse steak! What do you know about that?" said Breene after trying the rudder. "The left rudder works all right, but the right rudder just isn't."

"That's no news to me," replied Bill. "I found that out soon after we left the ground. What I want to know is what's the matter with it."

By this time the other pilots and mechanics had arrived at the plane. When Bill ground-looped in the beam of the searchlight everyone on the field saw the plane make the abrupt turn. They naturally thought that he had blown a tire or crushed a wheel as a result of turning too sharply.

"Is that the way that you were taught to land an airplane?" asked Bob Finch as he stepped up to the plane.

"Can't you even make one good landing on your home field?" asked Kiel.

"We thought that we might have to order the meat wagon out," said Goldie.

"How about this night flying, do you like it?" asked Batten. "I will give you instructions in landing at night if you want."

"Don't let him do it," interjected Goldy. "He might lose his way and land you up at Sacramento. I'll teach you."

"Go ahead and rag me, you bums," replied Bill. "One thing is sure, if I find the rat that has been tampering with my rudder control, I'll kill him on the spot."

"What's the matter with your rudder?" asked Captain Smith, who had come up during the conversation.

"I have no right rudder at all. I haven't had any since just after I left the field."

"Get out and let me see what the trouble is," said Smith.

Bill climbed out and Smith took his place in the cockpit. The others stood silently by while Smith tried out the controls. Finally Smith tried to see into the cockpit with the instrument lights, but found they were not powerful enough.

"Has anyone a flashlight?" he asked.

"Here's one," replied Sergeant Barney, the Chief Mechanic.

"That's the most peculiar thing that I ever saw," said Smith after throwing the beam into the cockpit and trying the rudder. "I wonder how that came to be put there?"

"What is it, Captain?" asked Bill.

Smith did not answer, but instead went head first into the cockpit. He squirmed around for a while with his feet in the air and then started working his way back again.

"Here it is," he said when he had resumed his normal position.

He held a small board in his hands.

"What has that to do with it?" asked Bill.

"That board evidently fell or was placed in front of the rudder bar," said Smith. "When it dropped in place, it exactly fit the space between the right side of the bar and the front cross members of the fuselage. The result was that you could not have pushed your right foot forward without breaking the cross members of the fuselage."

"I wonder where it came from?" asked Bill. "Breene, who was working on this plane with you?"

"Corporal Grabo and a recruit. I don't know the recruit's name. Who was he, Barney? You sent him over."

"Dixon," replied Barney.

"I wasn't in the cockpit at all," said Grabo. "Let's get Dixon and find out what he knows."

"I sent Dixon in to do some K. P. work," said Barney. "He was in the way out here and balled up everything that I gave him to do. Roll the plane back to the hangar, you men."

"One of you men go to the barracks and bring Dixon to the office," said Smith as he walked away.

Captain Smith was in his office when Bill arrived. He sat down and waited as he was interested to learn why that piece of board was in the plane.

"Come in, Dixon," said Captain Smith after a while, and Dixon entered.

"Dixon, did you ever see this board before?" asked Captain Smith as he handed the board across the desk.

"I can't say that I have, Captain," replied Dixon.

"Were you working in the cockpit of Airplane Number 1 this evening?"

"Yes, I was," replied Dixon. "Come to think of it, I did have a piece of board with me, but I don't know if that's the one, for I left it in the cockpit."

"Why did you leave it there?" asked Smith.

"Barney told me to clean out the cockpit and I couldn't find a dustpan," said Dixon. "I took a piece of board with me to gather up the dirt. I had just started to look for the dirt when Sergeant Barney called me. I left the board there so that it would be handy when I returned. I didn't know that anyone wanted the board or I would have put it back where I found it. It looked like a piece that someone had thrown away."

"Now listen to what I say," said Smith. "Hereafter, don't you ever leave anything in any airplane which doesn't belong there. This little piece of board came near wrecking an airplane tonight. It might have caused the pilot and a mechanic to lose their lives had it not been for good headwork on the part of the pilot. Just remember that. That's all."

Dixon was obviously too astounded to speak. He was a recruit and knew nothing about airplanes or their workings. To him a piece of board was just a piece of wood, and there was no more harm in leaving it in the plane than there was in leaving it in the old farm wagon back home. He saluted and withdrew.

"Well, there's the whole story," said Smith. "There's nothing more to be done about it as far as I can see. It is unfortunate that there are such things as recruits, but we can't have old soldiers without their first being recruits."

"I hope that the next recruit practices on someone else's plane," said Bill.

As Bill left the office he stopped to read the notices on the bulletin board. Aerial gunnery the next day, all pilots to be on the field at eight o'clock. Bill liked aerial gunnery and looked forward with pleasure to the next day's missions.

Seven-thirty the next morning found all the pilots at their planes. Each was testing out his engine or standing by while the mechanics checked up on the synchronizing gear and guns. The targets which were to be used were pieces of floating wood in Drakes Bay. Other pilots were designated to do shadow shooting—that is, shoot at the shadow of their own or another plane on the water.

Three planes of Bill's flight were scheduled to take off first. The planes, engines and guns were ready, ammunition had been placed in the boxes and the pilots were sitting in their cockpits waiting for the starting time. One of the planes had already commenced moving across the field for the take-off when a messenger ran out onto the field and stopped it.

The plane returned to the "dead line." The pilot stopped his engine and climbed out. Bill Bruce was in his plane and noticed the proceedings. What it was all about, Bill could not imagine. The operations order had been explicit in time and what was to be done. The time for starting was passed. Smith was exceedingly particular about missions starting on time and yet the flight was held up. Bill decided to find out why.

"What did that messenger say to you, Bob?" asked Bill when he reached Bob Finch's plane.

"Told me it was the Captain's orders that we stay on the ground until further orders," replied Bob.

"Did he say why or when we would go up?" asked Bill.

"He just said what I told you and nothing more," said Bob.

"I will go over to headquarters and see what I can find out," said Bill as he walked away.

"Where's Captain Smith?" asked Bill as he entered the Adjutant's office.

"He left for Corps Area Headquarters a few minutes ago," replied the Adjutant. "He gave instructions just before he left to hold your planes on the ground until he returned."

"What's it all about?" asked Bill.

"I don't know anything more than you do," replied Maxwell.

Bill returned to the planes and gave instructions for the pilots to shut off their engines. There was nothing more to do but wait until Captain Smith returned. The officers sat around and each gave his version as to why they were held on the ground. Finally, after a wait of about three-quarters of an hour, Smith returned in a motorcycle side car and went into his office. Bill hurried over to the office to get such information as he could.

"Take a look at this," said Smith as Bill came in.

He handed Bill a telegram to read.

"Salem, Oregon.

"Request airplanes for use in detecting and preventing forest fires stop Over two hundred fires now burning in northwestern part of state stop More breaking out all the time stop Smoke pall so bad that regular lookouts can not see through stop Unless help is secured I am afraid that most of timber in state will be burned stop

OLCOTT,
Governor."

CHAPTER X—CLOUDS ON THE SISKIYOU

"Orders are being issued for the Squadron to leave for Eugene, Oregon, where we will establish temporary headquarters," said Smith. "We will leave tomorrow morning. That is, part of the Squadron will leave in the morning. The motor transport will leave at daybreak. I will take off with 'B' Flight at soon after daybreak as we can get away. Bruce, you will leave with your Flight when you have straightened up the airdrome. We will probably be gone all Summer, so make arrangements accordingly. Some of the planes will probably operate from other places than Eugene, but just where I cannot determine until I have a conference with the forestry officials after my arrival. Everybody make the necessary plans to carry out the instructions just outlined."

That was all there was to the orders. The Squadron Commander of "B" Flight would take off, the enlisted men would leave with the motor transport and "A" Flight would follow as soon as it had closed up the buildings and made the necessary preparations for the safety of the property. Bill Bruce had no idea how long these preparations would take, but he hoped that he would be able to get away on the same day as the rest of the Squadron.

For the remainder of the day the Squadron personnel were busy with the multitudinous details attendant to their departure. Their first task was the removal and storage of the bombs and

ammunition which had been installed in the planes for the gunnery practice. The machine guns were taken off and packed away. The radio sets were tested to insure their perfect working condition.

It was no easy job to select the proper equipment and clothing which should be taken along. The personnel did not know the conditions under which they would live in Oregon and accordingly had a very sketchy idea as to what would be required. In this they could get help from no one and each worked out the details according to his own ideas.

The transportation was thoroughly inspected and the necessary spares put aboard each truck. It was decided to leave the searchlight truck at the home station, as it was far too heavy for mountain roads and bridges. The radio trucks were taken along, and with them all ground radio sets. Everyone realized that radio communication would have to be used continuously between the planes and any bases which might be established.

The next morning Bill found that the truck train had departed long before his arrival. All of the Squadron messing facilities, tools and spares for the airplanes and engines, officers' and men's personal equipment and surplus flying equipment were in the trucks. A short time afterwards Captain Smith left with "B" Flight.

Bill Bruce immediately started to work, using the officers and men of his Flight to clean up the airdrome and close the hangars and other buildings. It was a long, tedious task, but was finally completed. At eleven o'clock the planes were lined up ready for the take-off. Bill taxied his plane to the end of the field and the others joined him in proper position for taking off in formation. He had five planes in his Flight. One of his pilots was absent on leave and would join the Squadron at Eugene at a later date.

The Flight took off and, once in the air, the planes swung into their proper places. Bill was leading and the other planes placed themselves along the sides of a large "V." Each plane was slightly above and uncovered the one in its front so that the Flight looked like a flock of ducks as it flew across San Francisco Bay.

The first part of the trip took them to the north end of the bay. They passed over a portion of the fertile Napa Valley and then crossed the coast range at an altitude of about five thousand feet. Here they obtained their first extended view of the broad Sacramento Valley. They flew for miles over the level floor of the valley. Here and there they saw or passed over a small village or a railroad, but the greater portion of the flight was over large ranches.

Their course brought them closer and closer to the Sacramento River. At first it had been well off to their right and could be distinguished only by the trees along its banks, but as they progressed they gradually came closer to it and could make out the bridges over which the roads and railroads passed. They noticed that the towns became more numerous as they flew parallel to the river and railroad.

The Sierra Mountains, with their snow-capped peaks, marked the eastern boundary of the valley. Mount Lassen, the only active volcano in the United States, thrust its head well above the surrounding mountains. Straight ahead of them Mount Shasta seemed to stand as a direction post indicating the proper course for them to fly.

They reached the rough, broken country at the head of the valley and crossed the Sacramento River. Bill here changed his course slightly so that they would pass to the west of Shasta. The hills beneath them became higher and higher and their slopes were thickly covered with rocks. The river wound its way through the hills far to the west, only to appear unexpectedly beneath them as they climbed for more altitude to pass over Castle Crag.

The terrain rose abruptly from the river to the top of Castle Crag. This enormous mass of rock thrust itself almost vertically into the air and culminated in numerous pinnacles of solid rock. It was easy to see how it had obtained its name, for the general impression obtained when looking at it was that of a gigantic stone castle. Its peak was composed of many sharp needle-like points some seven thousand feet above sea level.

On the northern side of the Crag the country dropped abruptly into Shasta Valley. They were close to Mount Shasta by this time, and although flying along at about eight thousand feet, they had to look up into the air to see the snow cap of that peak, which was some fourteen thousand feet above sea level. The sides of the mountain were covered with trees for the first five or six thousand feet above the floor of the valley, but beyond that the timber thinned out until the mountain was bare for the last three or four thousand feet.

At the foot of Mount Shasta they passed over a logging camp nestled in the thick forest. Ahead of them stretched the floor of Shasta Valley, but they could not see the far end as it was covered with clouds. For the next fifty miles Bill wondered what he would do when he reached those clouds. He knew that the valley ended at the range of mountains along which the Oregon-California boundary extended. He could not cross those mountains unless he could get at least four or five thousand feet altitude.

Bill led the Flight toward the railroad, for he knew that it made its way through the mountains and he hoped to follow it. The planes reached the clouds and dropped down to thirty-five hundred feet to get under them. From that point on Bill followed the tracks. On both sides the mountains rose well above the railroad.

As they progressed the ground rose and tended to meet the clouds until they were soon flying along with barely any space between the planes and the timber-covered mountain sides. The railroad tracks followed the course of the stream, which flowed down the valley. The valley became narrower and the tracks climbed higher up on the mountain sides. At one point they passed a train standing on a siding waiting to pass another coming from the opposite direction. The passengers were standing in the vestibules or looking out of the windows at the planes as they passed. The pilots passed so close that they could see the minutest details of the people on the ground. It seemed to Bill that he could almost have touched the train as he passed.

The valley was gradually getting narrower—the trees were higher and the planes had less

room for maneuvering. Bill turned around to see how the other members of his Flight were getting along. He was following the middle of the valley and had plenty of space for maneuvering, but the flank planes were too close to the trees for comfort. The Flight was limited in its movements by the clouds above and the V-shaped cut through the mountains below.

As they gained altitudes the valley twisted and turned. Each twist and turn had to be followed with great care by the pilots. The Flight began to string out on account of the confined space in which they were flying, the danger of hitting a mountain side or of running into one of the other planes. The curves of the railroad and the stream became more abrupt until Bill found it difficult to anticipate the next turn he would have to make with his plane.

It was getting harder and harder to follow the railroad. Bill thought that they should soon reach the crest of the mountains and start to go down the other side, as the railroad by this time was almost in the low clouds.

All of a sudden Bill saw that the tracks made a complete one hundred and eighty degree turn ahead of him. The tracks had been steadily climbing to gain altitude, and now in order to gain more they turned back on themselves. Bill knew that he had led his Flight into a blind valley. He must turn around and follow the tracks, but where did they lead?

Bill had to make a wing overturn and come back, head on, at the other planes. Each plane in turn slid over to the side of the valley as Bill approached, but it looked as if he would surely collide with one of them before he passed the last. However, he cleared by inches and was maneuvering to pass the last plane when he saw that the railroad went into a tunnel.

It is bad enough to have to follow a railroad through a twisting, winding valley with barely enough room to handle the plane, but when that railroad runs into a tunnel, then the leader of the Flight is up against it to know just what to do. Bill had this situation confronting him. He did not want to back-track down the valley, for the clouds by this time might have settled down and shut off all possibility of getting out. Something had to be done, however, and must be done at once. The mouth of the tunnel was getting closer and closer.

The side of the mountain disappeared in the clouds above the tunnel. There was no way to tell how high that mountain extended above the bottom of the clouds. Bill could see the trees with their trunks below the clouds and their tops hidden, but that did not help any. He saw a deer, standing at first in an opening between the trees, suddenly turn and bound out of sight when it overcame its fright of the throbbing engines. Bill right there wished that he could change places with that deer.

He headed his plane straight at the mouth of the tunnel and then, just before reaching it, pulled back on the stick and went up into the clouds. Once in the mist, with all view of the ground cut off, he hesitated about what to do next. If he leveled off too soon he would crash against the sides of the mountain. If he held his plane in a climbing position too long, it would fall off into a spin. He tried to hold it at the same angle at which he had entered the clouds and hoped that it was sufficiently steep to follow the contour of the abrupt slope below him.

Bill held his plane in the climb for an appreciable period of time. He thought that he must have crossed over the crest of the Siskiyou Mountains and, accordingly, pushed forward on the stick. One of two things lay below him, either the side of the mountain or a level valley. In one case he would crash into the mountain, but in the other he would come out safely into the open. Which it would be, Bill had no means of knowing.

CHAPTER XI—INTO THE SMOKE PALL

When Bill Bruce went up into the clouds and disappeared from the view of the other pilots in his Flight, for a moment the men in the planes following were stupefied. It took some time for them to realize why this seemingly unnecessary dangerous maneuver had been performed. Then they came to a point where they saw the mouth of the tunnel and they could visualize what was ahead. They had no time to question the motives or judgment of their leader, for the tunnel was in their immediate front and other planes were thundering in their rear. They had no choice but to follow Bill Bruce. If they tried to turn, they would run the chance of colliding with the following planes. So each pilot in turn zoomed his plane into the clouds.

The Siskiyou Mountains run almost east and west, separating the Shasta Valley from the Medford Valley. Their crest conforms for that short distance, almost exactly with the boundary between Oregon and California. The railroad winds and twists in all manner of bends as it makes its roundabout way to the crest of the range. To one flying above the tracks, the curves seem unusually abrupt, but there is no other route for the tracks to follow in crossing the mountains. The only alternative is an exceedingly long tunnel through the base of the mountains. The expense of such a tunnel would be prohibitive on account of its great length, while the tunnel now used through the crest is really a very short one.

The railroad passes between two peaks. On one side is Pilot Knob, a trifle over six thousand feet high and exactly on the border between the two states. This peak received its name from the old pioneers who used it as a landmark to guide them over the Oregon-California trail. It stands well above the surrounding mountains and has a peculiar shape which makes it unmistakable after once having been seen. On the other side of the tracks is Ashland Peak, seven thousand feet high.

Bill Bruce saw from his map that these two peaks were somewhere nearby, but their exact location he did not know on account of the clouds. In order for him to get down into the Medford Valley safely, he must pass between these two almost prohibitive obstacles. The sides of all the mountains in that area are covered with large rocks, which are interspersed with scattered trees. Such was the country over which Bill Bruce was leading his Flight through the clouds.

As long as he continued in the direction which he was traveling when he entered the clouds, he would be all right. However, if he deviated from that course the slightest, he would surely crash into the sides of the mountains. Such was the most hazardous situation into which Bill had led his Flight. Bill had gone into the clouds blindly, but once in them he realized the many obstacles into which he had unintentionally led his Flight. He himself might make it through with little trouble, but could the other members of his Flight also do it?

Bill came out into the Medford Valley and breathed a sigh of relief. As far as he was concerned, he had passed through the dangerous zone safely, but the others were still in the clouds. He wondered if he should start flying in a circle and wait for the other planes; but such a maneuver was unnecessary, as he had no more made his entrance into the valley than the first two of the following planes came into view. They were flying with the same distance and interval between as when they had entered the clouds. They were followed almost immediately by the other two and the Flight was soon in formation again, headed toward their destination.

The clouds broke ahead of them and they had glimpses of clear sky. They passed over Ashland and Medford, the two largest towns in the valley, and saw the extensive orchards covering the valley. Ahead Bill saw another range of mountains barring his way to the north, but he did not anticipate any difficulties in crossing them. His planes were now light on account of the gasoline that they had used in coming from San Francisco, and they had a clear sky ahead.

Bill led the Flight on a direct compass course for Eugene. If everything went along smoothly he would make it, but if he encountered head winds, some of the planes might run out of gas before they arrived. The pilots climbed steadily to cross the mountains ahead, while the railroad disappeared to the west and entered the Rogue River Valley at Gold Hill. When he reached an altitude of seven thousand feet, Bill made an inspection of the country ahead.

There was nothing but mountain peaks as far as the eye could reach. The sides of the mountains were covered with timber, and that timber made a never-to-be-forgotten impression on Bill. It spread over the undulating ground like a rich, velvety, green rug. Clearings were few and far between. The streams and rivers wound their way through the valleys, making the rolling green covering even more beautiful. It was hard to believe that the trees over which he was flying were two or three hundred feet high.

Here and there the smooth surface of the timber was broken by small clearings. Each of these marked the place where some hardy homesteader had settled in the woods and was making a home for himself and perhaps his family. For the most part they were along stream beds where they could get water. Some of the clearings had evidently been worked for longer periods than others, for they were much larger. The houses and barns which had been erected appeared quite diminutive on account of the large trees standing near by.

Then other open spaces in the velvety green stood out to greet his eye. These were also in many cases the work of man, but from such far different causes. Large white snags stood like gaunt tombstones marking the glory of once mighty trees. These snags could have resulted from only one thing—forest fires. Where the fires were of recent occurrence, the ground was still burned black, but in the older fire areas the second growth timber had made its appearance and the ground was covered by the small trees with which nature hoped to restore the forests to their former grandeur.

Then, again, there were areas where man had left entirely different marks resulting from his activities. The second growth timber had covered the bare places, but there were no snags present. These were places where the land had been cut over for lumber. In some cases the sawmills were still operating and Bill could see the smoke coming from the stacks of the boilers. He could make out the tracks of the narrow gauge which hauled the large logs to the mill and the donkey engines working some distance from the mill, furnishing the power by which the logs were snaked to the narrow gauge tracks or to the slides.

When slides were used to send the timber down the mountain sides, they showed up in a distinct, straight brown streak through the timber. Bill saw one of these slides operating later on and was astonished at the speed at which the enormous logs thundered down the track. The logs passed with express train speed and the friction with the track was so great that many of them were smoldering from the heat when they reached the bottom.

Here and there Bill saw what he thought was the smoke of a forest fire. There was no mistaking a fire when it was large, but there were other columns of smoke ascending which Bill could not identify. They might be coming from other sawmills or they might be small fires.

Off to the right stood Mount McLoughlin, thrusting its head well above any of its neighbors. Later on, during the patrol, many times Bill was to welcome the sight of that peak. It was ninety-five hundred feet high and its top was almost always covered with a snow cap.

Suddenly Bill became aware of the fact that he could not see very far ahead. There did not seem to be any clouds in the sky, but the visibility became extremely limited. Gradually the haze grew thicker around them. It had the distinct odor of burning timber. The Flight had entered the dense smoke pall which covers the Northwest section of our country during the forest fire season. It has not the appearance of clouds, but is just as impenetrable to the eye. Clouds vary in color from white, through gray to black. At times they have a distinctive greenish tinge which always is indicative of hail being present. The smoke pall has a dirty, grayish brown color which tends toward a golden hue when the sun shines on it.

By this time Bill had led his Flight quite some distance from the railroad. He had not seen any possible landing fields since leaving the Medford Valley. The smoke pall had taken away some of his self-confidence. He wanted to get back closer to civilization. Bill changed his course so that he would soon meet the railroad again.

The Flight had now been in the air for over three hours. The tanks held gasoline for a trifle over four hours. Bill knew that they would soon have to land for gasoline. He looked to his left for the railroad, but could see no signs of the usual open country which bordered the tracks. As the

country beneath them was wild and thickly wooded, Bill headed the Flight still farther toward the west to reach those tracks.

The smoke pall did not have a definite lower surface as clouds have, but gradually changed into a haze and thinned out close to the ground. Bill was gradually losing altitude and suddenly, through the haze, he saw a small town. He flew towards it and then circled around to pick up the landing field. He studied his map and knew from the configuration of the town, the river flowing by, that he had reached Roseburg. Another circle and he saw the landing field. Bill gave the signal for breaking formation and landed.

A gasoline tank truck was waiting for the planes when they taxied to the end of the field. Apparently they were expected, but how did anyone know that they were going to land there, when Bill himself did not know it? Bill set out to satisfy his curiosity.

"How did you know that we were going to land here?" he asked the driver of the truck.

"Captain Smith told me that you would probably get in some time about three o'clock," replied the driver.

"What time did Captain Smith come through?" asked Bill.

"It must have been around eleven o'clock. It was before lunch anyhow. They all went into town for lunch and left here about one-thirty."

"The lucky dogs," said Bill. "We haven't had any lunch so far, and from all indications we will not get any. Fill us up as soon as you can, for I want to make Eugene this afternoon."

In a short time the pilots and mechanics were busily engaged in filling the tanks in the planes. Some pumped gasoline into the tanks, while others put in oil. The water in the radiators was checked, inspections made of the various parts of the planes and everything possible done to insure a safe trip into Eugene.

"How long a hop to get in?" asked Bob Finch.

"Just sixty miles," replied Bill. "We ought to make it in forty minutes easily. There's nothing to the trip now, for we can follow the railroad if we have to."

"I surely was surprised when you went into the clouds back there," said Bob. "I was following right on your tail and looked around to see how close the other planes were. When I again looked to see your plane, it was gone. Then I saw that tunnel and I didn't know what had become of you. I soon figured it out that you had hopped the ridge. I had no idea how high that range was when I went into those clouds, but I hoped for the best."

"I couldn't very well turn around," said Bill. "There wasn't room enough. I had no other choice."

"The planes are all serviced," said Batten, who had just walked along the line of planes.

"We will take off in ten minutes. Same formation," replied Bill.

They followed the tracks for the greater part of the trip to Eugene. The country was fairly open along the railroad, with many small towns at intervals. Streams and creeks ran down from the timbered hills and crossed the tracks to join large rivers which emptied into the Pacific. The farther north they flew, the more dense became the smoke. Appearances would indicate that the Governor was right when he said that there was danger of the whole timbered area burning.

Bill saw the Willamette Valley open up ahead just as he reached Cottage Grove. It was the first real open country that he had seen since leaving the Medford Valley. The other valleys had been so narrow that they looked entirely too small to amount to much from the airman's point of view, but Willamette was wide and had numerous farms, orchards and open spaces. It was a real valley, but after their flight from San Francisco to Roseburg the pilots knew that such wide-open spaces would seldom be found in the Northwest woods.

Almost immediately after losing sight of Cottage Grove, Bill saw several railroads converging and knew that Eugene was not far off. A little later he jumped his plane over a small ridge and the city lay almost at his feet. He saw the airdrome with the other Squadron ships and led his formation low toward the flying field. He made a circle of the town and then gave the signal for landing.

The planes came down to the ground, the pilots and mechanics jumped out of the cockpits and the planes were lined up with those from the other Flight. The Squadron was united again. It was ready for the strenuous work of aerial forest patrol.

CHAPTER XII—A FOREST PATROL BASE

That night the officers and enlisted men secured living accommodations in the town. After the truck train arrived, the enlisted personnel would all be quartered in tents on the aviation field. In the meantime they must occupy temporary billets in the hotels.

The next morning the Squadron personnel were out at the aviation field quite early, for there was much work to be done. The only available buildings on the field were a large frame structure which was to be used as a storehouse, and a small one which was to be used as headquarters. The officers were installing the furnishings required to change the frame shack into an office. The mechanics were working on the planes, performing the necessary maintenance and servicing required after a flight.

Batten, the Engineering Officer, was making arrangements to insure the planes being in serviceable condition the next day. Maxwell, the Operating Officer, was busily engaged in plastering maps of Oregon all over the walls of his office. Liggett, the Radio Officer, was checking radio sets on the planes and supervising the erection of a radio hut some distance away from the landing field proper.

Bill was inspecting the planes of his Flight when he heard someone say, "Hello, old-timer, who would have expected to see you here?"

Bill turned and saw Earl Simmons, the corpulent forest supervisor from the Cascade National Forest.

"I never expected, when you drafted me as a fire-fighter, that I would make it a profession, either," replied Bill, as he shook hands with Simmons. "How did they pry you away from your bailiwick in the woods?"

"We are going to have a conflag here to determine how you people can help us save what's left of the timber," replied Simmons. "Cecil is or will be here, and Elliot, the State Forester, will represent the state. I am glad that you came up and hope that you can stop this run of fires that we are having."

Just then an orderly came up and said: "Captain Smith presents his compliments and requests that you report to him in his office."

"I guess that this is the conflag," said Bill. "You had better come along."

Upon arriving at the office, Bill saw that Smith, Kiel, Maxwell, Cecil and another man, probably Elliot, were already assembled. After introductions and greetings all around, the group settled down to business.

"Gentlemen," said Cecil, "the fire situation in this state is more serious than it ever has been before. Every day new fires are breaking out, and the old ones are getting larger. The smoke pall is so dense that the lookouts cannot see through it. Accordingly new fires get very large before they are reported and we send out a crew to fight them. Smith, what can you do to help us out?"

"I am not very well acquainted with the fire situation, how you handle the problem, or the organization which you have to work with," replied Smith. "I suggest that you outline to me on the map your present working organization. Then I will have something to guide me when I make a proposal. If I suggested anything now, it would be like shooting in the dark."

Cecil and Elliot then outlined on the map on the wall the limits of the National Forests, and marked the location of the forest supervisors', rangers' and wardens' headquarters and the lookout stations.

"The lookout stations, as you can see, are located on the highest points in the vicinity," said Cecil. "All such stations are connected to the nearest headquarters by telephone. A fire is located from two or more stations. They make intersections on the smoke and read the azimuth. This is reported to headquarters and a fire-fighting crew is immediately collected to go out and fight the fire. If it is an exceptionally large one and is hard to get under control, either the supervisor or warden usually makes a reconnaissance of the fire to determine the best means of fighting it. That must be done on horseback or foot and takes, in some cases, several days. At the present time the lookouts are not of much use on account of the smoke."

"As I see it," said Smith, "we can help you in detection and suppression of fires, but not much in the prevention."

"I am not so sure about that," said Cecil. "As soon as it is known that the airplanes are patrolling the forests, people will be more careful not to start the fires. The planes will have a great psychological value."

"Perhaps so," replied Smith. "The first thing that I want is a liaison officer from your service to stay right here and represent your department. We cannot talk your language and you can't talk ours. In a short time the liaison officer will be able to talk both."

"That's all right," said Cecil. "I think that I will have Simmons stay to start you out right and later replace him with someone else. Does that suit you, Earl?"

"Suits me O. K.," replied Simmons.

"With Simmons here," said Smith, "we can start a set of maps which will show the fire situation at a glance. All the fires can be marked on the map in different colors."

"I have a suggestion to make in that connection," said Cecil. "In order that a standard set of colors be used, we should all have red pins to designate new fires that are verified; yellow pins for new fires not verified; green pins for permanent smokes such as logging camps, sawmills, etc., and black pins for fires that are burned out. In that way there will be no confusion."

"So be it," replied Smith. "So much for the maps and the liaison officer. Now my next suggestion is that we send out two patrols a day from here, one going south to Medford and the other north to Portland."

"That will be all right," said Cecil, "provided that these patrols cover the areas having the greatest fire hazard. Let's work it out on the map."

It took some time to work it out satisfactorily, as Cecil wanted to get the patrol to cover the greatest possible amount of timbered area and Smith had to be sure that the routes covered areas where there were at least an occasional emergency landing field; that the routes would normally take but two hours to cover; and that they would end near a sub-base where the planes could be serviced with gas and oil. The patrols finally agreed upon were:

1. From Medford over the Cascades to Eugene and return over almost the same route.
2. From Eugene over the coast range to the west of the Willamette Valley and end at Medford. To return over approximately the same route in the afternoon.
3. From Eugene over the Cascades in the morning to Portland, and back over the coast range in the afternoon.

As the period of greatest fire hazard was during the middle of the day, it was agreed that the patrols should start out at nine o'clock each morning and land at the sub-base about eleven, and taking off again about one o'clock, be back home at about three.

"How will you send in the information that you get?" asked Cecil.

"By radio," replied Smith. "I also have a suggestion on that. I am bringing up several extra sets. Why can't you hire some amateurs and have them run sets in each forest? In that way the Forest Supervisor would get the fire data as soon as it was sent. We would save a lot of time if we

did."

"An excellent idea," said Cecil. "We will do it. When will your sets be available?"

"As soon as the truck train gets in," replied Smith. "Probably the day after tomorrow."

"What data will be in the message?" asked Cecil.

"We might just as well fix up a code now as any time," said Smith. "We will have a standard sequence for all messages. All data to be in code if possible. KA starting the message would be the attention call. Then VAI or the call letters of the ground station being called. FFF signal that a fire was discovered. NF or OF meaning a new or old fire. T followed by the number of the township. R followed by the range number. A followed by the estimated size of the fire in acres. W followed by the estimated strength of the wind in miles an hour, and abbreviation of direction, as N for north or SE for southeast. PA followed by the number of the patrol, and finally AR, meaning the end of the message. How does that suit you? That is my Radio Officers' idea. Liggett gets the credit for that if it is accepted. A complete message would be received KA KA KA VAI VAI VAI FFF NF T26 R7 A300 W15 NW PA3 AR AR AR. Then station VAI would know that a new fire in Township 26, Range 7, burning over 300 acres. The wind was 15 miles an hour from the northwest and Patrol Number 3 was reporting it."

"Its all right for us," said Cecil. "It gives us all the information that we need."

"The patrols will send in messages every five minutes regardless of the number of fires that they discover," said Smith. "That will enable us to keep track of their whereabouts. I don't want any planes landing in the timber and not knowing approximately where they are."

"I also suggest that the Liaison Officer should send in a complete report of all fires discovered by telephone as soon as the plane has landed," said Cecil. "I will have additional liaison officers at Medford and at Portland."

"That's all right," said Smith. "I am going to establish ground radio stations at both those places in addition to the one here to receive the messages that come in and check them when the plane lands."

"When can we get started?" asked Cecil.

"We can make patrols tomorrow," said Smith. "There will be no radio on the ground to receive any messages, though. I would suggest that you send up some of your men in the planes tomorrow to act as observers and check on the fires now burning."

"That will be fine," replied Cecil. "I am not so sure that we have located all of the fires now burning. That reminds me, how about special planes occasionally for special patrols to enable my men to get data as to how best to fight large fires? They could surely make the tour of a fire by plane in thirty minutes to two hours that now would take us several days on horseback or on foot."

"Whenever you want one," said Smith. "We will always have one plane in the airdrome waiting for such service."

"You may not appreciate it, but that is going to be a big help," said Cecil. "In order to fight a fire efficiently, we must know the topography of the country. That enables us to efficiently locate our fire lines. It is always better to stop a fire on a natural barrier such as a stream, the crest of a mountain, a road, or an already burned-over area than in the middle of a forest. The forester in the plane can also get the wind direction and nature of the wood burning. It makes a big difference if the fire is in second growth timber, virgin woods or brush."

"That is an easy request," said Smith. "A plane will be ready any time. Bruce, I am going to send Goldy and two planes from your Flight down to operate from Medford. You make all the necessary arrangements. The rest of the Squadron will operate from here. Simmons, you had better get Goldy and tell him what it's all about from your viewpoint. The first patrol will start out at nine tomorrow. Bruce, you take the south patrol, and Kiel, you take the north one. Goldy will start for Medford at the same time and patrol the Cascades on the way down."

"I will have my men here at that time," said Cecil. "I will send down a liaison officer with Goldy in one of the planes."

"Can't be done," said Smith. "Two mechanics will have to go down to work on the planes."

"I'll pay the transportation of one of them on the railroad," said Cecil. "He can go down on the evening train."

"That will fix it," said Smith. "I don't care how the mechanic gets there, so long as he is there to service the planes."

"Well, Simmons," said Bill as they left the office, "it looks as if you had bought yourself a job."

"One thing is certain," replied Simmons. "I will know a lot more about airplanes when this Summer is over than I do now."

"And I will know a lot more about your forests," replied Bill.

CHAPTER XIII—THE AERIAL FIRE PATROL

Bill Bruce had no conception of the size of the State of Oregon until he started out on his patrol the next morning with Forester Kotok. His patrol route covered the Siuslaw and Umpqua National Forests. Starting southwest from Eugene, it led to Marshfield on the Pacific Ocean and then turned to the southeast to Medford. On the return trip the turning point was almost due west of Medford and then direct to Eugene. Both the outgoing and return flights covered a distance of about two hundred miles. Normally it could be expected that a two hours' flight would be sufficient for the two hundred miles.

When a pilot is flying a forest patrol, he cannot always fly the direct route. He diverges from his course to accurately locate and secure the limits of each fire which he sees. Then, again, the smoke pall may obscure the tops of the mountains and require for safety's sake that the plane be

flown through valleys or around peaks to reach the destination. Thus on most patrols, while the flight could be made in two hours if the sky was clear and there were no fires located, during the fire season the plane might be out as long as three or even three and a half hours.

The general elevation of the terrain over which Bill was to fly was about four thousand feet, but here and there mountain peaks stood above the five thousand foot mark. The area was almost entirely devoid of habitations and completely covered with a dense growth of timber except where logging companies had operated or fire had left its terrible scars.

Before leaving the ground, both Bill and Kotok provided themselves with maps of the southwest corner of the state. These maps were mounted on boards so that they could be easily handled in the plane. Kotok desired to accurately plot the limits of every fire seen during the flight so that a record could be made of the fires then burning. Accordingly, Bill looked forward to a flight of three hours, if not more, before they reached Medford.

They had no sooner left the ground and headed over the large expanse of unbroken timber before Bill realized that he was going to find it rather difficult to accurately locate himself on the map. There was a strange similarity between the different sections of that area. The mountains were all covered with timber, roads were few, there were no railroads at all after leaving the immediate vicinity of the airdrome and the details of the ground all looked the same. He realized that he would have to orient himself by the rivers and streams or become hopelessly lost.

The smoke pall made it practically impossible to distinguish the few landmarks which were present. Everything was considerably dimmed by the smoke. He had the choice of flying under the smoke and skimming the tree tops or of flying above the smoke and dropping down through when a fire was sighted. During the first part of the patrol Bill flew under the smoke.

The first forest fire was sighted before they had been twenty minutes out of Eugene. The smoke rising from the burning timber joined to that already hanging in the air made an impenetrable barrier ahead of the plane. Bill guided the machine around the area, while Kotok obtained data as to its size, nature of material burning and the limiting natural features. Bill then flew a short distance north to the railroad in order to accurately locate the fire. It was a rather small fire, covering between two hundred and three hundred acres.

After getting the data concerning the first fire, they continued on their patrol. They picked up one fire after another. Some were quite large and evidently had been burning for a considerable time. Others were small, which would indicate that they had started but recently. At times it was necessary for Bill to fly right over the fires as they were bounded by high mountains with peaks extending into the smoke pall.

While flying over the burning timber, Bill thought that he could hear the crackling fire above the deafening roar of his engine. The trees sent pillars of sparks and smoke high into the air when they fell. The heat was intense and the air so rough that it was terrifying. The air conditions put a severe nervous strain on Bill, for there was always the possibility of his engine cutting out. If that had happened the plane would have been forced to land right in the midst of the burning trees, for with the limited ceiling the plane was just clearing the tree tops.

The bumps threw the plane around so violently that Bill was kept busy continuously working the controls. One wing dropped and Bill threw the stick across to bring it up. Before he had the plane level, the nose went down and the plane dropped at a terrific speed right toward the burning inferno below. Several times they missed the tree tops by inches. However, Kotok, at first more or less nervous on account of the conditions under which they were flying, was soon hard at work making his notes.

The heat from the fire finally sent the plane up with a bound into the smoke cloud overhead. Once in the cloud, the fire became a glow against the haze and then finally disappeared. Bill turned and looked at Kotok for instructions as to what was to be done next. If Kotok was through with that fire, they could continue the trip. If not, Bill must dive through the smoke and brave the turbulent air above the burning timber again. Kotok gave a sign which Bill interpreted as meaning that he was through. Bill headed his plane along the patrol route.

Gradually climbing, they soon emerged above the smoke cloud. They had reached an altitude of seven thousand feet. The ground was hidden, except when occasional mountain peaks penetrated through the cloud. For a while they flew along above the cloud, following the compass course. Then Kotok pointed to the right and Bill turned in that direction.

There was a peculiar hemispherical hump protruding above the general level of the upper surface of the smoke cloud. It looked like a mushroom thrusting its top through the ground. As they came nearer they could see that there was a violent disturbance of air around that hump. The smoke had a golden glow which indicated a fire beneath. The much needed data could never be obtained without dropping through the cloud. With the troubles and dangerous flying conditions which Bill had encountered above the last fire still fresh in his mind, Bill hesitated about plunging down into the unknown.

As long as they remained above the smoke, Bill could see what was ahead of the plane and all dangers of crashing into mountain sides was eliminated, but driving a plane down into that thick smoke was different. They had been sent out to get information, however, and that data could not be obtained without seeing the fire. Accordingly Bill pointed the nose of his plane down and hoped that they would not run into anything before emerging from the smoke into the murky air beneath.

Bill was not so sure that he was going to like forest patrol flying if it necessitated much of this blind navigating. A little of it was not so bad, but when a pilot was required to fly for mile after mile through the muck and haze of countless fires, it put a different aspect on the subject. Bill endeavored to get a glimpse of the ground beneath as he circled down to the fire, but it was impossible. He was up against a proposition of putting his entire trust in Lady Luck. If she was with him, they would come out all right. If not, then it would be too late to worry.

Lady Luck was kind and the plane came out into a small timber-covered valley. The fire was

some distance away and Bill turned his plane towards it. He had enough ceiling under the smoke to fly around the fire without any appreciable danger. The first impression they had was that only a small area was in flames, but as they flew around it was apparent that this was a large fire. Bill had no idea how Kotok was going to locate it on his map. Just where they were, Bill did not know. He had lost his location when they went up through the smoke twenty or more minutes before.

Judging from the manner in which Kotok jotted down notes, he knew the location accurately. He may have obtained it from the small river which twisted around between the mountains, or it may have been the bald, rocky peak on one of the mountains which oriented him. In any event, this district was entirely similar to all the others as far as Bill was concerned. Bill had to admit that he was lost. He knew that the ocean was off to the west thirty or so miles and he could reach it by flying a compass course. In the same way he could reach the railroad by flying in the opposite direction, but that did not help in getting the accurate location of such a fire as this one was. Bill estimated that it covered at least two thousand acres.

When Kotok had completed his work, Bill again headed in a southwest direction. Suddenly they came out over a small bay opening into the ocean. Bill made several circles to get the lay of the land. He saw a railroad crossing the bay and continuing to the south along the bay shore. He located himself at last. They had reached Coos Bay.

Bill reluctantly left the low ground along the bay shore and headed back into the timber-covered mountains. The smoke pall was not so thick as they progressed to the south. There were fewer fires and accordingly they made better time; with the decrease of the haze, Bill was able to fly at a higher altitude and thus they could cover a much greater strip of the forest in their search. That was more like the flying that Bill had depicted that aerial patrol would be.

They skirted a mountain and came out into a valley. A stream and railroad ran along side by side in the valley. From there on the flight was easy. The railroad led into Medford and they landed about thirty minutes after picking up the railroad. The flight had taken three hours and a half, but even at that they were both on the ground removing their flying equipment before Goldy's plane came into sight.

"How many fires did you locate?" asked Bill when Goldy had climbed out of his plane.

"We picked up twenty-four," replied Goldy. "How many did you get?"

"Eleven," replied Bill. "I can't very well see how fires can be started in the country we came over. We must have flown for a hundred miles without seeing a single sign of any habitations."

"I guess you are right at that," commented Kotok. "The area we flew over and will go over again this afternoon is perhaps the least explored of any in the United States. The southwestern part of Oregon has practically no settlements and there is no excuse for anyone going into it unless he is a timber cruiser or a hunter. A man could get lost there and he never would be found. He would have to find his own way out."

"What's a timber cruiser?" asked Goldy.

"A man whose business it is to make estimates of the amount of timber in a woods," replied Kotok. "The logging companies usually have timber cruisers go over a section before they start operations. Thus they can form an idea of the amount of lumber they will be able to get out."

On the return trip Bill and Kotok flew deeper than ever into that little-traveled section of the state. The afternoon sun threw its beams onto the leaves and made the green carpet of trees passing beneath the plane seem like a beautiful picture. The fires were very few for the first part of the trip and the flight very pleasant, but after they reached Rusty Butte and turned to the north, conditions changed. It was there that they ran into the smoke cloud again and had more dirty flying.

They reached the Umpqua River and had but fifty more miles to do when they saw an enormous fire. The ceiling was so low that they had to fly along just above the tree tops, and from that low height could see the men working around the fire. It also was apparent that the fire was confined to a bend in the river where the river turned almost back on itself. Thus by building a fire lane across the bend the fire would soon burn itself out. Bill at once saw the great value that an airplane reconnaissance would be to the man in charge of a fire crew there. In a rough section like that, a man would take hours to work his way through the timber and over the mountains to get that information. Kotok undoubtedly saw in a few minutes the proper place to place the fire break.

They picked up a few more fires before reaching the Siuslaw River. Most of them were small and apparently under control. They had reached the area adjacent to the Willamette Valley. Here there were a few old fires about burned out, but none of those blazing furnaces which threatened the entire forested area like the larger ones farther away.

Bill landed his plane on the airdrome and was glad to be back at the base. It had been hard flying with the thought continuously in his mind that if his engine stopped he would have to land in the trees. It would not have been so bad had the ceiling been unlimited so that he could have gained sufficient altitude to at least try and glide to a burned-over area or land in some second growth timber, but the thought of making a landing in the tops of trees which were two or three hundred feet above the ground was not so pleasant.

"Did you get them all?" asked Bill as they walked to the operations office.

"I think so," replied Kotok. "My map shows twenty-three fires."

"How did you locate them without any landmarks?" asked Bill.

"You may not realize it, but I have been operating in this country for a long time," explained Kotok. "I have been fighting fires here for the past seven years. These mountains all mean something to me and they all have different shapes, covering of trees or rocky formations by which each is distinguished from the others."

"They all looked alike to me," said Bill. "Perhaps, before the season is over, I will be able to tell one from the others, but not now."

CHAPTER XIV—DOWN IN THE TIMBER

The patrols over the forest continued day after day. As the planes landed, the master map in the operations office became more and more spotted with its colored pins. The number of pins constantly increased, but the colors changed with the condition of the fire. Everyone was working to have the pins all black as soon as possible, for black pins meant that the fire was out and therefore presented no further danger.

The truck train arrived and the added equipment which it carried made operations easier for everyone. The enlisted men pitched a camp in a grove of trees adjacent to the flying field. The tents were all in the shade. A large tent with a fly covered the kitchen and storeroom. Wooden tables and benches were built for messing. A large tent fly was erected over the tables to provide shade and keep out rain, if any should come.

Radio stations were established at Eugene, Portland and Medford. With the establishment of these stations, the reports of fires were almost instantly received and sent to the forest supervisor concerned. The smaller sets were sent out to the forest headquarters for use of the amateurs. This further expedited the reporting of fires, as it was no longer necessary to rely on the telephone lines, which in some cases might lead through as many as five or six centrals.

The amateurs operating the sets in the forests were usually boys on vacation from school or college. They were eager to get out into the woods and much interested in the radio. Their enthusiasm and interest materially assisted in the efficiency of the radio. Accordingly, it was very seldom that an amateur station was reported as being out of order or the operator not on the job.

The number of new fires decreased each day and the fires reported were controlled much sooner than before the Squadron arrived. However, the crying need was rain, and lots of it. The woods were dry as tinder and a single spark was sufficient to start an enormous fire. This was especially true in the sections well out beyond the line of habitations bordering the valleys. A general rain would dampen the ground in the forests and at least tend to prevent fires from starting.

The hot Summer days also increased the fire hazard by driving more vacationists into the woods. In spite of everything that the Forest Service did, some of these campers would go away leaving their campfire burning or throw burning matches or cigarette stubs into the woods. It was a constant fight to try and secure conformity to the fire rules and regulations.

Simmons returned to his forest for a short time and returned with a story which showed the psychological value of the airplane patrol. He was in his office one morning when a camper came in and asked for the forester in charge.

"I am he," replied Simmons.

"I came in to give myself up," said the camper.

"What for?" asked Simmons.

"I left my campfire burning this morning when I left my camp, and that airplane patrol flew over a little later," replied the camper. "I know that he saw the fire, and I also know that he saw me coming down the trail. He would catch me sooner or later, so I am giving myself up."

"We will go right back and put out that fire," said Earl.

As it happened, the airplane observer had caught the fire and reported it by radio. Simmons and the camper returned to the camp site and the camper extinguished the fire. Then Earl escorted him to the county seat, where a judge fined the camper for not extinguishing his fire. It was all over within a few hours, but the camper had learned a lesson.

The airplane observer might or might not have been able to see the camper going down the trail in his automobile, but that did not enter into the case. The whole proceeding showed that the average camper knew of the airplane patrol and was accordingly more careful.

Some time later Goldy was on patrol from Medford. He had not been out for more than twenty minutes when he picked up the smoke of a new fire. The location and size were sent in by radio and picked up by an amateur at the supervisor's headquarters in the Umpqua Forest. The warden left immediately for the location reported and found a homesteader burning slashings.

After extinguishing the fire, the warden escorted the woodsman to the nearest judge. The case was tried, the man found guilty and the fine imposed without delay.

The airplane observers picked up the smoke five minutes after the fire was lighted. The amateur operator picked up the message and notified the warden almost immediately. Twenty minutes later the warden was on the scene and the fire was extinguished. Another half hour and the case was being heard in court and sentence pronounced. Thus within an hour after the fire was started the man had been convicted and had paid his fine. He never knew how the fire was discovered and why the warden had arrived so quickly until it was all over. It mystified him, for things had happened so quickly. The warden explained to him how the observers were flying overhead with all-seeing eyes and could discern even the smallest of slashing fires. It was rather a bitter pill for the woodsman to swallow, but he had learned that when forest regulations were published it was expected that they would be obeyed.

"Bruce," said Captain Smith one day, "I want you to go out on a special patrol. There are a few fires along the crest of the Cascades which we are not getting. Fly a course from here to Mount Thielsen, turn there and then go direct to Medford. Return over the same route. If you start now, you will get into Medford about eleven o'clock."

"Who will I take along as observer?" asked Bill.

"All the regular observers are on routine patrols," replied Smith. "You will have to take one of the mechanics who can operate radio."

"I'll take Sergeant Breene, then," said Bill.

"That's all right. Go ahead," agreed Smith. "Your patrol number will be five."

"Get your flying togs," said Bill Bruce to Breene. "We leave in five minutes."

"What do we take in the plane?" asked Breene. "I have not made any of these trips yet."

"You put the equipment in the plane every time that it goes out," said Bill. "Why ask me that?"

"That was different," replied Breene. "I didn't have to go on any of those trips."

"Two canteens filled with water, two emergency ration outfits, two revolvers and ammunition," ordered Bill. "I will take care of the maps and pencils."

In a few minutes they were on their way. For some time the low smoke cloud had made it necessary that they follow the Middle Fork of the Willamette River. The sky cleared materially by the time that they reached Diamond Peak, but did not allow them to get as much altitude as Bill would have liked. They picked up several small fires, which were sent in by radio after Bill gave Breene the data in code form. It was too much to expect that a mechanic could accurately report on forest fires while flying over absolutely strange country. Breene was now finding it just as hard to locate himself accurately as Bill did on his first trip.

All traces of the smoke had disappeared when they reached the Umpqua River and Bill climbed to the nine thousand foot level. The mountains to the south stood out distinctly in the sky. Directly in their path were Mount Thielsen, ninety-one hundred feet, and Mount Bailey, eighty-three hundred feet high. Mountains with their tops above the seven thousand foot level were numerous. To the east the visibility was almost unlimited and one range after another sloped off from the Oregon High Desert further to the east.

Before reaching Mount Thielsen, they passed over Diamond Lake. It was located in a valley between Thielsen and Bailey. Just why lakes should nestle in the valleys along the crest of this high mountain range, Bill could never understand. In California there is a long chain of lakes which extends from the middle of the state to the Oregon line. These lakes are also located amidst the highest peaks of the Sierras. It is a topsy-turvy condition of topographical features that allows water to be plentiful among the mountain peaks where it should run off, and have extremely arid land down in the plains.

Bill's thoughts were far afield from his engine as he cruised along over Diamond Lake. He had about ninety-five hundred feet altitude and everything was running smoothly. There was no reason why he should think of his plane. Also there was no reason for looking for forest fires, as they had not seen any for the last twenty or thirty minutes of the flight. Bill was brought back to the business at hand with a jerk. His engine started an intermittent miss.

He looked under the plane for a possible landing field. There was none. The lake was out of the question as the timber came right down to the water line. He had no idea of the nature of the country ahead of him and reasoned that it might be even worse than that which he had already passed over. He had no option, he must turn back.

With the start of the turn, the missing increased alarmingly. The engine was now giving just enough power to keep the plane in level flight. Bill tried to retain the altitude that he had, for, seemingly, he had a long distance to go before he could find any kind of a place to land his plane. He remembered having flown over a burnt-over area some distance back and headed in that direction. The area was covered with snags and second growth timber, but it was better to take a chance in that than in the towering trees which covered the ground under him.

The engine sputtered and spit as if showing its displeasure at being made to work when not in perfect condition. The R.P.M.'s steadily dropped until it was doubtful if any power at all was being obtained. Meanwhile the plane continuously lost altitude. Bill scanned the terrain ahead, vainly seeking the burnt-over area. He knew that if it did not show up soon that he could never make it, for they were now gliding along with an almost dead engine.

Bill tried to picture the results if they were forced to land on top of the giant trees. He pictured the plane supported by the mass of limbs some two or three hundred feet above the ground. Suppose that it turned out that way, how could they get down? The lowest limbs were usually a good hundred feet from the ground. They did not have any ropes of any kind with them in the plane. He thought that they might use the wire controls from the plane in an emergency, but he hoped that he wouldn't have to. Then the thought came to him: suppose that they became stranded on the tree tops and could not get down. They would starve to death.

In the meantime they dropped below the surrounding peaks and were gliding over the valleys. The burnt-over area came into view as a small speck in the distance. It was a big question whether or not they had altitude enough to make the distance.

Down, down, down dropped the plane. The trees came closer and closer to the landing gear and the distance to the burnt-over area decreased slowly. If they made it, the margin would be a scant one. Bill pulled back on his stick so as to save every foot that he could. The plane seemed to be barely moving forward, but they were not dropping so fast.

It was nip and tuck all the way, but they finally cleared the trees along the near edge by inches. Bill tried to pick out the most likely place to land, but it was a problem, for there was no likely place. Large, grotesque, weather-beaten snags stood up everywhere. Then Bill saw a small section with the snags widely separated and made for it. The plane missed some tree trunks, skimmed over the second growth timber for a few yards and then settled down until the wheels hit. When the landing gear became entangled in the small branches, the plane went up on its nose and then dropped down bottom side up.

CHAPTER XV—ON FOOT MILES FROM ANYWHERE

As the plane started to turn over on its back, Bill debated as to whether or not he should unfasten his safety belt. The somersault of the plane had come so suddenly that he did not have time to do much debating and had left it fastened. When the plane came to rest, he was glad that he had.

Both Bill and Breene were suspended head downwards from their cockpits. While they hung

there the loose articles in the plane showered all around them, falling to the ground. Bill then looked carefully around and saw that they were some six or seven feet above the ground. It was too great a distance to fall on one's head, and therefore great care had to be exercised in loosening the belts.

"Be careful when you loosen your belt," said Bill. "You will hurt yourself if you fall that distance on your head."

"But, Lieutenant," replied Breene, "I can't hang here forever. The blood is rushing to my head. I am not a blooming monkey."

"Let your conscience be your guide," said Bill. "I am going to try to get down feet first."

"Just how does one get his feet past his body from a position like this?" asked Breene.

"That's what I am trying to figure out," replied Bill.

With the plane upside down, there was nothing for the hands to grasp to support the weight of the body. The cockpit was so small that Bill could not force his head and shoulders alongside his waist. Then again, gravity working against his every move, made it more difficult. Finally Bill hooked his feet under the rudder bar and opened his belt. The force of his weight falling that short distance pulled his feet from the bar and he found himself doing just what he had tried to prevent—falling head first.

"Be sure and go down feet first, Lieutenant," he heard Breene say as he dropped.

Bill stretched out his hands and landed on them. The force of the fall was taken up on his arms and shoulders. He was out of the plane. O. K. Breene watched Bill fall and then opened his belt. As he dropped he doubled up like a ball. He hit on his shoulders and rolled over on his back. Both were out without any physical injuries.

"Lieutenant, I have been flying with you for some time," said Breene, "and I must say that you have picked out better landing fields than this one."

"Depends upon the way that you look at it," replied Bill. "Compared with the rest of the country hereabouts, I think that this is probably the best landing field in the vicinity. In fact I am glad to have had the opportunity of trying it out."

"Which way do we hike?" asked Breene.

"All I know is that it is a long way to civilization," replied Bill. "We will take our canteens, emergency rations, pistols and the airplane compass. With the compass and the map, we ought to be able to hit the Umpqua River. We can follow it down until we reach some sort of habitation."

"How are we going to get the compass?" asked Breene. "Everything but the compass seems to be here on the ground waiting to be picked up."

The compass was just beyond their reach, even though they stretched to their utmost. Finally Bill stood on Breene's back while the sergeant was on his hands and knees and was able to get his hands around the compass. He yanked, twisted and pulled, but the instrument board was stoutly built and the compass could not be budged. All this time Bill was moving around on Breene's back with the heels of his shoes digging into Breene. Breene stood it as long as he could and then squirmed. Bill lost his balance but clung to the compass. When the confusion was over Bill was sitting on the ground with half the instrument board in his hands. They had secured the compass.

"No matter which way we go, we are going to have some rough traveling," said Bill, as they stood by the plane. "We can follow the creek off to the east and hit the river, or we can head to the west and hit another creek and follow it to the river. The latter route is shorter, but I doubt if we find any trails either way."

"You are the boss," said Breene. "You select the route and it will be all right with me."

"We are on our way," said Bill, and headed out through the underbrush to the west.

Each had his canteen, emergency rations and pistol. Breene carried the compass and Bill had a map mounted on a board.

"By the way," said Bill before they had gone far enough to lose sight of the plane, "did you send in any radios?"

"Sure I did," replied Breene. "I sent in one when the engine first started to cut out. I sent one every few minutes afterward. The last one I sent said that we were about to land in the timber."

"Did you give them any location at all?"

"I told them that we were over a lake when the engine started missing. Then I told them that we had turned around. They were the only locations that I knew anything about. I never saw this country before, Lieutenant."

"Perhaps they will be able to figure about where we went down, and perhaps they won't," said Bill as he started ahead again.

The traveling was rough, for the woods were practically devoid of trails. Once in a while they would come across a game trail, but these animal paths seldom led in the direction which the two marooned aviators wished to go. The high hills and mountain sides prevented them from selecting a compass course and sticking to it. They were continually turning and veering around to miss obstacles.

Bill figured that they should reach a stream running to the north about five miles from their plane. It was about eleven o'clock when they started walking and they had not reached the stream by one. The five miles shown on the map as the distance to the creek was in a direct line, but just how many miles Bill and his mechanic had walked, neither one had any idea. However, the stream had not been reached.

Finally they arrived on the top of a ridge and sat down to rest. They could see that the ridge pointed east and west. Accordingly the streams in the vicinity must run the same direction. Where was that stream toward which Bill had been heading?

He studied his map as they sat there and was convinced that the plane had landed several miles farther north than he thought. Actually it made no difference, for all of the streams in the district flowed into the Umpqua. After a short rest they started down the end of the ridge and came to a stream. No matter what happened now, they were assured of water.

The going was harder along the stream bank than through the timber. Streams have a habit of picking out the most impossible places to cut through hillsides, wash away soft ground and form ravines or deposit large stones and boulders. If the airmen were not floundering around in mud, they were slipping over rocks or climbing up steep banks. All of these obstacles were in addition to those normally found in a forest, such as tangled vines under foot, thick underbrush, numerous tree trunks and a myriad of ferns. It was a case of forging ahead as best they could.

Both of the airmen still wore their helmets and summer flying suits. The helmets protected their heads from the sharp points on the branches, and the flying suits protected their uniforms. Bill tried to follow their route down the stream on his map, but had to give up. There were too many small streams in that country which were not indicated on the map. About sundown they stopped for a longer rest period.

"When do we eat?" asked Breene.

"Right now if you want to," replied Bill.

"What will I eat?" asked Breene.

"You have an emergency ration, eat some of that."

"I am not that hungry," said Breene. "I tried one of those some time ago and it tasted like sawdust mixed with sausage finely ground and then baked. I'll save mine until tomorrow."

"It probably won't do either one of us any harm to go without eating tonight," replied Bill. "We still have a long distance ahead of us before we get to civilization. I think that we may as well stay right here and shove on tomorrow."

"How far do you figure that we are from the railroad?" asked Breene.

"About fifty miles air line," replied Bill.

"I think that you are right, Lieutenant. We can't get there tonight."

"I have never tried sleeping on pine needles," said Bill. "As I did not bring any mattress or blankets along, I think that this will be a good time to see how soft a bed pine needles make. My feet are sore after that walk. I am going to soak them in the river."

They took off their shoes and soaked their swollen feet in the water. The rough ground had left its mark of blisters and rubbed spots on their feet. Neither one was wearing shoes fitted for hiking through the mountains and neither one could have walked much farther that day.

Bill picked out a place in the woods where the rocks stood out above the ground and built a fire. He had just gotten it well started when he heard a shot back in the woods.

"Did you shoot, Breene?" he called.

"Just getting my supper," replied Breene, who appeared a few seconds later with a mountain grouse.

"That looks much better to me than the emergency ration," said Breene, as he held the grouse up for Bill's inspection.

They cleaned and plucked the bird, and then Bill was about to put it on a pointed stick to toast when Breene interrupted him.

"Wait a moment, Lieutenant," said Breene. "We must have salt on our meat."

"Where are we going to get it?" asked Bill.

"Right here," replied Breene as he fished in his pocket.

"How come the salt in your pocket?" asked Bill.

"I have never forgotten the time that you and I were lost in Mexico without any salt," explained Breene. "No offense to you, but I always carry it now when we go out together."

"I am glad that you did this time," said Bill.

"Slide this stick through the bird," said Breene. "Now we can hold it over the fire and rotate it so that the bird will cook on all sides and not burn."

They sat in silence while the bird sizzled and cooked over the fire. Occasionally Breene would take a sharp stick and test the meat to see if it was sufficiently cooked. Finally it met his requirements and he removed it from over the fire.

"I hope that we do not run out of the grouse country until we reach the railroad," said Bill as he ate the meat off half the breast.

"I don't find this hard to take at all," remarked Breene. "It gets dark quickly down in the valley, doesn't it? A few minutes ago I could see the sun shining on that peak across the way, and now it is almost dark. I am going to dig a hole in these pine needles, get a drink from the river and turn in."

"That walk tired me out, too," said Bill. "I am going to do the same. I think that we had better keep the fire burning, for I don't want any more bears using my camp as a thoroughfare like they did the last time I was up here in these woods."

"Are there bears here?" asked Breene.

"Lieutenant Finch and I only saw about three," replied Bill.

"I don't think that I will go to bed," said Breene.

"They won't hurt you if you do not hurt them," said Bill.

"You may know that, I may know it, but do the bears know it?" asked Breene. "No, sir, I am going to sit right here by the fire all night."

"Suit yourself," said Bill, and curled up in the pine needles.

CHAPTER XVI—A LOOKOUT STATION IN THE MOUNTAINS

Bill found it rather hard to get to sleep. The pine needles were not as soft as they seemed at first. Then there were the usual noises that are ever prevalent in the forests. The creaking trees, falling branches, small animals wandering through the darkness hunting for food, and occasionally a larger animal coming down to the river for water. Each in turn gave Breene a start

and he was continually calling to Bill.

"What's that?" asked Breene on one of these instances.

"What and where?" asked Bill sleepily.

"There," replied Breene, pointing into the darkness.

Bill looked in the direction which Breene pointed and saw a pair of shining eyes. They had the bright shine and green tint of a cat's eyes. Coming out of the darkness they looked as large as two baseballs. Bill was wide awake after looking a short time into those luminous spots standing out against the otherwise dark background. The impression that he received as he looked into those eyes was both fascinating and terrifying. They must belong to one of the various species of mountain lions, thought Bill.

"Maybe this will make him stop staring at us," said Bill as he aimed at the eyes with his pistol and pulled the trigger.

The roar of the explosion echoed back and forth through the woods and broke the stillness of the night. Immediately following the sound of the pistol the woods became alive with moving creatures. Apparently the campfire had attracted all manner of animals which, at the sound of the pistol, found business elsewhere which would tolerate no delay. The shining eyes were gone.

"Go out and take a look to see if I hit him," said Bill.

"Not on your life," replied Breene. "I have a distinct aversion to cats at night, more especially in the dark. It can wait until morning."

"I haven't lost anything out there either," said Bill as he moved a bit closer to the fire.

Breene did not sleep much that night. Bill tried to sleep, but did not have much luck as his bed was rather uncomfortable. Both were glad to see the light break over the hills and know that the mysterious noises of the forest would no longer bother them.

"I don't know what you are going to do, Sergeant," said Bill, "but I am going to take one of the cakes of chocolate from my emergency ration and make myself a cup of chocolate to drink."

"I would greatly prefer coffee for breakfast, but I can stand chocolate," replied Breene.

They used the cups from their canteens and heated up their drinks. It was rather a slim breakfast, but was better than none. A few minutes later they were striking through the brush along the stream bank. The stream became much larger as they progressed and they also encountered an old trail which they found passable in spots. It was much better than struggling through the virgin woods.

They had been traveling some four or five hours since leaving their camp when Bill heard the drone of an airplane engine. He stopped and listened. The stream they were following was deep down in a valley with high hills on both sides. He could not possibly see that plane unless it flew directly overhead. Bill thought that if he could get a glimpse of the plane he could form an estimate of his present location. It would not do much good in regard to cutting down the distance which they still had to go but it would satisfy his curiosity. The airplane apparently was still some distance away.

"Breene, I am going up on this mountain to see the course that plane is flying," said Bill. "You wait for me here at this stream junction. I will be back in a short time."

"I would have thought that you had seen enough airplanes in your life without climbing mountains to see another," said Breene. "I will wait for you right here."

Bill climbed up to the top of the ridge. He was afraid that he would not reach the summit in time. The airplane was not far off when he had first heard it and would probably be out of sight before he reached the crest of the ridge. Bill crashed through the underbrush like a scared deer. He reached the top of the ridge out of breath. He had not stopped on the way up to listen for the plane, so had no idea whether or not it was still within sight. He came out into an open space which had recently been burned off and saw the plane.

The airplane was circling around a mountain top but a short distance away. At first Bill could not figure out why it was circling. There were no signs of forest fires, but when he studied that mountain the reflection of the sun on a highly polished surface met his eyes. In a few seconds it disappeared. He examined the top of the mountain very carefully and was sure that there was a lookout station on the top of that ridge. Bill wished that he had brought the airplane compass with him so that he could get the bearing of the mountain. He estimated the distance to the lookout to be anywhere from four to six miles, but distances looking across depressions are very deceptive. Perhaps it might be ten or twelve miles the way they would have to travel. In any event, he was glad that the plane had circled the lookout to drop its message, whatever it might have been. Perhaps the pilot was throwing over a bundle of newspapers. Bill himself had often done that while on patrol.

After carefully studying the topographical features of the mountain on which the lookout station was located, Bill descended the ridge to join Breene.

"Sergeant, there is a forestry lookout station not over ten or twelve miles from here," said Bill. "I think that we will head for that."

"As far as I can see, that is more than we have been heading for during the past twenty-four hours," replied Breene. "Let's go."

They worked their way around the bottom of the ridge in an endeavor to reach the opposite side without climbing to the top. Several times Bill doubted the wisdom of the proceeding, but once having started, was reluctant to change his plan. He found that he could not tell when he had reached the other side, for there were so many small valleys and gullies coming down from the top. Finally they reached the bottom of a hog-back which Bill thought pointed in the direction in which the lookout lay.

"Give me the compass, Breene," said Bill. "I am going up on this hog-back and get a bearing to the lookout."

"I thought that you might ask for the compass when I hurled it at a wild creature which was about to invade our camp last night," replied Breene. "I had every intention in the world of

getting it this morning, but with the making of chocolate and everything, I forgot all about it, just the same as you did about that big cat which you shot at last night."

"I didn't come within a mile of that cat when I shot last night," said Bill.

"I probably didn't, either, when I hurled that compass," replied Breene.

"A fine woodsman you have turned out to be," said Bill as he started up the hill. "Wait for me right where you are."

Once having reached the top of the ridge, Bill found it difficult to find a space sufficiently open to get a good view. He tried one place after another, but could not get a clear view through the trees. Finally he thought that he had the lookout spotted, but was not sure. The mountain upon which it was situated did not look the same from his present position.

"I am not sure that I have it spotted," said Bill when he returned.

"I know how we can get in touch with them," said Breene.

"How?"

"Start a forest fire," explained Breene.

"Yes, and pay a fifty-dollar fine," said Bill. "Not for mine. Come on, let's go."

Once more they started through the tangled underbrush. Bill tried to keep the sun in the same relative position so that he could keep the proper course. He was glad that the smoke pall did not extend over this section of the state. He led Breene over ridges and valleys, streams and gullies, and never deviated from what he thought was the direct line to the lookout.

They reached the highest point on a ridge and Bill stopped. He wanted to check up on his course. Once again he hunted for an open space and came upon a rocky stretch where there was no foliage. He looked in all directions, but could see no signs of the station.

He was lost. The station had disappeared as if by magic. He started his search all over again. He made a careful scrutiny of the mountain peaks in front of him, but could see no signs of the lookout. He was about to give up and start for the Umpqua River when Breene called to him from the other side of the ridge.

"That's a funny-looking place for a homesteader to live," said Breene as Bill came up.

"Where?" asked Bill.

Breene pointed it out. Bill examined it carefully.

"Why, that's the lookout!" he exclaimed. "It's in exactly the opposite direction from where I expected it to be."

"Is that what you were hunting for?" asked Breene. "Why, I saw that a quarter of an hour ago."

"You would have saved me a lot of worry if you had told me when you first saw it," said Bill.

"We can't miss it now. Let's go."

The station was just across a valley and the going was not so difficult, as they found a trail in the bottom of the valley which led to the top of the mountain. It was late in the afternoon when they came out into the open space which surrounded the lookout station. They saw two buildings, the lookout tower and a small shack, evidently used as living quarters. They walked up to the tower and Bill called out, "Is anybody home?"

"There sure is; come right in," replied a voice from within, but it was a woman's voice.

Bill and Breene entered the small one-room shack and saw a woman sitting at a large table. The sides of the building were open, enabling her to overlook the forest for miles in all directions.

"I believe that the lost are found," she said when she turned and saw Bill and Breene. "Are you the two aviators who dropped into the woods near Diamond Lake yesterday? How did you find this place?"

"We are the same," replied Bill. "I saw something shining in the sunlight when I was on a mountain top about ten miles back there."

"I have been receiving all kinds of messages about you ever since you fell into the woods," the lookout replied. "Telephone first and then the airplane patrol came over this morning and dropped a message concerning your disappearance at the same time he dropped my papers. The shining light that you saw was from my hand mirror. I sent reflections on the mountain sides on a chance that you might see them. Sit down while I telephone in that you are O. K."

While she was telephoning, Bill tried to remember her name. He had heard that there was one woman lookout in the Forestry Service, but had not paid much attention when he heard the name. Now it was gone. The lookout gave him no clue when she telephoned. Her message was simple: "Lookout on Black Rock Mountain speaking. The two aviators who fell into the woods near Diamond Lake just reported in here. Neither one hurt. I will start them down tomorrow morning. Send out someone to meet them on the Tiller trail. Did you get that O. K.? Good-bye."

"I don't imagine that you have had much to eat," she said. "One of you sit here and watch for fires and I will get you some supper. I am about famished myself."

"I'll take care of the station," said Bill. "Breene, you help with getting supper."

When they had left the tower, Bill studied the map. He located Black Rock Mountain and Tiller. They were safe as far as hunger was concerned, but were still many miles from civilization. Just how long it would take them to get back to Eugene he did not know, but he was going to get something to eat soon. That was the big thing right now—food. The trip down the mountains to the railroad could take care of itself. Then Bill remembered the lookout's name. It was Mollie. Lady Luck was riding with him again, for they had found a lookout station in the midst of the wilds of the forest. If Mollie had not been throwing reflections with her hand mirror, he and Breene would now be facing a cheerless, foodless night in the woods.

CHAPTER XVII—BACK AT EUGENE

"Come and get it," shouted Breene when the supper had been prepared.

"How about someone watching for forest fires?" asked Bill.

"There's no use watching any more today," said Mollie. "Most of the fires start during the middle of the day. It is very seldom that I can pick a new one after sundown. There are exceptions to the rule, though. Several years ago there was a maniac who went from one place to another in the forest starting fires. They would break out in the most unexpected places at the most unusual times. It was weeks before we were sure that they were being willfully started, but there was no other explanation which would explain the succession of fires at most extraordinary times. We finally caught the miscreant and that ended further trouble from that source."

"What kind of a man was it who would deliberately set these woods on fire?" asked Bill.

"He was crazy," replied Mollie. "He thought that he had a grievance against one of the foresters and took that means of getting even."

"You must pardon my inquisitiveness," said Bill. "I am trying to learn something about the woods. What kind of a grievance could anyone have against a forester?"

"That's all right," said Mollie. "Ask all the questions that you want. This fellow had a fairly large herd of cattle and used to graze them in the forests on the mountain sides during the Summer months. By doing this he derived several benefits. The cattle were high up on the mountains, where it was much cooler than down in the valleys; there was considerably more grass and other green vegetation in the forests, and the cattle were out of the fly-infested areas of the lowlands. The Forestry Service charges a nominal fee per head for this privilege. The charge varies for cattle and sheep. The half-demented fellow had availed himself of the privileges of the Summer grazing in the forests for several years without our knowing it, but when we found out that he was grazing his herd in the woods, we sent him a bill.

"Even at that, he was getting out light, for the bill only covered the charge for the current year. He took the stand that he never paid before and therefore he had the right to graze in the woods free. He considered it his privilege as a taxpayer. Naturally the Forest Service denied him the privilege of sending his cattle into the forests without paying for it.

"I guess that the poor fellow brooded over the matter for some time and then became a nut on the subject. The only way that he knew of getting back was to set fires in the woods. It was such an unnatural thing to do that we did not suspect him for quite a while. Finally the evidence was piled sufficiently high to convict him.

"He is the only person whom I have ever heard of who has maliciously set fires in the woods. Others have started them through carelessness or have been negligent, but to deliberately burn down the trees of the forests, why I cannot conceive of such a thing."

Bill studied Mollie as he ate the supper of baked beans, potatoes, coffee, bread and jam. He figured that she was about forty years old. The outdoor life had bronzed her skin so that she had almost the coloring of an Indian. Her duties, where she was entirely on her own, far from the help of others, had made her exceedingly quick of thought and action and self-reliant.

"How does it happen that you have the position of lookout?" asked Bill.

"My husband had the position first, and he was killed in fighting a fire," she explained. "I then took the examination and secured the position. I liked the woods so much that I could not give it up. I can think of nothing more beautiful than the sunlight on the leaves of the forest. This is my lifework and I will never willingly give it up."

"Do you stay up here all year around?" asked Breene.

"No," replied Mollie. "That would be too much of a good thing. This peak is cut off from the valley lands after the first hard snow in the Winter. I usually come up during the last of May or the first of June, depending on how hard the preceding Winter was. Sometimes we have had to blast the snow out of the roads with dynamite to get through in June. That is more particularly true of the Sierras down in California than up here."

"Did you have a lookout in California?"

"I had one near Tahoe for a long time, but I decided that I wanted a change and was transferred up here," replied Mollie.

"Don't you get awfully lonely?" asked Breene.

"Never. There is always something to occupy the time. If it isn't forest fires, it is the wild life of the woods. I have seen deer, mountain lions, porcupine, coons, grouse, eagles, and I don't know what else right out here in the open near my shack. Once I saved a fawn from a fire and made a pet out of him. I put a bell on his neck and he stayed around for quite a while. When he was about two years old he started wandering about the forests. He would come back here occasionally, but his visits were shorter and shorter. I haven't seen him now since last Fall. I hope that no one has shot him."

"Have you picked up many fires this season asked Bill.

"This has been the worst season that I have known for many years," answered Mollie. "We haven't had any rain since the middle of May and the woods are awfully dry. It doesn't take much to start a fire. Most of those that I have picked up have been small ones, which were quite easily put out. We are lucky down here in that the smoke pall hasn't reached us yet. It will be down here before the season is over, though, unless we have rain."

They washed up the supper dishes and sat in front of the shack on a bench where they could see the clear sky. The sounds of the woodland wild life which had so excited Breene that night before were ignored by him now. The mere fact that there was a building close by was sufficient to make him disregard everything but his own weariness.

"How often do you go down for supplies?" asked Bill.

"I never go down more than once or twice after the season opens," replied Mollie. "I have a country storekeeper down the trail a piece who brings my supplies up. I think that it is time to turn in, as you boys must be tired. I have nothing to offer you but a couple of blankets. You can roll up in them either on the office floor or out here in the open. Take your choice."

"I think that I will take the open air," said Bill.

"I will, too," remarked Breene.

It was not light the next morning when Mollie woke the two airmen. They were dead tired and slept well. Mollie had breakfast ready when they arose.

"Why didn't you call us sooner so that we could have helped with breakfast?" asked Bill.

"You needed the sleep and I didn't," said Mollie. "You have a long hike ahead of you, while I haven't."

"Follow that trail all the way down the mountain," said Mollie as she started them out after breakfast. "About the time that you reach Boulder Creek, the trail will widen considerably. You will probably meet someone from the Forest Supervisor's office along about noon. Good luck to you."

"Thanks for helping us out," called Bill and they started down the ridge.

The trail was easy to follow and not hard on the feet. Occasionally other small trails would join theirs and they would be doubtful as to which was the proper one, but by keeping moving in a general southwest direction they came to Boulder Creek without losing their way. Here the trail widened and could almost be considered an unimproved road. They rested a while at the creek and then started on.

They had been traveling but a few minutes when they heard horses approaching. Soon they saw them come around a bend in the trail. A mounted man was leading two saddled horses. He stopped as he came up to the two airmen.

"Well, you must have started early," said the horseman. "It is only noon and you have crossed Boulder Creek. I expected to meet you on the other side. My name's Robins. I work in the Forest Supervisor's office."

Bill introduced himself and Breene.

"Well, climb aboard, unless you are hungry," said Robins. "I stopped for a while down the trail and watered the horses and ate my lunch. I also got an early start."

"We can eat the sandwiches which Mollie gave us as we ride along," said Bill as he mounted.

"I don't know much about these creatures," said Breene, as he struggled to get his legs afork the saddle.

"Neither one will run away with you," said Robins.

The rest of the trip was very pleasant. They reached Tiller in the late afternoon and then pushed on to Perue, where they spent the night. The next day they hit the main road at Canyonville and then rode into Myrtleville, where they reached the railroad.

"This is some country," said Breene to Robins. "It took us just a little less than two hours to get to that place in the woods where we landed, and here it has already taken us almost four days to get this far back, and we aren't home yet."

"You don't waste much time when you travel in your airplanes," said Robins. "I cannot imagine getting to Diamond Lake in less than two hours. Every time I have gone up there it has taken several days. I guess that you can find your way home from here. I will start back. Good luck."

"Thanks for the buggy ride," said Breene, and Robins left them standing on the station platform.

A couple of hours' wait for the train and then they were en route to Eugene. The train trip seemed endless, as they were both eager to get back to their quarters so that they could change their clothing.

"You had us worried for a while," said Captain Smith as he greeted Bill at Eugene. "We did not know whether you had made a safe landing or had cracked up."

"I did both," replied Bill. "I made a safe landing, for neither one of us were even scratched, and I cracked up a perfectly good ship so that it will never be flown again. I set it down in the only open space that I could see within miles. That place wasn't any too open. The second growth timber was eight or ten feet high."

"Batten flew down there and saw the plane and noted the character of the country in which you had landed," said Smith. "He also said that had you not selected the spot which you did, your plane would probably be hanging to the tree tops a couple of hundred feet from the ground. We were all much pleased when Mollie, the lookout, 'phoned in that you were O. K. I have already sent down for another plane for you. Batten and Goldy are taking some game to San Francisco. They got a late start but hope to get in tonight. They will bring your plane back with them tomorrow."

"Just think of it," said Bill. "You casually remark that Batten and Goldy are going to fly from here to San Francisco today and come back tomorrow. On that trip they will cover a distance of about nine hundred or a thousand miles. Breene and I have been five days covering a little less than four hundred miles. Give me the airplane every time."

CHAPTER XVIII—THE WEATHER CHANGES

During the next few weeks the patrols became monotonously routine. The hot, dry weather continued and the fires broke out with a regularity which nonplussed the foresters and the aviators. New fires were picked up in spite of the smoke pall, but it was mighty hard work. The aviators were having their fill of flying over the forests, but with each patrol they became more experienced and could locate the fires with an accuracy that was astonishing. It was a question as to how much longer they could stand the strain, for the constant flying over timberland, where landing fields were conspicuous by their absence, showed its effect on the smooth flying of the pilots. The Flight Surgeon had already sent several of them into the woods on vacation to rest, something that they would not do while at the base.

The critical fire situation which existed in the woods was shown by one patrol on which Kiel

carried Forester Oglesby over a particularly bad area. They discovered four new fires all within six miles of a lookout station. One covered four hundred acres and another over two hundred acres, and yet the lookout could not see them on account of the smoke pall. When Kiel thought that he had about half completed the patrol, he handed Oglesby a note asking which direction he wished to go to finish the patrol. Oglesby then returned the paper to Kiel. On it he had written, "Take me home. I have counted thirty-one fires and have seen all that I can stand for one day." Rain was needed, and needed badly to save the woods.

The Weather Bureau predicted rain, and the appearance of clouds indicated that there might be some precipitation, but in the meantime the clouds made the situation further complicated by decreasing the already limited visibility. The smoke and clouds joined together into an impenetrable mass of murky haze. That made the flying much more difficult, but did not assist in limiting devastation of old fires nor in preventing new ones from starting.

"I wonder how much longer this dry weather can continue?" asked Simmons of Bill as they stood out in the airdrome looking into the sky. "There are plenty of clouds, but not much rain that I can see."

"The weather map gives every indication of rain within a short time," replied Bill. "One day's good soaking would put out all the fires that are now burning. It would also wet the woods so that new ones could not start so easily."

"I hate to admit that anyone could be so mean and despicable as to deliberately set the woods on fire, but it certainly looks that way to me," said Simmons. "The fires are breaking out with too much regularity to be accidentally or carelessly started."

"I can't imagine anyone being so malicious," replied Bill.

"I said that I hated to admit that I had such a thought, but I have it just the same," explained Earl Simmons. "You must have studied the fire map and seen how the fires start in one place and then new ones start just a short distance away. This procedure has been continuing now for several days."

"Captain Smith presents his compliments and directs that you report to his office," said an orderly who came up to where they were standing.

"Both of us?" asked Bill.

"Yes, sir, both of you," replied the orderly.

"Something gone haywire somewhere, or Smith would not send for both of us," said Earl as they started toward the office.

"Come in and sit down," said Smith when they entered. "Goldy started a patrol from Medford, but had to turn back on account of engine trouble. Just before he turned he thought that he had spotted an extra large fire between Abbott Butte and Rogue River. He could not verify it. He picked up what he thought was large columns of smoke arising from the timber and then his engine started acting up. He went back. Landed O. K. at Medford. I would like you two to go out and verify that fire."

"We haven't much ceiling," said Earl.

"The fire won't stop burning just because there is a low ceiling," replied Smith. "If it is as big as Goldy thinks it is, it must be a corker. We haven't had any reports of any fires in that vicinity prior to this."

"We'll take off in ten minutes," said Bill. "Can you be ready, Earl?"

"I'll be there waiting for you at the plane," replied Earl.

Bill wondered how he would get to that location and either verify or determine definitely the absence of that fire. The mountains were several thousand feet high. The clouds in the Willamette Valley were but a couple of thousand feet high. He would have to follow the different valleys which headed in that direction and hope that the clouds did not drop down in front of the plane and block his way. He studied the map and made plans accordingly.

Bill secured his flying togs and went out to the plane. Earl was already in the cockpit. Breene was warming up the engine. As soon as Breene was satisfied that everything was functioning properly, he throttled the engine and climbed out of the cockpit. Bill got in and the plane started on its way across the airdrome.

Soon after leaving the airdrome Bill found that the flying conditions were exactly as he had anticipated. The smoke joined with the clouds to form a brownish gray mass of mist and haze that prevented his getting more than three thousand feet above the floor of the valley. If the ceiling did not get any higher than that, he would never be able to make the jump over the passes from one valley to another. However, he would make a good try at it and do the best that he could. He headed the plane toward the Middle Fork of the Willamette River.

The valley was wide enough so that he had no trouble in navigating up to the time that they reached Fall Creek, but beyond that whiffs of clouds seemed to drop below the main mass and threatened to cut them off from the upper valley. When he could, Bill went under the low-hanging clouds, but after a while they hung right on the tree tops. Even at that he sometimes went through, but he could never tell what he was liable to meet on the other side. It was a dangerous proceeding, but could not be helped. Bill's mission was to get to the reported fire, and if it was humanly possible he would do it.

The old Military Road ran alongside the river. This road had been constructed years before when the covered wagons were bringing settlers out over the Oregon Trail. While Bill found the going rather hard, he thought of the greater troubles that the old pioneers had when they traveled the same route. They had no idea what they would find when they reached their destination. Indians might ambush them anywhere along the trail, the trail might become so impassable that they might have to abandon their wagons and proceed on foot, but they forced their way ahead in spite of all obstacles. Bill watched the road turning and twisting its way through the river valley and tried to imagine that he saw a wagon train coming down the valley toward him.

The wagon train in actuality was another low-hanging cloud, and Bill had plunged his plane into it before he came back to the present from the past. He dropped down as low as he dared in an endeavor to see the ground beneath, but the mist must have been right on the ground. Then he emerged from the cloud as suddenly as he had entered it. Below them was a small village called Lookout. They were getting fairly well up into the mountains.

He reached Oakridge, the last town along the road. Beyond the town, the valley turned and twisted with almost unbelievable abruptness. Bill had to keep a sharp watch ahead to prevent the plane colliding with the hills along the valley. He followed its broad sweep to the south. Soon he would reach the place where he had planned to leave the Willamette Valley and cut across the mountains to the Umpqua Valley on the side.

The clouds seemed to remain at about the same altitude above the trees, in spite of the general rise in the ground. He reached the entrance to Staley Creek Canyon and hesitated before entering it, for it looked impossible. He made a circle and then started up the canyon. The plane had gone but a short distance up the Staley Creek Valley before they ran into a terrific rain storm. They could not see sufficiently far ahead to insure their safety. Bill turned back and started down the Willamette again.

Once again he found his path barred. The river valley was completely closed ahead of them by a mist that lay right on the ground. Bill knew that the valley had so many sharp turns that it would be folly to try and fly blindly through that mist. He was in a pocket with no chance of getting out. In the meantime there was the added danger of the rain storm driving down into the area in which he was flying.

Bill searched the terrain and saw another canyon leading to the south. He turned his plane into that and found that it was much narrower than any of the others that he had flown through. The fog seemed to hang higher. Perhaps he might get through. The air became much rougher and with the rough air came a slight rain. Bill flew through the rain and found that the floor of the valley was gradually getting closer to the plane. He could not climb any higher, as the clouds were just above his top wing. In fact at times he flew through the lower patches of mist.

Finally he reached a point where he was missing the tree tops by inches and, before he knew it, the ground had started dropping from beneath the plane. They had reached one of the small creeks which empty into the Umpqua. Bill did not even realize it at the time, for he was busy fighting the bumps in an endeavor to keep his plane from striking the mountain sides. Then all of a sudden it seemed as if the flood gates of the heavens had opened on them, and, to make matters worse, the lightning flashed and blazed all around the plane.

Bill hoped that they would escape being hit by lightning. He had never heard of a plane being hit by lightning and did not want to be an interested party in the first of such cases on record.

The rain fogged his goggles so that he could not see. He wiped the water off with his gloves, but was compelled to use one hand continuously for that purpose in order to see at all. At best he could see only a few feet from the plane. There was no place to land anywhere in sight. In fact, he had not seen a place where even a crash landing could have been made for the past forty minutes. His safety and that of Earl Simmons in the rear cockpit was dependent upon his getting through into the open.

The ground was surely dropping beneath them and Bill was certain that they had now crossed the divide. A steep ridge projected abruptly into the valley. Bill had but a few seconds to make up his mind which way to turn to avoid it. If he turned one way, he would run into the main mountain. If he turned the other, he would come out into the clear. He swung the plane around to the right and hoped for the best.

Then he saw that he had taken the right route, for the valley opened up with another creek coming in to join the one they had been following. For several minutes Bill was busy banking the plane in one direction or another to miss the tree-covered sides of the ravine through which they were flying. The rain continued to fall in torrents. There was one consolation: the forest fires would surely be quenched by this downpour. That thought was consoling, but it did not help Bill in his present situation. He did not know how much longer he could continue to see the ridges ahead sufficiently far to miss them with the plane. He hoped that the rain would cease, the clouds would raise or an open space large enough to land the plane would make its appearance while he still had control of the plane.

CHAPTER XIX—FISHES LARGE AND SMALL

That flight up the Willamette and down the Umpqua was ever afterwards a nightmare to Bill. There were so many times when the difference between life and death rested upon his moving that heavy three thousand pound plane in a fraction of a second. Sometimes he missed an unusually high tree by a fraction of an inch when he was sure that he would hit it. Once he did not miss a tree, but was fortunate in that the landing gear merely smashed its way through the small top branches. Other times he was forced to jump up into the clouds to escape colliding with a hill which suddenly loomed up ahead. It was tough going all the way, with no let-up.

By the time that they reached Steamboat Creek the rain had slackened somewhat and the clouds had risen. The flying was easier, but as far as being safe was concerned, they were far from being out of the woods. The valley still had many sharp bends which could not be foreseen. Bill had to fly that plane all the way and fly it every minute.

They came to a place where the river made a turn of almost a complete circle. For a while Bill was sure that he had turned up one of the tributaries to the river. He did not see how such a large river could meander around so much. Just as he was about to turn back, he saw an exceptionally bright area ahead. River or no river, he would get into that section and get away

from the abominable weather that he had been flying through.

Suddenly the valley opened and Bill saw a railroad track stretching across his path. He was out of the mountains and somewhere near Roseburg. Bill turned along the railroad and instantly searched the ground for the landing field at Roseburg. The rain was now falling steadily, but not so hard. The town came into his view and he circled it several times before he could locate the landing field through the falling rain. Another circle and he dropped his plane onto the ground.

The plane stopped rolling and both Bill and Earl jumped out.

"What a ride," exclaimed Earl.

"Let's put on the cockpit covers and then get out of the rain," said Bill.

"O. K., let's go," replied Earl.

They fished out the canvas covers and put them over the engine and cockpits. Then they crawled under the wings of the plane to get out of the rain.

"I never want another ride like that one," said Bill.

"I will never know how you missed some of those ridges and hills," said Earl Simmons. "Sometimes I never saw them until you had turned the plane and they were under the wing. Then when that extra heavy flash of lightning whizzed past the plane, I thought that we were surely hit. It didn't miss us by more than ten feet."

"The worst part of it was that it blinded me so that I did not see a hill directly ahead," replied Bill. "I came near running into that hill without knowing that it was there. I rubbed my eyes to get them back to normal and there it was almost on top of us. The old bus certainly came around beautifully when I kicked her over."

An automobile drove up to the side of the field and someone started across the field toward the plane.

"I never thought that we would have any spectators a day like this," said Bill.

The man approaching had on a raincoat and large hat, so that they could not see his features. Furthermore, neither one was interested in the identity of the man, as they did not expect to see any friends on such a miserable day.

"Hello, birds," said the visitor. "Where did you hail from?"

There was something about the man's voice which sounded familiar to Bill, but he could not place it. The wing shielded his face from view and Bill edged over to make a more complete scrutiny.

"Came down from Eugene," replied Earl.

"Do you know a chap by the name of Bruce up there?" asked the man.

"If it isn't Sam Crouch," exclaimed Bill. "What are you doing down here? I thought that you were upon your clearing on the McKenzie."

"I also have a shop down here," replied Sam. "I am glad to see you again. How about a fishing trip? You can't fly in this weather, and this rain will continue for several days. What do you say?"

"I am game," said Bill. "How about you, Earl?"

"Nothing would suit me better," said Earl.

"We couldn't get away from here today, anyhow," said Bill. "Let's go into town and we will talk it over."

They rode into town and Bill sent a wire telling where they had landed and that they were held up by bad weather. He ended it by saying that unless there was some urgent need for them back at Eugene, they would stay at Roseburg for a couple of days.

"The fires will be out by tomorrow," said Bill. "They don't need us now, and will not for a couple of days."

"The lightning may start a few new ones," said Earl. "However, no patrols can be made as long as it rains like this, and we will get back before they start in again. The weather man says that we are in for several days of rain."

"Bring on your fish," said Bill. "When do we start, Sam?"

"First thing in the morning," replied Sam. "I will stop at the hotel for you. The salmon have started to run and we can get some salmon eggs for bait. We ought to have a wonderful trip. We will go up by the hatchery. I will see you in the morning. I have to go and round up some tackle."

"Can't we help?" asked Earl.

"No, thanks, I have all afternoon to do it," replied Sam as he went out the door of the hotel.

Late that night Bill received a telegram from Bob Finch at Eugene. It read: "Wait for me. I'll be there in the morning. Bob."

"It looks as if we will get a late start tomorrow," said Bill to Earl after he had read the wire. "I wonder what time the morning train gets in?"

"I think that there is a train that leaves Eugene this afternoon," said Earl. "By taking it, Finch could get here quite early tomorrow."

As a matter of fact, Bill was awakened the next morning by Bob pounding on the door of his room at the hotel.

"How did you know that we were going fishing?" asked Bill after Bob had entered.

"With Earl Simmons along and the hunting season not opened, what else could you do with a couple of days here?" replied Bob.

"Well, you will never guess who is going to take us out," said Bill.

"I give up before I start," said Bob. "Who is it?"

"Sam Crouch. He has a store down here and met us at the aviation field."

"It looks like a put-up job to me," said Bob. "You and Earl, one of the most ardent fishermen in the state, start out for Medford and end at Roseburg, where you meet Sam Crouch, another fish enthusiast. I'm glad that I could horn in."

In a short time they were all in Sam's automobile headed up the Umpqua River. They drove about fifteen or eighteen miles up the river and stopped at the hatchery. Neither Bill nor Bob had ever seen a hatchery before and immediately began asking questions.

"Tell me something about the hatchery and what it is for?" asked Bill.

"I hardly know where to start," said Earl.

"Why do they have hatcheries?" asked Bob.

"To increase the number of fish which are incubated from the eggs," replied Earl. "The salmon lay their eggs in the sand and gravel in the bottom of the rivers and creeks. The eggs stay there until they hatch out. While they are incubating the other fish eat them, in spite of the fact that the large salmon try to conceal them by covering the eggs with sand. Then, again, as soon as the small fish comes out of the eggs, they are in turn prey for the larger fish. You can accordingly see why a very small part of the eggs ever bring forth fish which grow to any size. The hatcheries take the eggs and hatch them out, as you will soon see, in small basins. They hold the small fish for some time and then plant them in the streams. In this way the young fish, called fingerlings, have more of a chance for their white alley."

"How do they get the salmon to come to the hatcheries?" asked Bill.

"They don't have to," replied Earl. "Salmon have a peculiarity which makes it easy for the hatchery people. When spawning time comes, salmon always return to the place where they were born. The young ones gradually work their way down to the sea and go out into the ocean. Just where they go, no one knows, but after a period of three to five years they come back up the streams in swarms. They never mistake the streams, but always come up the one which they went down years before. The Fishery Department has determined this by tagging the salmon and then catching the same ones years afterwards."

"Let's go over to the river and let them take a look at the fish coming upstream," said Sam.

They walked over to the river and Bill and Bob were astounded at the sight. There were thousands of fish working their way upstream. It looked as if a person might walk across the river on fish.

"What happens to all these fish?" asked Bill.

"In the bygone days the Indians used to spear them as they came upstream to spawn," said Earl.

"If you went downstream a ways you would probably find people spearing them now," interjected Sam.

"After they spawn the large fish die," continued Earl. "The banks of all the streams in the Northwest are literally covered with dead fish after the run is over."

Earl led the way to the racks where the fish were caught. The racks were so arranged that the fish could get upstream through the bars, but could not get downstream. Inside this large area there were thousand of salmon which soon enter the hatchery to have the roe removed.

They then went into the hatchery and saw pool after pool so arranged that there was a continuous stream of fresh water running through each one. In some were the eggs. In others there were fish of various sizes. It seemed to Bill that there could not be that many fish in the entire world. The small fish just hatched out were so small that they looked more like young tadpoles than fish. Outside in the racks the salmon were of various sizes, from three feet in length up to four or even five feet. Some of them were tremendous. It was hard to realize that just a few years before these giant fish were as small as the minute wiggly things in the pools in the hatchery.

"Have you seen enough?" asked Earl after a while.

"I think so," replied Bill.

"Come on, then, and we will go fishing."

They left the hatchery and went downstream to a point where a small creek emptied into the river.

Here Earl handed Bill a three-pronged hook and told him that they must get some salmon eggs for bait.

"Put that hook on your line and I will tell you which of the fish to snag. Then you bring it in to shore and we will get the roe."

Bill assembled his rod and threaded his line. He attached the hook and announced himself as being ready.

"See that large fish out there just holding herself against the current?" asked Earl. "Her top fin is just a few inches below the surface of the water. Cast your line over and snag her."

Bill made a cast and missed. He tried again and the hook caught in the top fin. He reeled in on his line and looked around for further instructions, only to see Earl and Sam sitting down on the bank laughing at him. He knew that he had been caught at a tenderfoot trick, but just what it was he did not know.

CHAPTER XX—MORE ABOUT FISH

"What are you fellows laughing about?" asked Bill. "I caught the fish, didn't I?"

"Bring it into shore," said Sam.

Bob Finch was as much in the dark as to the cause of the merriment as was Bill. Bill tried to reel in his line, but the fish would not respond. He fought against every move on Bill's part. Bill soon saw that he had a task in front of him. The fish was snagged in the middle of the body and, accordingly, could use all its power against the pull on the line. If he pulled hard against the fish, he would break his line or snap his rod. If he didn't pull, the fish would run downstream and take the line with him.

It seemed as if every move that he made was anticipated by the fish. Try as he would, he could not get that fish closer to shore. It was about twenty feet from him when he snagged it, and it was still twenty feet away. The fish started to run and Bill gave a yank on the line. The rod bent

almost double and then the tip broke with a snap.

"Bring him in," yelled Earl between peals of laughter.

"Don't let him get away," yelled Sam.

"I thought that you said he was a she," said Bill.

"We must have made a mistake," said Earl. "You have snagged the largest buck salmon in the stream. You have to bring him in now or you will lose your rod and line."

It was all clear to Bill now. They had picked out the largest buck that they could see and had him cast the hook to catch it. They knew that the chances were ten to one against his landing it. Bill made up his mind that he would bring that fish into shore even if he broke every section of his rod.

It was not such an easy job, but little by little he worked that buck salmon into shore. The closer it came, the more astonished he was that he could move it in the water. Finally he had it in close enough for Bob to catch in his hands. Bob picked up the struggling fish and was covered with a shower of water.

"What shall I do with it?" asked Bob.

"Take out the hook and throw it back," said Earl. "We can't get any eggs from him."

Bob released the fish and it went scurrying through the water to join the numerous others which were moving upstream.

"You did better than most of the other tenderfeet who come up here," said Earl. "Ordinarily they break their rods and lose their lines and never bring the fish anywhere near the shore. You landed your fish and you ought to be proud of it. We will get a boat here and go fishing."

They walked a short distance down the river and came to a place where a boat was tied up to shore. A man was standing by the boat.

"Tom," said Sam, "drive the car down to the highway bridge. We will meet you there some time this afternoon. Did you bring the rifle?"

"Here it is, Sam," replied Tom.

"We'll see you later then," said Sam.

"What are you going to do with the rifle?" asked Bob after they had started to float down the river.

"Get some salmon eggs for bait," replied Sam.

"You can't fool me again," said Bill. "I'll let Bob shoot the salmon eggs."

"This is no joke this time," said Earl. "It is the easiest way to get them."

"Do you want to shoot first, Bob?" asked Sam.

"I'll bite, but what do I shoot at?" asked Bob.

"I'll pick out the fish and you shoot it," said Sam.

He handed Bob the rifle and pointed to a fish near the boat.

"Get that one," he said.

The fish was within four feet of the boat. It seemed to Bob that he could touch it with the muzzle of the rifle. He aimed at the fish and fired. Just where the bullet went was a mystery to him. The fish never even budged from its position. One thing was certain: he had not made a hit.

"I aimed right at that fish," said Bob, "but never hit it. Are there any bullets in the gun?"

"Look at this one before you load," said Sam as he handed Bob a cartridge.

Bob examined the cartridge. Apparently it was all right. Once again he aimed at the fish and fired. Another miss. Bill was just as mystified as Bob. There was no doubt that the bullet went into the water, but it certainly did not hit that fish.

"Let me try it," said Bill.

Bob handed the rifle to Bill and sat down to watch the proceeding. Bill loaded the rifle and took careful aim. The boat was steady, so that there was no reason why he should not make a hit. He aimed right at the fish and carefully squeezed the trigger. He watched expectantly for the fish to show some signs of being hit, but it didn't.

"Give me the rifle," said Earl.

Earl took the rifle and apparently did not aim at all. He fired, and almost immediately the fish began to struggle in the water and then floated to the surface. Sam pulled it into the boat.

"Now you see that it can be done quite easily," said Sam.

"It's easy enough if you know how," replied Bill. "One thing is sure: either we have phony ammunition or we don't know how."

"You are absolutely right, it is easy enough if you know how," said Earl. "It's like cutting a pencil with a dollar bill. Everything is not done exactly the way it looks. Maybe the pencil is actually cut with the dollar bill and maybe it isn't. The chances are ten to one that it isn't, but it looks as if it was during the act. You don't aim at where the fish seems to be, for it isn't there. The water makes it look where it isn't. Accordingly, you must shoot where the fish really is, and not where it appears to be."

"Take this oar and put the end in the water. Now does it look straight? No. It appears to be bent. The water causes the light rays to change their angle and you always see a thing much closer to the surface than it really is. Therefore you must aim under the object which you expect to hit."

"I should have known that," said Bill. "That is simple physics, but I never thought of it."

"We have the salmon eggs and now can start fishing," said Sam.

They cut open the salmon and took out the eggs. They put them into a can and then rowed the boat out into the center of the river. Here they allowed the boat to drift while they fixed their lines and baited their hooks. It was a most pleasant way to fish. There was no labor connected with it. The boat floated slowly down the stream with the lines drifting behind.

It had been drizzling slightly ever since they had been out, but so much of interest had happened that neither Bill nor Bob had noticed the rain. Occasionally someone would get a strike. They had caught several small trout, but no large ones. Earl was the first to get a real

strike.

"Reel in your lines, for I have a fish that is a fish," he cried suddenly.

Sam was not fishing at the time and he took hold of the oars so that he could maneuver the boat while Earl played the fish. Bill and Bob were trying so hard to reel in their lines that they snarled them. Everything was in a mess, but Earl managed to keep the fish out of the tangled lines. It began to look as if the tangled lines might have to be cut. Sam could not always move the boat so that the fish would clear them, and Earl could not play his fish to keep it clear forever.

"What's the matter?" asked Sam. "Can't you get your lines in?"

"We have them untangled now," said Bill as he started to reel in again.

It was quite evident that Earl had quite a large fish on his line. It played around the boat in large circles. Once it ran right at the boat and Sam was quite busy keeping the boat in such a position that it would not run under the keel. If it had done that, the chances were that the line would have parted or the leaders broken.

Finally Earl brought the fish up to the side of the boat.

"Where's the net?" asked Bill.

"We don't need a net," said Sam. "That's what we brought the rifle for. See if you can hit it."

Once again Bill took the rifle and aimed at the new target. It was not as large as the salmon, but it was a magnificent trout. Bill aimed at a point about four inches below the trout and fired—another miss.

"This fish is closer to the surface," said Sam. "Wait until it stops moving so rapidly and try again."

This time Bill did not aim so much below and when he fired the fish came to the surface, belly up.

"Now you see that there's no trick to it, don't you?" said Earl. "All you have to do is to aim where the fish is and not where it isn't."

So the morning was spent, drifting slowly down the Umpqua River. The forest fires, the fight for their lives in the clouds the day before, the other troubles which had bothered them during the routine performance of their duties, the drizzle which made them wetter and wetter, were all forgotten.

"How about pulling in for this island for lunch?" asked Earl as they came abreast of a large island in the river.

"I am ready to eat," said Sam. "How about the rest of you fellows?"

"I am ready any time," said Bill and Bob together.

A fire on the shore in the lee of a large tree trunk, baked potatoes, roasted corn, Earl swinging a steak—what more could a man desire? No wonder Sam liked the outdoor life in the woods. They had not seen anyone but their own party since leaving the shore near the hatchery. It was like being out in the wilderness.

After lunch they fished for a while from the shore of the island and then continued their trip down the river. Bill realized that the salmon were not as numerous in the water as they had been near the hatchery.

"Where have all the salmon gone?" he asked.

"This is the first part of the run," said Sam. "The racks cause a block in the river and there is a congestion at that point. A little later, if there is a large run this year, the river will be full of them all the way up to the hatchery. There's the bridge ahead of us. I guess that our day's sport is over."

"I am of the opinion that we have had about enough," said Earl. "I am soaked through, and as I have no other clothes with me, I will have to go to bed until these dry."

"It will be about time to go to bed anyhow when we get to the hotel, so what's the difference?" said Sam.

They reached the bridge and shoved the nose of the boat ashore. Tom was waiting with the automobile. They had caught a fine lot of fish. The catch included steelhead, rainbow and salmon trout. The largest was a fine fat fellow, twenty-three inches long, which weighed about six pounds.

"I think that we ought to move the squadron up here for station," said Bill after they reached the hotel. "It's much more fun going down the Umpqua River in a boat than being hauled out of the cold waters of the Pacific by the crew of an Artillery tug."

CHAPTER XXI—THE EUGENE AIRDROME

The three days' vacation at Roseburg passed much too rapidly for Bill and Bob. They would have liked to stay there for a much longer period. Earl Simmons wanted to get back to Eugene. He liked this form of recreation as much as either Bill or Bob, but his real interest in life was the protection of the forests.

Each day along the Umpqua gave additional surprises to the two young aviators. It seemed that there were no end to the things that the oldtimers in the Northwest woods knew and the tenderfeet from San Francisco had to learn.

The day before they returned to Eugene, they were fishing along the river and casting out into the water from the banks. It required quite a bit of practice before either Bill or Bob could make their dry fly land in the water with the ease and grace of an expert fisherman. Finally they became sufficiently adept to get occasional strikes.

Bill had been fishing a pool which was surrounded by large rocks. Every time that he made a cast, a large fish struck at the fly. Somehow Bill could not hook the fish. The longer this game of "catch if you can" lasted, the more determined Bill became to land that fish. The other members

of the party watched him for a long time and then left to fish in other places, but Bill stayed right there.

It was most discouraging not to be able to hook that trout, for from the violence with which it came after the fly, it was sure to be a large one. Bill finally made his best cast of the day. The fly sank lightly onto the water and then, by slightly jerking his rod, Bill made the fly skim across the water. That was too much for the trout. He seized that fly and started out across the river with it. Bill flipped the end of his rod upward to send the hook home and the struggle was on.

The line left the reel sounding a tune which all real fishermen know so well. It went out so rapidly that Bill wondered if he would lose all the line before the fish stopped its run. At that stage of the game Bill was decidedly nervous. He had never before snagged such a fish as this one was. He knew that if he tried to stop the trout too suddenly, the line would break. Bill applied gradually increasing pressure on the reel until the rush was stopped.

The trout made several mad rushes after the first one, but none were as fast nor as long as the first one. Once in a while Bill would get a glimpse of the fish as it darted through the water, but the fish was out of sight again almost immediately. The thought uppermost in Bill's mind now was, "Could he net that fish before it broke the line?" The rushes became shorter, and it was apparent that the fish was getting exhausted. At times it would allow Bill to bring it in almost to the rock where he was standing, and then without the slightest warning it would sink to the bottom of the pool with a speed that bent the rod double while the line was going out.

The fish finally came up and Bill worked it around to where he could use the net. In his excitement of netting the trout, he almost lost his rod and line, but he never risked the loss of the fish. Bill was so elated that he did not try to remove the fish from the net or the hook from its mouth. He carried the rod, net, and fish back to the road and waited for the other members of the party. He was still sitting there holding the netted fish when Sam Crouch came up.

"What have you there?" asked Sam.

"You tell me," said Bill. "I finally caught it, but what kind it is I do not know."

"It's a nice big brook trout," replied Sam. "I guess that you have the largest one caught this day. I have several that I thought were large, but none to compare with that one."

The others returned and Bill felt quite proud of his accomplishment as each in turn admired his fish. They returned to the hotel and unloaded their fishing gear.

"You had better take this fish, Sam," said Bill. "We leave tomorrow, and I cannot use it."

"Let me see that fish," said a stranger who came up as Bill was handing the trout to Sam. "I think that you have a gold button trout there. We will take it into the hotel and measure and weigh it."

"What's a gold button trout?" asked Bill. "Do you have to pay a fine for catching one? Is it unlawful?"

Both Sam and Earl burst out laughing at Bill's questions.

"You poor boob," said Earl, "that means that you have probably caught the largest trout reported during the fishing season. The Portland *Oregonian* has a contest each year and gives a gold button for the largest trout caught."

The fish weighed seven pounds and two ounces and was twenty-six inches long.

"My name's Pratt," said the stranger. "I am a reporter on the *Oregonian*. I will send your story in to the paper and you will be notified later if you get the gold button."

The story of the catch was recounted and with it ended the fishing excursion at Roseburg. Bill could not quite understand why anyone should get a prize for going out and enjoying himself. Later in the season he received the gold button. Two short periods of fishing in the Oregon woods had elevated Bill from the rankest kind of an amateur fisherman to one whose catch was broadcast all over the state.

Bob Finch left that same night by train for Eugene after vainly trying to get Bill to agree to have both Earl and Bob ride to Eugene in the rear cockpit. Bill settled that question when he called attention to Earl's rather portly figure and asked how they could both get in the cockpit. Bill and Earl left by plane early the next morning, Earl anxious to get back to work and Bill reluctant to leave.

"Thanks for the good time, Sam," called Bill, and the plane started on its homeward journey.

The rains had cleared the sky of all the dense smoke. Here and there small fleecy clouds stood out as reminders that there had been a rain storm, but the visibility was such that the occupants of the airplane could see for miles in all directions. As they flew along Bill obtained his first clear view of the high peaks which marked the crest of the Cascade Mountains. Although these peaks were a good forty miles away, the air was so clear that they were plainly visible. The Three Sisters, a large, massive mountain with three peaks quite widely separate, came into view just as they sighted Eugene. The tops of all three of these peaks stood well above ten thousand feet. It seemed remarkable to Bill that he had never been able to get a glimpse of them before, as they were decidedly the most conspicuous mountains of the entire southern part of the range.

"Well, we have another job on our hands," said Smith when Bill reported. "The city of Eugene wants to establish this as a municipal airdrome. In order to do it, they are going to float a bond issue. We are going to lend our support by having a field day here tomorrow. We will have aerial and ground events. Dignitaries from all over the state will be present. Among others, Governor Olcott will be here."

"What part am I to play?" asked Bill.

"You had better go in and work that up with Maxwell," replied Smith. "When you have finished your draft of the events, I will go over it and either approve or disapprove."

"Well, here I am, Buddy," said Bill as he sat down, by the desk in the operations office. "Captain Smith said that I was to help you draw up the list of events for the field day tomorrow."

"It's a fine time for you to be showing up after I have all the hard work completed," said Maxwell. "I think that I will pick out a real job for you."

"Go to it," said Bill. "I have had such a good time during the past few days that I can stand anything now."

"Do you mean that?" asked Buddy.

"Sure I do," replied Bill. "What have you on your mind?"

"We will go over the list of events as they appear on the program," said Maxwell. "In the morning the squadron baseball team will play the local team. In addition there will be a trap-shooting competition in which both an officers' and enlisted men's team will compete against anything that the local people bring on. Then we will have an early lunch given by the Chamber of Commerce, during which the celebrities will tell why Eugene should have an airdrome. In the afternoon we will have some formation flights, a radio demonstration in which someone will broadcast from an airplane through a loudspeaker, and finally you will jump from a parachute."

Bill did not know whether Maxwell was joking or not. He looked at the paper on the desk and, sure enough, the last event was for a parachute jump. As far as Bill knew, there were no parachutes in the squadron. The only ones that he had ever seen were those used during the war. All balloonists were equipped with them and the crews of the German airplanes wore them. In fact, Bill had the distinct recollection of having seen a German plane shot down and the observer jump with his parachute, thereby escaping with his life. To the best of Bill's knowledge, the only parachutes for airplanes in the United States were those still in the experimental stage.

It looked to Bill as if Maxwell were playing a joke on him. There would be no harm in agreeing.

"That's all right with me," said Bill.

"We will get Captain Smith to O. K. this and then we can arrange for the details," said Maxwell.

"How are you getting along?" asked Smith, who came in about that time.

"Everything is all arranged, much easier than I thought possible," replied Maxwell. "Here is a list of events."

Much to Bill's surprise, Buddy Maxwell handed the paper to Captain Smith with the parachute jump still included. He had made no attempt to erase that event. Perhaps they have obtained a parachute from somewhere.

Smith went over the list and commented upon each event as he came to it. He gave instructions as to how he wanted the details arranged.

"I want each Flight leader to lead his own Flight in the formations," said Smith. "I will have Liggett take the radio demonstration."

Then he saw Bill's name entered for the parachute jump.

"Did you volunteer for the parachute jump?" asked Smith.

Bill was caught. There was no way out now. He had told Maxwell that he would jump, thinking that there were no parachutes. Obviously there must be some available now, or Captain Smith would have shown some surprise when he read the event. There was only one thing to do, and Bill did it.

"Sure, I volunteered," he said.

"Have you ever jumped before?" asked Smith.

"Never in my life," replied Bill.

"That makes no difference, you have to start some time," said Smith. "Fortunately, Sergeant Ruhs has just arrived from Dayton with instructions as to how the parachutes shall be worn and how you get out of the plane with them on. You had better see him right away and get your instructions. I approve of the schedule of events."

So there were parachutes, and a parachute jump was going to be part of the field day after all. Bill had never even seen one at close range. He had never had the slightest desire to try one out, and, furthermore, he realized that the thing he desired the least of anything in the world was to make that jump the next day.

CHAPTER XXII—TRAPPED IN MIDAIR

Bill left the headquarters building with a heavy load on his mind. As far as he could see, he had put himself in such a position that he had to make that parachute jump. He went to the supply building and found Sergeant Ruhs. Several parachutes were spread out on the floor and Ruhs was inspecting them.

"Sergeant, you never told me that we had received those parachutes," said Bill.

"No, sir, I didn't," replied the parachute sergeant. "They came while you were down at Roseburg."

"How many are there?" asked Bill.

"Enough to equip each plane with two and then have several for reserve," replied Ruhs.

"Are they standard articles of issue now?"

"Regulations will soon come out requiring all Army pilots to put on a parachute for every flight," replied Ruhs. "The orders will be very strict about it. As soon as the orders arrive, all pilots and observers will have to wear them every time they go up."

"How can a pilot get into his plane and handle his controls with one of those bulky things strapped to his back?" asked Bill, whose idea of parachutes was limited to the large, bulky balloon type chutes.

"You evidently haven't seen the latest model," said the Sergeant. "This new type is called the seat pack. You sit on it in the plane just the same as you would a cushion. The straps fit over the shoulders just snug enough to operate satisfactorily, but not so tight as to be uncomfortable."

"Well, I might as well break the sad news to you," said Bill. "I volunteered to jump from a plane during the demonstration tomorrow. Tell me all that I must know beforehand."

"I am sorry that you volunteered, Lieutenant," replied Ruhs. "I was hoping to have that pleasure myself."

Bill looked at the Sergeant in surprise. Ruhs had intimated that it would be a pleasure to jump from a plane.

"Have you ever jumped?" asked Bill.

"Several times," replied Ruhs. "I rather like the sensation and take a jump at every opportunity."

That statement changed everything for Bill. He would jump now to get the experience. If he had to wear a chute on all flights, he ought to know how to use it. Some day something might happen to the plane and he would have to jump. That being the case, he might as well eliminate all tendencies of hesitating to jump from the plane right now and not wait until circumstances made an immediate jump imperative.

"Tell me what I have to do, then," said Bill.

The parachute Sergeant picked up a parachute and arranged it so that the pack was suspended from Bill's back.

"This is a back type," said Ruhs. "When you jump tomorrow you will have two chutes on, a back pack and a lap pack. That is to insure that at least one will open. While we have never had a failure, it is always well to be prepared for the unforeseen. These chutes are training type. That is, they are much larger than the service packs. The larger area gives a greater supporting surface and you will not hit the ground so hard. You can open both of them as you drop if you wish."

"How hard do you hit the ground with one of these?" asked Bill.

"With the service type, it is about the same as jumping from a fifteen-foot wall. With the training type, the falling speed is much slower."

By this time Bill had both chutes strapped to him. One pack was on his back and the other hanging down in front of him.

"Now what do I do when I want to jump?" he asked.

"Climb over the side of the plane and count three. By that time you will have cleared the wings, tail surfaces and landing gear. Then pull this ring. The parachute will fly out and open up. The best jumpers always bring their rings back with them."

"How can you find that ring when you are flying through space?" asked Bill.

"It doesn't make much difference whether you find it right away or not, for you will be sure to find it before you drop very far. I have found out that even though I am falling head first, I have had no difficulty in locating the ring."

"Don't you drop down feet first?" asked Bill.

"You start that way, but before you get the chute open you will have turned quite a few somersaults in the air. The main thing is to count three after leaving the plane, and then pull the ring far enough so that the pins holding the pack together are entirely removed from the lugs."

"Is there anything more?" asked Bill.

"That's all there is to it," replied Ruhs.

Bill removed the chutes and started for town. If Sergeant Ruhs had made several jumps, there was no reason why Bill shouldn't make one and get away with it.

Bill found that he could not concentrate on the various events which were taking place the next morning. He was nervous about the jump in spite of all attempts to view the matter in a matter of fact way. The morning dragged interminably. The Governor and all the other officials inspected the field and planes. The baseball games were played and the trap-shooting events took place, but Bill found it hard to concentrate on them.

There was a large crowd out at the field by the time that the luncheon was served. The speeches were finished and the pilots started for their planes.

"Here's wishing you luck," Bob Finch said to Bill.

"I am glad that I am to be the first officer in the Squadron to jump," replied Bill. "Some of these days some of the rest of you may have to jump under circumstances not quite so favorable. At least I will know how it feels."

"I will take mine when I have to," said Bob. "It takes nerve to jump overboard just for the experience, and I can't see myself doing it now."

The afternoon's flying events started with the two Flights leaving the airdrome in formation. Each was led by its Flight leader. The two formations went through various evolutions and then joined together into one large "V". These planes had scarcely landed before the radio plane went up, and Lieutenant Liggett kept the crowd interested by telling stories, singing and giving information as to what he could see. He talked into the radio installed in the plane, and the monologue was repeated through the loud-speakers on the ground.

In the meantime Bill was getting his parachutes adjusted. Captain Smith watched him for a moment and started away, only to return.

"I think that I will fly the plane from which you jump," he said. "I will take you up to two thousand feet and head into the wind. You must estimate the velocity of the wind so that you will drift back to the field after your chute opens. That shouldn't be so hard, for the airdrome is quite large."

"I would be very much pleased if you would pilot the plane," said Bill.

"I will get the plane started now, and as soon as you get fixed up, we will take off," said Smith as he went away.

"Are you sure that everything is all right?" asked Bill.

"I packed these chutes this morning," said Ruhs. "They should function perfectly. Remember, do not pull the rip cable until after you have counted three. When you land, bend your knees slightly so that you will not get so much shock."

"I'll try and remember everything," said Bill, and started for the plane.

He found it rather cumbersome walking on account of the two parachutes hanging from his shoulders and the web straps around his body. He came up to Smith's plane and climbed in. Everything was ready for the jump.

The day was clear, not a cloud in the sky. A slight wind was blowing from the northwest, but not sufficient to drag Bill after he had landed with the parachute open. There was a big crowd assembled along the danger line in front of the plane watching the two airmen. Bill heard the loudspeaker report: "Bill Bruce is now about to take off to make his parachute jump. I think that Captain Smith is piloting the plane. I can't see who it is from here, but it looks as if the plane's number is '0', and the Captain never allows anyone else to fly his plane."

Smith taxied across the airdrome and the plane was soon in the air. They climbed until they reached the two thousand foot mark and then Smith headed into the wind and flew toward the airdrome. Bill watched the ground pass under the plane, but hesitated in plunging out over the side of the cockpit. He at once realized that it took more nerve to actually make the jump than it did to agree to make it while standing down on the ground.

Smith throttled the engine and gave Bill the signal to jump. Bill stood up in the cockpit and steeled himself for the ordeal. He wanted to make sure of having that ring in his hand when he had counted three, so he grabbed the ring before climbing out of the cockpit. He stepped up on the seat and held onto the side of the fusilage with one hand and the ring with his other. The hundred-mile wind made it hard for him to retain his balance and he swayed back and forth against it.

Bill put one leg over the fusilage and the wind pressure became more intense. It threatened to drag him back along the fusilage. In his efforts to stay in the cockpit, he pulled the parachute ring and the chute went out of its pack.

Fortunately Bill had one leg still in the cockpit and could retain his grip on the plane. More fortunate still, the parachute did not open but went out like a string and streamed straight to the rear just over the tail surface. Bill did not know what to do next, so he stayed right where he was.

Captain Smith was watching when Bill pulled the rip cord. He instinctively grabbed the collar of Bill's flying suit to help hold him in the plane. They were now in a most perilous situation. If the parachute now opened, it would drag both of them through the tail surfaces and probably both would be killed. If Smith released his hold and the chute opened, Bill would be dragged through the same surfaces and he would be killed or severely injured. The tail surfaces would then be so badly damaged that the plane would be uncontrollable. In that case Smith would be out of luck, for he did not have a parachute on.

Both Smith and Bill had the same thoughts at identically the same time—they were in a mighty bad fix and could see no way out.

CHAPTER XXIII—A NEW OUTBREAK OF FIRES

Captain Smith at once saw that he was risking the lives of both Bill and himself by holding on to Bill's flying suit. Accordingly he released his grip and confined his activities to the plane and began thinking of a possible way out of the dangerous situation they were in.

There was still a big chance of the parachute's opening and dragging Bill from the plane. If that happened, Bill might or might not be carried through the tail surfaces. Then, again, the parachute might not open. Remote as that possibility was, they could not afford to take any chances. Every effort must be made to get the streaming chute away from the tail group. Smith immediately started to figure how it could be done.

Bill in the meantime saw that by staying where he was, he not only was risking his own life but was jeopardizing Smith's as well. Bill realized that something must be done at once whereby he could fall free of the plane without being carried backward by the trailing chute.

Bill climbed over the side of the fusilage, being very careful while doing so not to increase the probability of the chute opening by giving it any unnecessary motion. He reached the top step safely and then stepped down to the lower one. From that position he could see that the streaming shroud lines were inside of the elevator horn and that it would take some little maneuvering to get them clear.

From Bill's point of view there was but one way to do it. Somehow or other he must work his way back to the tail group and throw those shroud lines clear. He looked around to see how it might be done. To climb back on top of the fusilage was out of the question, as that would make it practically impossible to throw the chute clear. The only other method was for him to work his way back along the control cables which ran alongside the fusilage.

Bill immediately bent down and grasped the control cable with his right hand, while he held on to the fusilage with his left. When he was sure that he had a secure grip, he released his left hand and grasped the cable with it. At the same instant his foot slipped from the lower step and he found himself hanging from the control wire. The force of his fall had caused the cable to cut his hands severely, but he held on just the same.

In the meantime, while watching Bill, Smith was thinking out a method whereby he could so throw the plane through the air that the shroud lines would be cleared of the elevator horn. He thought that it might be done by slipping the plane through the air. During such a motion the plane would not have the same resistance to the air as the chute and might possibly move away from the chute. When that time came, Bill could drop with some degree of safety.

Thus it was that both Smith and Bill started working with the same end in view. Bill worked his way backward toward the tail group, stopping every once in a while to try and throw the shroud lines clear with one hand while he retained his grip on the cable with the other. Smith put the plane into a steep side slip and watched the parachute to see what effect the sideward motion of

the plane was having.

Several times Smith slipped the plane with no apparent results. Meanwhile Bill Bruce was working his way farther and farther to the rear of the fuselage. Finally Bill reached a point within a few feet of the leading edge of the stabilizer. Here he again tried to throw the shroud lines clear with one free hand. Smith at the same time put the plane into an almost vertical slip. The shroud lines moved across the surfaces, jumped the horn and strung out clear of the plane.

As soon as he saw that the shroud lines were clear, Bill dropped off into space. The crowd on the ground saw all of these maneuvers, but could not imagine the reason for their taking place. They saw the streaming chute and knew that it should not be that close to the plane. They also saw that Bill was still in the cockpit when he should have been clear of the ship. None knew the perilous situation which confronted the two airmen. Everyone, however, realized that something had gone wrong and that the two men were fighting for their lives.

When Bill dropped from the plane, as far he could see, none of the rules and instructions which Sergeant Ruhs had given him before going into the air could possibly be put into effect. In the first place, one parachute was already open and it was not necessary to count three. Then, again, it would do no good to pull the ring of that chute now, no matter how hard he pulled it. Ruhs had said that the chutes always open. Would this one open or should he pull on the ring to open the other chute?

Bill had a hard time to think logically while falling through space with the string-like parachute streaming down after him. He was afraid that, as his body tumbled around while falling, the first parachute would wrap itself around the second one and keep it from opening. That being the case, the sooner he pulled the rip cord on the second chute, the better off he would be.

It was fortunate that Smith had climbed to about twenty-five hundred feet before giving Bill the signal to jump. Otherwise things might not have turned out so well for Bill. They had lost about five hundred feet while trying to get the chute clear of the tail group, and then Bill had fallen another thousand feet before he tried to open the second chute.

That drop of a thousand feet had taken scarcely any time at all, and Bill did not realize that he had fallen so far. He began to search for the other ring with one hand. At the time he was falling head downwards. He instinctively raised his hand toward his head to reach the ring, but it took what seemed to him to be hours before he found it. He gave the ring a pull, and kept on pulling until the wire was clear.

The pilot chute came out with a snap and then Bill felt his speed slacken with a distinct jerk. He looked up and saw that the second chute was open. The first was still in the form of a streamer. With the opening of the chute, Bill started a pendulum motion, his body swung in a large arc below the chute. The length of the arc gradually decreased until he was hanging suspended directly under the center of the silk umbrella-shaped chute. He looked up at it with astonishment, for he had no idea that it could possibly be so large.

While he was still looking upward the first chute opened, and each one forced the other out at an angle. Bill was hanging down between the two. Bill looked down at the ground. It seemed as if he was hardly falling at all, the drop was so slow. He found it rather a pleasant sensation—after the chutes had opened.

Bill had been too busy fighting for his life when he was about to leave the plane to think of anything else but clearing the chute from the elevator horn. He could not make up his mind whether or not he would have been a little afraid to jump under normal conditions. One thing certain, the thought of fear of jumping had not entered his mind after he had inadvertently opened the first chute.

The wind was drifting him across the aviation field. Evidently all the maneuvering in the air had taken but a very short time, although it seemed that hours had passed.

Bill watched the ground come closer and closer. He was aware of the fact that Smith was circling around in his plane, but Bill never looked at the airplane. Smith drew away as Bill came down close to the airdrome. Bill bent his knees slightly as he neared the ground and then he hit. It was not a violent jar, but the wind carried the chutes along while Bill was on the ground.

Two twenty-four foot parachutes afford a large surface for the wind to catch, and had the wind been much stronger, Bill would undoubtedly have been dragged along the ground. Ruhs arrived alongside almost as soon as Bill hit. He grabbed the top shroud lines and pulled them down. The chutes immediately became deflated and dropped to the ground.

Bill got up on his feet and the crowd cheered when they saw that he was not hurt. It had been a terrible ordeal, but both Bill and Smith had come off unscathed. Bill's hands were cut from climbing along the cable, but that was not worth considering when there were so many worse things which might have happened.

Ruhs untangled Bill from the shoulder braces and said, "You can ride back in the ambulance if you want to."

"Not for mine," replied Bill. "It looked for a while as if I would be in no fit condition even for an ambulance, but I am all whole. I will walk."

"How did your chute come to open up before you were clear of the plane?" asked Captain Smith when Bill reached the line.

"I was afraid that I would not be able to find the ring after I dropped into space," replied Bill. "Accordingly I held on to the ring while I tried to climb out. I lost my balance against the wind pressure when I stood up, and, in trying to regain it, must have pulled open the chute."

"Next time you had better wait until after you count before grabbing the ring," said Smith. "I doubt if we will always be as lucky as we were today. I don't understand now why that first chute did not open and drag you out of the cockpit."

"Neither do I," said Bill.

"Weren't you scared to death up there when your chute fouled the plane?" Bob Finch asked Bill as they were returning to town that evening.

"Bob, I didn't have time to be scared. There were too many things to do if I wanted to make a fight for my life. In a time like that it would have been fatal to be scared."

The next day, when the operations office opened, there were several radios and telephone messages waiting. Those messages came from the various forests. The rain had put out all the large fires that had been burning before. The lightning had started quite a few new ones, but there were others which had started in districts where no lightning storms had been reported.

"I cannot account for all of these fires in the area to the southeast," said Simmons as he placed pins in the map to show the approximate locations of the new fires reported. "However, these which are reported over in this area have me buffaloes. There is no rhyme or reason for their existence. There were no thunder storms anywhere near them. It rained hard enough for all the old fires to have been extinguished, and yet here is a string of new fires starting. Look at them, all in a row. What started them?"

"Perhaps there was a small local thunder storm over there," suggested Kiel.

"How could that have been possible without the lookouts and the forest wardens knowing it?" replied Simmons. "That doesn't sound reasonable to me."

"Are you trying to infer that there is someone out in the woods deliberately setting fires?" asked Bill.

"That is exactly what I am driving at," replied Simmons. "I thought so before the rains started, and I am more convinced than ever now. The fires are breaking out at too regular intervals and times to be resulting from carelessness. Furthermore, Bill Bruce, you and I are going out in a plane this morning and catch that firebug."

CHAPTER XXIV—HUNTING A FIREBUG

"Why are you so sure that there is a firebug?" asked Bill.

"When we came back from Roseburg there were but twelve fires burning in the whole state," replied Earl Simmons. "Eleven of them were new ones which had been started by lightning, and the twelfth was the large one over near Three Fingered Jack in the Sanitaur Forest. The air was entirely clear of smoke and it looked as if the fire season was over."

"The tourists have all cleared out of the forest with the rains, thereby eliminating any further trouble with them. It is too early for the hunters to start out, and accordingly we won't have any need to worry about their carelessness for a while. The lightning fires were all under control on the day following their start. The large fire over in Sanitaur was almost extinguished by the rain and is now under control. That being the case, according to all past precedents, I was entirely justified in believing that the fire season was over."

"Now what happens? Without any reason new fires break out over in the Buck Peak—Mary's Peak region. Are they like normal fires? They are not. The first one starts in the vicinity of Buck Peak and they break out at almost regular distances toward the north. It may be a coincidence that they are at regular distances, and each succeeding one starts at about the time that it would have taken a man to arrive from the last one. I don't think so. I think that there is some maniac over there who is deliberately setting the woods on fire. Will you help me get him?"

"I am perfectly willing to go out and try," replied Bill. "However, I don't think that we will make as effective a team as if I had someone in the rear seat who could use the radio."

"Who says that I can't use the radio?" asked Earl. "I was a commercial telegraph operator for several years. Furthermore, I have had a radio of my own ever since they came into common use. Why, during the winter months I amuse myself by building them. If you don't think that I can operate the set in the back of your plane, ask Liggett."

"The joke's on you," remarked Liggett, who was standing by listening to the conversation. "Earl has been operating these sets ever since we arrived."

"Then why the deuce didn't you send out a few messages when we were making that special patrol and were caught in the storm?" asked Bill.

"Why didn't you release the generator propeller before we started, and I would have," replied Earl.

"I give up," said Bill. "We will start out whenever you are ready."

"I want to get together with you and study the map before we start," said Earl.

"Will you go out on the regular patrol or be an extra one?" asked Captain Smith. "It is time for the regular patrol to start."

"You had better let the regular patrol go out as usual and then we will not arouse the suspicions of the firebug if we get started a little late," replied Earl.

"Here's the way that I figure this thing out," said Earl as he and Bill sat at a table with a map spread out in front of them. "This fellow, whoever he is, is traveling by auto. He either goes into the woods as far as he can with his auto and then travels a short distance on foot and starts these fires, or he gets out of his car and then starts the fires without walking any farther than is necessary to insure the safety of his car. Once he has started a fire, he gets into his car and travels north for a few miles on the nearest road and repeats the performance."

"The location of the fires would indicate that something like that is happening," replied Bill.

"Now, here's my plan for catching him," said Earl. "We will wait for the report of the patrol which is just starting. That will give us the location of any new fires. Once we plot them on the map, we can make a guess as to the place where he will probably start the next one. We can get there by plane almost as soon as he can by auto. Accordingly, if he works true to form, we will catch him in the act. That is, of course, providing that you are willing to fly low enough to see a single man running along a road."

"I think that you have your nerve in even suggesting that I might not be willing to fly low over

the timber after what we have been through together," replied Bill.

"All right then," said Earl. "As soon as we determine the spot where we think we will need help, I will notify the nearest forest headquarters equipped with radio. They will have some forestry men standing by in an auto who will be dispatched to the place where we direct them from our radio. From then on we will have to drop messages on the auto and direct them in the chase. How does it look?"

"Entirely feasible," said Bill. "All we have to do now is to wait for the patrol plane to report the new fires, if any, in that district."

The patrol had not been out for more than twenty-five minutes before it was sending in fire reports. The first ones were concerning the old fires spotted the day before. Then came data concerning a new fire. Even before the location had been given, Earl had its approximate location marked on the map. Earl missed the second new fire by about five miles, but it showed that the principle upon which he was working was correct.

"What do you say now?" asked Earl after the observer had stopped sending from the patrol plane.

"You hit the first one almost on the spot," replied Bill. "The second one you missed a little, but not much. Let's get going."

"Wait until I send a message to the supervisor in the Mary's Peak area," said Earl.

"Is the plane all right?" asked Bill as he ran to get into the cockpit.

"First-class condition," replied the mechanic.

"We will check in with the amateur station at Glenbrook on the way out. We can't afford to waste any more time in getting to Elam," called Earl as Bill motioned for the mechanics to remove the blocks from the wheels.

"O. K.," replied Bill.

Bill did not try to gain any altitude for a while, as speed was essential to the success of their plan. His plan was to arrive over Glenbrook at about four thousand feet. He hoped that Earl would start sending to check the set long before they reached the place, and then the O. K. panel would probably be waiting for them when they flew over the station.

They were flying along at three thousand feet when they reached Ferguson. Then Bill felt Earl poking him in the back and, turning, saw that a note was being passed forward to him. Bill took the note and read it. "I can't get any juice from the generators. Did you remove the safety wire from the generator propeller before you started?"

Bill shook his head, "No." To land and take off the safety wire would consume a lot of valuable time. Something else must be done. It was necessary that the radio function. Otherwise, the plan could not succeed. Bill wrote a note and handed it to Earl: "Do your stuff as you have never done it before. Put that emergency stick into the socket in your cockpit. Follow the movements that I make as I pilot this plane. Learn what you can in the next few minutes, for I am going to climb out on the wing and kick the generator fan loose. You are going to pilot the plane while I do it. I don't care if you never before have piloted a plane. That makes no difference. Get busy."

Earl was perfectly willing to try and follow Bill's instructions. At first he over-controlled just like any new student would. Then he seemed to be able to keep the plane on an even keel. Bill did not touch his stick for some time and the plane ran along perfectly all right. Bill then started to climb out onto the wing.

He had one leg outside of the fuselage and the plane started to veer to the right alarmingly. Earl was giving it too much right rudder. Bill motioned for the correction but had no success in making himself understood. He returned to his cockpit and put the plane on an even keel. Once more he was about to get both legs out of the cockpit, but this time the plane started to climb at such an angle that he knew it would stall. Bill was able to correct it by leaning in and pushing forward on the stick.

Bill learned by this time that Earl was so intent upon trying to fly the plane that he could not see any of the signals which Bill gave for correcting the position of the plane. It was up to him to get out on that wing, kick the fan loose and get back into his seat as soon as possible, and do it before the plane was entirely out of control.

Bill waited until the plane settled down into a level flight again and then started to climb out on the wing. He had both feet on the wing and was about to move forward to the leading edge when the nose of the plane again went up at decidedly too great an angle. Bill hesitated and tried to get Earl to push the stick forward. Earl would not even look at him. Earl had his eyes glued to the inside of the cockpit.

Bill decided that the same thing would happen every time that he left the cockpit. Accordingly it was just as safe to get the job done this time as it ever would be. Completely ignoring the dangerous angle at which the plane was climbing, he continued to work his way forward. By the time that he reached the leading edge of the wing, the plane had almost lost all flying speed. In a short time it would fall into a spin. He must get back to the cockpit as soon as he could. Otherwise the plane would certainly fall and be out of control during the fall.

Bill did not take much time to consider what was the proper thing to do. He was in a position now from which he could stoop down and give that fan a kick and break the safety wire. It was doubtful if he could ever get there again, judging from the erratic way in which the plan had traveled through the air during the past few moments.

The few seconds spent in kicking that fan loose might be the ones needed to save the plane from falling into a spin. On the other hand, it might fall into a spin before he could get back to the cockpit even though he did not try and release the fan. Apparently it made no difference.

Bill grabbed the front cross brace wires, stooped down and kicked the fan. He felt the safety wires break and knew that the fan was loose. The plane then went into an even steeper climb. Bill hoped that the old Liberty engine would keep on reliably pumping its four hundred horsepower into that propeller. He also hoped that the plane would maintain its present speed until he could

get his hand on the stick again.

The plane was just staggering through the air. Any increase in the flying angle would surely send it into a spin. Bill started back toward the cockpit and in his hurry slipped on the smooth laminated wood which protected the wing surface. He caught himself in time to keep from slipping off, but lost several seconds. Once more he started moving back to the cockpit. If he could only make it before the spin started. A DH in a spin takes a considerable altitude to come out. Sometimes they do not come out regardless of the altitude at which they are flying. Bill had a scant two thousand feet when he started to climb out of the cockpit the first time. He had lost some altitude since that.

Could he get there in time to save the ship?

CHAPTER XXV—THE END OF THE FIRE SEASON

Bill lost no time in getting back into the pilot's seat. He caught the plane as it was falling off onto one wing. By skillful manipulation of the controls, he changed the movement into a nose dive. He knew that they were now safe. A short drop and they would regain flying speed. The plane went down into the dive, gradually picking up speed, and soon Bill pulled it out into a level position and they were flying along normally. Once more they were headed toward Glenbrook, where they could check their radio.

They hopped over a few timber-covered foothills and the town of Glenbrook came into view. It was not much of a town, but a branch line of the railroad followed a small stream and terminated there. The forest headquarters was easily picked out on account of the panel already stretched out on the ground. Earl had started sending with the radio as soon as Bill had regained control of the plane. Bill picked up the O. K. panel and dipped his plane in greeting to the amateur operator who he knew would be watching from below.

Bill knew that the radio operator would immediately send word to the foresters waiting at Elam and Adler that the plane was on its way. He turned his plane to skirt Buck Peak and then crossed Beaver Creek. Here he saw the first of the fires, which were still burning and which circumstantial evidence indicated had been lighted by the firebug. Beaver Creek had proved too great a natural barrier for the fire to cross. To the south and southwest there was nothing to check its path, and it had spread rapidly in that direction. The fight made by the crew on the ground to bar its progress was clearly shown from the scene of desolation extending below them.

The fire had evidently started on a comparatively narrow front. Then the strong wind had spread it out over a broad area. The fire crew had attempted to stop it along the crest of a ridge, and had almost succeeded, for the width was appreciably narrowed down to almost a point. Then on account of the lack of men, or for some other reason, the fire had surged through that narrow opening and spread to an even wider area than before. From the viewpoint of the airmen, it looked as if that fire had almost been guided by human hands.

Sensing that it was hemmed in on all sides, the fire had taken advantage of that one small unguarded strip and had broken through with an irresistible rush, burning fiercer than ever. Bill and Earl could see the crew working ahead of the fire. These men were backfiring, making fire breaks, standing by natural barriers and doing everything humanly possible to vanquish that fire monster. Forest fires always left an indelible impression on Bill's mind. They seemed to him to be magnificent and awe-inspiring on account of their relentlessness and the apparent unlimited power, but at the same time they were terrifying as he saw the area of complete destruction which followed in their wake. Thus, in a few minutes' time, timber which had taken hundreds of years to mature was completely effaced, deliberately, or through carelessness by the hand of man.

Bill did not pause in his flight on account of the fire, but traveled along at his hundred-mile an hour pace. He picked up a second and then a third fire. He thought that the third fire might be the one near which they would find the firebug and looked around at Earl for instructions. Earl waved him on.

Off to their left was Mary's Peak. Somewhere along the road which led down its sides the forest men were waiting. Bill was about to head that way in an endeavor to locate them when he saw a small smoke coming up through the timber almost directly ahead of them. He pointed the nose of the plane down and headed straight for that smoke. Gradually losing altitude, as his plane thundered along at an ever increasing speed, he was barely skimming the tree tops when he reached a point directly over the smoke.

He passed over that fire at a speed far too great to pick up any details on the ground, but Bill did get a fleeting glimpse of a road which ran close by the fire. He had come down so low that the radio antennae wire was torn off by the tree tops. In his anxiety to get to that fire as soon as possible, he had forgotten all about the antennae. From now on the radio was useless. All messages would have to be dropped.

Bill pulled his plane up into a reversement and was back over the fire almost immediately, but traveling at a much lower speed. He saw a man running through the underbrush in a cut-over area not more than fifty yards from the fire. It was up to him now to keep that man in sight until help arrived on the ground. Bill looked at Earl and knew by Earl's smile that he, too, had seen the man. The mere fact that he was that close to the fire and was running when seen was sufficient in Bill's mind to brand him as the man who had started the fire.

Another circle and they lost the suspect. Bill made a wider circle, always keeping the road on both sides of the fire in sight. Sooner or later the firebug must come out on the road to get away from the burning timber. Then Bill saw an automobile standing alongside the road several hundred yards from the fire. He flew slowly and low over the car and obtained sufficient data

regarding it to enable him to write a good description of the auto.

Bill again circled the car and wrote: "Brown roadster on mountain road running southeast from Adler. Hold the driver. Roadster now headed toward Adler. Will keep you advised as to its location. Bruce." He handed this note back to Earl.

The forester took the note and read it. He nodded his O. K. and Bill headed the plane toward Adler. If the foresters on the ground were at Adler, everything would be fine, but if they had gone up the mountain toward Elam, things might not work out so well. Just then Bill turned around and saw the firebug climb into his car and start down the mountain road.

Adler came into view after a few minutes' flying. It was a small village, and standing in the middle of the street was an automobile. Bill flew low over the scattered houses and caught a glimpse of several men standing by the car. These men stretched out a white sheet on the ground. There was no doubt now but that they were the foresters. Bill made a quick turn and dropped back right over the car.

When they had almost reached a point over the car, Earl stood up in the cockpit and threw a message overboard. He had tied a piece of cloth and a stone to the message. The stone tended to make it drop straight downward and the streamer to make it visible from the ground. Earl, however, had misjudged the speed of the plane and the message dropped onto the roof of a nearby house.

Bill was almost frantic. Suppose that the firebug should run through the town while the foresters were climbing up to the roof to get that message. Something must be done at once. Bill made another circle and Earl tapped him on the back. Simmons was writing another message. When the message was completed, Bill made another dip over the car. As he passed, he saw a man on the roof of the house searching for the first message. The second one dropped at the feet of the men by the auto. While making a circle to see if they understood, Bill saw the other men jump into their car and start off toward the mountain road, leaving one of their number still on the roof of the house.

Bill headed his plane for the nearest point on that mountain road. He caught a glimpse of the brown roadster turning off the road into what seemed to be a deserted homestead. Bill then made wide circles around the deserted buildings so as to give the impression that he had not seen the firebug turn off the road.

The firebug stopped his car and ran around the first building, which appeared to be an old barn. He then disappeared from view on the other side. There was no way now of telling where he had gone. He might be in the old barn or he might have gone into the underbrush beyond. Bill continued his wide circles and wrote another message to the pursuers on the ground. It read: "Search abandoned homestead over which I will circle. Bruce."

Earl received this message and, after reading it, nodded his approval. Bill continued his circling so that he could watch both the road and the building. The foresters' car came into view, tearing up the mountain road. Bill flew low to attract its attention and then, when it had stopped, Earl again demonstrated his ability as an aerial marksman by dropping the weighted message into the edge of the woods alongside the car. Bill did not wait to see if they picked it up, for he did not want to lose track of that brown roadster.

He circled around over the old homestead. The car was still there, but there was no sign of the firebug. He might by this time be in any one of the three buildings or be in the woods a good distance away. Bill tried to catch a glimpse of anything moving under the thick trees, but came to the conclusion that if he did, it would be by the merest chance.

The foresters came up the road and stopped at the entrance to the deserted clearing. Four men jumped from the car and started toward the brown car. One of them stayed by the roadster while the others began a search of the buildings. I saw one of them enter the old barn and wondered if the firebug was armed. If he was and started shooting, he might get away before the foresters could surround him.

The time passed mighty slowly for Earl and Bill as they watched the developments from their aerial grand-stand seats. Neither one could get any idea of what was happening on the ground. The only one of the foresters whom they could see was doing something to the roadster, just what, neither one could make out. The others were still in the buildings. Both Earl and Bill were eager to be of some active assistance, but realized that it was impossible.

Just then they saw two of the foresters run toward the old barn. Evidently things were coming to a climax. The man by the car stopped his work and watched the old building. A cloud of smoke shot out of the roof of the barn. The firebug was true to form even when cornered: he had set fire to the old barn as a last resort. He hoped to escape under cover of the smoke and excitement when the fire started burning.

His ruse failed, for in a few minutes Bill saw four men emerge from the rapidly burning building. As they came out into the open some distance from the burning building, they stopped to make their captive fast to a nearby log and then the foresters returned to prevent the spread of the fire from the burning building.

Bill flew low over the tree tops. He wanted to get a look at this demon who had deliberately fired the woods. As he flashed by, the firebug raised his head and shook his fist at the plane. One glimpse was sufficient for Bill to establish the identity of this criminal. His old enemy, Andre, was again in the hands of the law. The forest fire season in Oregon was over.

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