

Oxygen and All That

(From "Tee Emm")
The body is nothing more nor less than an internal combustion engine. Every time you eat you are merely shovelling in fuel—and if you've ever seen P.O. Prune's uncle in action, you'll realize that's just what it looks like too! The fuel is then changed by combustion into energy, the necessary oxygen for which operation comes from the air. The air is drawn in through the nose—or through the open mouth, if you're that sort of fellow!—into the windpipe and thence is carried by a series of smaller and smaller tubes to the tiny, thin-walled air-cells, of which the lungs are mainly composed. The total area of the walls of these air-cells is about the same as that of a tennis court—though much more useful—and over this whole area the vein blood, returning from its job, loaded with carbon dioxide but poor in oxygen, is getting rid of its carbon dioxide, taking up oxygen from the air and turning itself back into artery blood, rich in oxygen and off to work once more. To enable the blood to do this a certain Partial Pressure of oxygen is required.

All the above is really old stuff; the important thing is this "Partial Pressure."

Partial Pressure is the pressure exerted by any one of a mixture of gases and is proportionate to the percentage of that gas in the mixture. At ground level the Partial Pressure of oxygen is just right for sufficient oxygen to be taken up by the blood; when, however, you get into higher altitudes the atmospheric pressure falls and with it the Partial Pressure of the oxygen. The blood, therefore, cannot be sufficiently saturated and you suffer from lack of oxygen.

The effects of lack of oxygen are at first just grand. They have even been compared to the effects of alcohol, and who can say fairer than that? You are on the top of the world and chock-full of self-confidence, without any tendency to that self-criticism which so often spoils one's enthusiastic appreciation of one's own achievements. You lose the faculty of accurate judgment or reasoned thinking, and, what's more, you don't know it. You may also be inclined to hilarity or pugnacity—as with too much beer. You are indeed a pretty dangerous person to be piloting an aircraft; you are equally dangerous as a navigator, because—just as in the later stages of a cocktail party, when you take a poor view of anything requiring much concentrated thought—you don't want to be bothered with working out even the simplest navigational problems. (If you do work them out, you get a wrong answer, which, unfortunately, you are convinced is the right one!) To crown all, you may even pass out without knowing it.

In the later stages oxygen-lack affects your vision, particularly your power to see in the dark, weakens your ability to co-ordinate your limb movements, makes you both sick and cold, more liable to frostbite, and inclined to twitch uncontrollably, which may look fun-

ny to your friends, but is no joke to you. It may also give you agonizing muscular cramp. All this distressing business is lumped under the name Anoxia, or Altitude Sickness—which is putting it mildly.

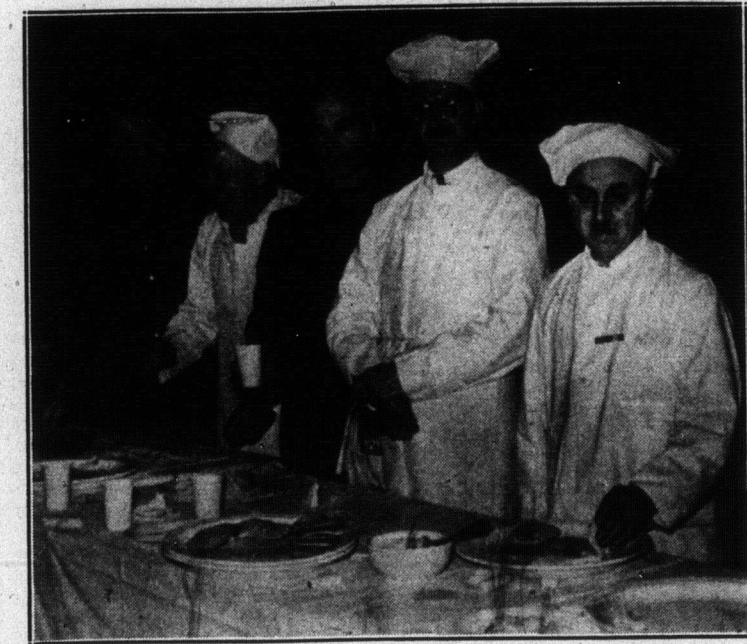
There is naturally one remedy for Anoxia. That is, extra oxygen, in sufficient quantities to keep the blood properly saturated. Now by the time you are at 10,000 feet, extra oxygen becomes necessary for any reasonable efficiency at that height if you are going to stay there for an hour or more. By the time you are up to 15,000 feet it is necessary for actual safety. More and more is required as you go higher, till at 35,000 feet you would have to breathe pure oxygen, and at 40,000 feet even that would be no good by itself.

You would also have to have a pressure suit or cabin, because the atmospheric pressure has now fallen so low that you are in danger of bursting outwards like a deep-sea fish brought up to the surface. And at 63,000 feet the pressure is so reduced that the fluids in your body would boil. This, of course, is rather a distressing thing to happen to anyone.

Now there are two main points which must be emphasized about the use of oxygen for high altitude flying. The first is that you must take it in time. This means you must go by the altimeter, not by whether you think you need oxygen or not. For, as we said above, the first symptoms of lack of oxygen are just those which tend to make you feel you don't need it—over-confidence and inability to criticize. These are mental changes, and thus their significance is not appreciated by you yourself; they are, however, clearly seen by an observer who is not suffering from oxygen lack. You are in the position of the drunk who says, "I'm perfly all ri', o' man!" and a moment later falls slap on his fanny without knowing quite how he got there. The drunk, of course, hasn't done any damage—except possibly to his own fanny—but if you are a pilot flying an expensive aircraft with perhaps several companions, you can see the implications. You are a definite danger! And you do not know it! Remember that men undergoing anoxia tests have been known to pass out completely while in the middle of writing a sentence, and then on receiving oxygen have come to, finished the sentence and been prepared to swear they never lost consciousness at all! That is what lack of oxygen can do for you. Guard against it!

The second point is, don't let yourself fall victim to the fallacy of thinking that to use oxygen is "pansy." The unspoken thought, "You weaklings have to take oxygen; I don't; I'm tough" doesn't denote toughness—so much as dumbness and damfoolishness. Remember that oxygen should be used for all long flights above 10,000 feet. So use it!

Finally, a few practical hints. At ground level you are getting all the oxygen you need. Taking more doesn't harm you—it doesn't



These worthies again went into action on March 6. Fun, food, frolic and friendship marked the Station dance. Left to right: LAC Clark, T. Milne, Cpl. Mackay, A. McKee, R. Cristo.

make you "burn up"; it doesn't even act as a "tonic"; for all the oxygen the blood can absorb is already being received normally and you are just breathing out the surplus and wasting it.

If you do suffer from shortage at any time while flying, and cannot for any reason relieve it, deep slow breathing is the best way of counteracting the effects. While you may be quite comfortable sitting still, moving about in flying clothes demands more oxygen and so causes a temporary shortage which may lead to a sudden faint. For this reason if physical effort is necessary, as in the case of a rear gunner, the regulator should be set for a higher altitude than you're at. If, when using your oxygen mask, you have actually to move about the aircraft, take two or three deep breaths before unplugging the point, hold your breath, move to the new place and plug in at once. (Be sure that the bayonet-fitting has been firmly turned to the right and is secure.) When portable oxygen bottles are available, moving about is simpler, but they should be used sparingly. They only give a "full-on" supply for twelve minutes, and you may want a lot of that if baling out.

Oxygen cylinders hit by a bullet are less liable to cause damage when pressure is reduced. It is important, therefore, to turn on all bottles in the early stages of a long flight so that the pressure has fallen by the time you are in action.

Excessive smoking or drinking lessens the blood's power to absorb its oxygen. This means you want more oxygen to keep efficient. In other words, not only you, but the rest of the crew may go short of oxygen—because you have, in effect, smoked it and drunk it the night before.

Finally, baling out. (We say "finally" because it's probably the last high altitude flying you'll be doing

with that particular aircraft, and we hope it'll never come to that.) If you have to take leave of your 'plane above, say, 20,000 feet, great care must be taken not to lose consciousness on the way out. You may then not be able to pull the rip-cord: you may, even—for such are the strange effects of the lack of oxygen—stare dully at your rip-cord handle on the way down wondering what the hell that thing is for. So make all preparations possible while still using oxygen, and take as many full breaths of oxygen as possible up to about a score, i.e., load yourself up with it to the Plimsol, before disconnecting. Then hold your breath just as in diving, and go! Pull your rip-cord as soon as you are clear. Then it doesn't matter whether you do lose consciousness: with the parachute you will be falling slowly enough to come round properly in the lower air before reaching earth.

And happy landing to you—right side up!
A smile is worth a hundred frowns in any market.
The one thing that keeps a man poor is pretending to be rich.

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SECTIONAL NEWS

CUES FROM STATION HDQS.

Surprised, eh! I mean with HQ's having two editions running consecutively. Well friends, we've turned over a new leaf and are steaming right ahead with only one thing in mind and that is Victory. (Down with Hitler and throw Churchill another cigar.)

Some of the local boys attended a dance held in the Palais Royale, Alliston, and according to rumors of good authority a certain Corporal got so hot coming home he rode with his head hanging out of the window. Nice work Corporal, that's how I got my start!

Many of you readers no doubt remember the olden days when people would exchange one thing for another. Well friends, times haven't changed a bit. You should see the well-dressed Airman on the station and the marvellous shoulder fit he got. Mighty fine suit, eh! Major, and a very good exchange, eh! Hoot.

A little behind time perhaps, but we, the staff of HQ's Orderly Room, wish to express our sincere congratulations to Flight Lieutenant M. F. Badgley on his recent promotion to Squadron Leader. Of course my friends, yours truly is still hanging on and with his many benefactors throughout the station. Have courage, Wing.

For the information of those concerned, a well-known Ex-Sgt. of HQ's Orderly Room, Sgt. D. D. Dodge, now stationed at Patricia Bay, B.C., has become the proud father of an eight-pound daughter. Congratulations, Delmar.

Travel, speed, and communication are wonderful things today folks, but when I say that, I'm not thinking namely of the Bell Telephone System, but who were the two who visited the florist in Barrie and a half hour later had two large size boxes of roses (Red Ones) one delivered at Pickering and the other at the Toronto Daily Star? Friends, that's what I call speed. What do you think, Lou?

F. R. Davis, the ace Nostradamus better known to the HQ's staff as Singapore Sam, has quit taking ground trips to Alliston and East but instead is devoting all his time to the Asiatic situation, his assistant being Hop-along Kaminsky.

So readers again caught by the Deadline, remember the old saying, "We did it before and we can do it again." Until next issue, So Long. —"WING."

SIMPLE

The air raid warden was small in stature but very keen on his job. He'd had rather a tiring time inspecting shelters when a large man asked in a bullying manner: "What can I do with my five kids in a shelter that's full of water?"

Then the worm turned. "Teach 'em to swim!" snapped the warden, curtly.

But maybe the old fashioned girl didn't 'ell mother everything because she didn't know everything.

H FLIGHT

This outpost gang are still in the running for honours, down at Ye Olde Drill Hall where all the top-notch sportsmen meet of an evening.

The matrimonial bug is buzzing around this hangar and making himself heard and no other than Sgt. Aistrop stopped the buzzing by getting himself hitched up away in Sudbury, where a wedding feast consists of icicles and blubber.

We also would like a little advance notice on our Badminton ace, P/O Lowe, who takes a dive off the deep end on the 28th of this month. We hope it's not too deep and not too cold.

These two stalwarts of this flight have what it takes, so here's wishing them lots of luck in their ventures.

What's the matter with Sgt. McBurney unloading a hundred rolls of "non-skid" in our midst. Are we like that, I ask you!

Sgt. Chapman endeavoured to beat Sitting Bull's record last week. He finished in second place. Better luck next time, Chappie.

More news for you comrades next time, so long for now. —"DAL."

FLIGHT NEWS

"Roly" Bradette and Earle Record are, by this time, well on their way across the pond to join many ex-Borden Boys. We wish them the best of luck and trust "Roly" gets the odd piece of lemon pie. As for Earle, we know he will enjoy a "schooner" of Bass' Ale in the first "pub."

Congratulations to our ex Officer Commanding, F/Lt Krug, on his appointment as Examining Officer of No. 2 Squadron. Our loss is their gain and the sting of regret is somewhat lessened in having F/O Hilton appointed to lead us in our battle to hold the "Most Efficient Flight" pennant.

Our instructor personnel has changed again. We are sorry to lose P/O MacKelvie to A Flight. We extend a greeting hand to P/O Burden and P/O Martin.

In signing off this epistle, let us extend a welcome to LAC Murphy who comes to us from Dauphin, Man., and to AC2 Mathews, fresh from T.T.S., St. Thomas.

ONE EXAMPLE

Teacher in Latin class—"What is the meaning of alter ego?"
Student—"It means 'other I'."
Teacher—"Can you give me an example of its use?"
Student—"He winked his alter ego."

Initiative never lacks opportunity. It cannot remain undiscovered because it is sought by too many who want to use it.

Wasted energy is like telling a hair-raising story to a bald-headed man.

CIVIES SORTIES

At a recent meeting of the Civies held in their club room, the main discussion centred around sports events. It was learned that the Camp Sports Committee had sanctioned the use of its equipment to any civilian working on the station on the same basis as that accorded airmen. This information was received with applause.

A recent bingo night proved such a success that those who conducted it were elected to take charge of future events. They were asked to elect their own convenor. We feel sure that they will have full co-operation.

It was further agreed at the meeting that full cooperation should be extended to the Y.M.C.A. to assist with the games nights held at the Airmen's Club each Monday and Thursday. A number of bingo fans have great faith in lucky charms. Mr. Empringham, who won the grand prize at a recent event, says there is not a bit of luck in charms while our friend Cristo says a wish-bone of the proper size, dipped in vinegar, and dusted with cinnamon will bring good results. Mr. Cristo is also interested in locating an ostrich farm nearby.

This little dialogue was heard last week:

1st Batman: "Why did you have that Summer Uniform pressed in February?"

2nd Batman: "I didn't have it pressed, I merely asked the presser to get So and So's uniform and press it. I guess he's the one that is colour-blind."

F/S Bean was the recipient of a Ronson combination cigarette lighter and case in appreciation of his efforts toward the establishment of a Recreation Room. Andy McKee made the presentation.

—J. D. SMART.

One man—"How about buying a ticket in the raffle we are having for the poor widow?"

The other man—"No, sir. My wife wouldn't let me keep her even if I did win."

VOLLEYBALL SPIKES

The No. 1 S.F.T.S. team has progressed through the Camp Borden Schedule with 16 wins and only two losses, the latter to the Canadian Dental Corps, who at present are on top of the league edging the flying spikers by one point. The Flyers' record is remarkable when one considers that a total of 24 different players have represented the station during the schedule.

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