

## Oil Dilution

(By F/Sgt. Deslauriers, J. J.)  
 Our boys of the Squadrons are actually working under trying conditions and everyone knows it. We of the "home base," do our best to help them by giving to each and every aircraft coming in a very severe inspection and a thorough clean-up.  
 However, the responsibility for the daily maintenance of aircraft still rests on the shoulders of our AC's out there in the cold.  
 In a previous issue of "Wings Over Borden" I ventured to give a few "tips" on how to start aircraft engines and warm them up. It was in September, if I remember, when the nights were mild and the days warm.  
 On purpose, I did not mention a little device directly connected with the starting and warming up period of engines. My idea was to take it out of the cockpit where it is buried with a multitude of gadgets and instruments and show it to you in its simplest form. It is called the "Oil Dilution System."  
 According to the dictionary, to dilute means "to thin or weaken by the admixture of another fluid; to become thinner."  
 Everybody knows that engine oil of a given viscosity, if exposed to cold weather for a certain period of time, will increase its viscosity, thus rendering its flow more difficult.  
 That is exactly what happens in an internal combustion engine which has been exposed to cold weather for a certain period of time.  
 Everyone also admits that for its proper functioning, it is imperative that the said engine be properly lubricated at all times by a steady flow of oil. If the oil does not flow freely through the numerous lines and passages of an engine, it is easy to picture the resulting amount of damage liable to be caused.  
 After a night out in the open under the present climatic conditions, the oil in the tank and in the system has increased its viscosity to a point where it does not provide proper lubrication, especially during the first five minutes following the starting.  
 A small device incorporated in all Harvards MK. II called "The Oil Dilution System" provides a very efficient method to overcome the difficulty encountered in cold starting. It is very simple. The fuel carried in an aircraft mixes very well with engine oil. All that has to be done is to mix it with the oil prior to its admission in the engine oil pump.  
 In a few words, let us see how the mixing takes place.  
 A copper line, branched off the fuel pressure gauge line, goes to a celluloid controlled valve. When the switch is pressed down in the cockpit the celluloid pulls the valve open and the fuel under a pressure of 4 to 6 pounds per square inch passes through this valve and

is directed at the lowest point of the oil inlet line. From this point on, the fuel is free to mix with the oil. The size of the line governs the amount of fuel mixed with the oil.  
 As soon as the engine starts, open the throttle to obtain 1000 R.P.M. and press down on the switch in the cockpit and hold it there for approximately 4 minutes. It will be noticed that the fuel pressure on the gauge drops almost to zero. It is nothing to worry about; this is caused by the opening of the fuel pressure gauge line. The best proof that the carburetor is not running short of fuel is that the warning light will not flash.  
 During the 4 minutes period the oil has been "thinned" out by addition of gasoline and flows more freely throughout the engine, thus warming up much faster. When the oil is properly diluted and reaches a temperature of 40°C, the fuel will evaporate as fast as it is absorbed and the fumes will escape through the crankcase breather, thus creating a fire hazard. A steady low oil pressure is a good indication of over-dilution. This condition MUST be avoided.  
 After the last flight at night the engine should be allowed to cool off for a while and when the oil temperature is below 40°C, the same procedure as for starting should be applied for 3 or 4 minutes. The idea is to leave in the engine a film of "thin" oil to ensure an easy starting the next morning. The same idea applies at any time of the day of course, if the aircraft is to be exposed to cold weather for any length of time.  
 The proper use of this small device greatly reduces the difficulties encountered in cold starting and lengthens the life of the engine.  
 In this respect, everyone is asked to co-operate; ground crew, students and instructors.  
 Since it is a part of a student pilot's course to learn how to start and stop his engine, I would advise them all to clear the matter with their instructors.  
 And never forget, fellows, that an engine will give good and reliable service as long as you take care of it both in maintenance and in operation.  
 N.B.—The inventor of this Oil Dilution System, Mr. T. W. Seirs, has recently been presented with the McKee Trophy for the most outstanding contribution to civil aviation in 1941. This man was a maintenance engineer for Canadian Airways.

Discovery of a prehistoric Indian skeleton with narrow, bulgy forehead, buried in a stone-lined vault in Pennsylvania is believed to mean that some of ancient America's Hopewell Mound Builders of the Mississippi Valley moved east through the mountains long ago to settle there.

FOR QUICK ENERGY  
 CHOOSE  
**ROWNTREE'S**  
**AERO-BISCRISP-COFFEECRISP**  
**CHOCOLATE BARS**

## Needle Ball Air Speed

(By F/O N. G. Bray)  
 As this little episode is our first contribution to Wings Over Borden, we of the Link Trainer Flight hope the editor will see fit to give it a little space and not file same permanently in the morgue.  
 As B.C.A.T.P. advanced so rapidly and the need for great skill in Instrument and Blind Flying was required it became increasingly apparent that New Technique and Methods of training would have to be developed.  
 The Link Trainer is one answer to this big problem, and experience has proven over the past few months that the actual flying time necessary to become qualified on instruments can be reduced by as much as fifty per cent. through proper use of the Link Trainer.  
 The trainer is an invention of Mr. Link of Binghamton, N.Y., who incorporated some of the basic features of the pipe organ, namely, the operation of the trainer on a system of bellows by means of vacuum pump. This vacuum pump is operated by a ¾-h.p. motor, which is situated under the trainer.  
 The trainer consists of a model aeroplane mounted on a universal joint and is free to move in three positions, namely, turning, banking, climbing or gliding.  
 The fuselage is large enough to accommodate one pupil, and is equipped with the usual aeroplane controls, as well as the most important instruments used in blind flying, and these are found conveniently situated on the dashboard in front of the pilot's seat.  
 The cockpit is equipped with earphones and a microphone, connected with the instructor's desk, making two-way communication possible.  
 The recorder which operates on the instructor's desk is an ingenious device for tracing the course the student would have flown had he been actually aloft in an aircraft. It is electrically connected to the trainer and records on the pupil's chart every turn of the course flown. The recorder travels on three wheels connected together, so that directional control is effective on all three wheels at the same time from one master motor. The third wheel is known as an idler wheel, which is equipped with an ink roller and does the marking on the sheet according to the movements of the trainer.  
 A duplicate set of instruments synchronized with those in the trainer is mounted in a cabinet on the instructor's desk and enables the instructor to observe and check the accuracy of the student during any exercise.  
 The Link Trainer is not a trick machine. It is perfectly true in all its movements. It will react exactly as the pilot handles the controls. If the trainer appears to bob about in no uncertain manner you may be sure the pilot is being rough and jerky with the controls. On the other hand, if the machine banks and turns with a smooth-flowing rhythm, you know that the pilot has a light touch and good control.  
 During the early exercises most new pupils feel somewhat like the proverbial "one-armed paperhanger with the hives," and recently one of our Australian student-pilots was so thrilled with his first "flip" he nicknamed the trainer the "Box of Horrors." This same student-pilot after a few hours of instruction had an entirely different viewpoint on the value of his time spent under the hood and appreciated the fact that the more time spent in the trainer the better in-

strument flyer one would become. In order to be a good instrument pilot you must know just what information each instrument will give you, and learn to believe your instrument rather than your sense of feel.  
 All Link Trainers are equipped with at least the fundamental instruments—and the three most useful and important instruments used in the 1-2-3 system are Turn-Bank Indicator and Air Speed Indicator. Other instruments used and listed in order of importance are: Vertical Speed, Sensitive Altimeter, Compass, Directional Gyro, Gyro Horizon, Tachometer, Clock, Path Indicator and Radio Compass. These instruments are arranged on the dashboard in such a way that any combination of related instruments can be used together with a minimum of eye travel.  
 May we repeat once again, that when a pilot controls the instruments, he controls the trainer. The standard system of instrument flying the world over is the 1-2-3 system. The Turn Indicator is the foundation of all instrument flying, and is number one in every move a pilot makes. The Turn Indicator is controlled by the rudder only.  
 The Bank (Ball) Indicator is the number 2 instrument in Blind Flying and in practical use is really more an indicator of co-ordination between the rudder and ailerons than a bank indicator.  
 When the rudder and ailerons are being correctly used together, the ball is exactly in the centre. When the ball is off centre the rudder and ailerons are crossed to a degree indicated by the distance the ball lies off centre.  
 One great fault with pilots is sloppy co-ordination of rudder and ailerons. That is, allowing the ball to stay any place except in the exact centre, EXACTLY BETWEEN THE CROSS WIRES. The main thing to keep in mind is that the turn indicator is controlled by the rudder only, and the ball by the ailerons only.  
 The Air Speed Indicator, which is number 3 instrument of the 1-2-3 system, enables the pilot to maintain the speed of the Link Trainer within safe flying limits. After the pilot has set the throttle, control of the Air Speed Indicator is maintained by elevators only.  
 (More anon)



## WEATHER: TERRIBLE!

## CIRCULATION—QUESTIONABLE

# THE EDENVALE MUDSLINGER

Editors: AC2 "Chick" Robart, AC2 J. K. Watson  
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**Remembrance Day**  
 On Tuesday, November 11th, at 1100 hours, the siren of Edenvale's ambulance sounded. Fifteen seconds later our Station was silent, deathly silent. In the two following minutes, many and varied thoughts must have passed through the minds of the entire personnel; some possibly of fathers, of brothers, of relatives, and of friends, who have given their lives, and who are giving their lives in this, the Greater War. But, what better opportunity or atmosphere could we have had, whilst honoring our predecessors, to ask ourselves, in all fairness and sincerity, "Am I, throughout the day, day after day, giving my best to the Service? Am I carrying my share of the Torch, which they 'King from falling hands' pass on to me? Am I playing the game with my King, my country, and my fellow airmen, and most important of all, am I fitting myself, spiritually, mentally and physically, for the job I have undertaken to do?"

Unless we can answer ALL these questions affirmatively, at the end of every day, not just once a year, we are NOT worthy of the task to which we have committed ourselves. Let us all get behind our O.C. and work hard FOR him and WITH him to make Edenvale a station which will command the respect of everybody, everywhere. And on November 11th, 1942, when many of us will be "Over There," our successors will remember US and feel that they, too, have an Honor to uphold.

**Farewell**  
 To F/Lt. G. H. R. Phillips, who was until Thursday Examining Officer of our Squadron, farewell. F/Lt. Phillips is leaving Edenvale for Hagersville, where he will assume the duties of Commander of No. 1 Squadron. He leaves behind a host of friends and well-wishers. To F/Lt. Phillips we say "Congratulations, Sir, and Good Luck!"  
 Congratulations, too, to F/Lt. J. C. Raymond, formerly O.C. of "G" Flight, who now assumes the position of Examining Officer for No. 2 Squadron.

**News Flash!**  
 Corporal Cornish, Canada's Climatic Casanova, is in love, again! This time it MUST be true. When interviewed today, with his half-closed eyes three-quarters open, Cornish was heard to say (and we quote verbatim, or nearly so): "Moi geezly noives." From this great statement we presume that he is in love.

**Radio Program—Station EDEN**  
 0500—Snore from the Bunkhouse .....The Harmony Boys  
 0600—The Hour Approaches .....Rev. Mr. Orderly Officer  
 0630—Then Came the Dawn .....Anonymous  
 0700—From Soup to Nuts .....The Hashslinger Quartet  
 0800—Moans from the Mudholes .....The Entire Company  
 0805—Stand By for Station Announcements  
 1200—Soup Inhalers .....Mess Choir  
 1220—Fine Points in Cribbage .....LAC Dalgarno  
 0500—Same as at 1200  
 0700—Beer Bibbers Babel .....The Soaks  
 0930—Heroes are Born .....Shaving Quartet  
 1030—Station Sign Off

With all due apologies to Thornton W. Burgess, this station begs to announce that there will be no Bedtime Tales at Edenvale

**Sports**  
 Our baseball and football season being on their last legs, we turn our thoughts to hockey. This should be an ideal place for hockey, as natural outdoor rinks are in abundance.  
 Crokinole and checkers are about the only form of amusement available at the present time. Cribbage as usual in the barrack rooms.  
 A pleasant form of amusement is observing the varied expressions on the faces of the hardy souls, who brave the elements to shave in the mornings. The lucky few who get there first get the hot water, and as for the remainder—try it yourself and see.

**Future Story (Condensed from The Readers Indigestion)**  
 First, a little secret! Only 35 more shopping days till Christmas! Think of that! Think of Edenvale, our home, all lit up (Edenvale, not us) on Christmas day! What a thrill! No mud, no puddles—just ice and snow, clean, crisp, white snow. Woe is me! Ah'm just a dreamer. Thank heaven! But wait. The sun is shining, the air is warm and filled with sweetly singing birds (and they're not Curley's mudhens, either). The grass around the barracks is green and soft; springtime flowers have gently pushed their little heads through the soft, warm earth. All around the tarmac roadway the shrubs are in full bloom, lining the road from the gates to the flights (and back) with delicate pastel shades of blue and pink. The shade trees around the freshly painted buildings are just now tinged with a darling shade of greyish greenish, bluish, yellow—well, anyway, the picture is one of perfect peace and contentment. All through the spring-filled grounds saunter the "Boys in Blue," no cares, no worries and no money. Times never change, do they?

But to continue, there are many things about the grounds too beautiful to describe. But, in a hazy mist (which seems to define a two compartment frame shanty) stands in all its glory an exotic fountain with little drops of fresh, warm water drifting slowly down to the pool below. The water is crystal clear. (Looks strange to me). But at any time of the day or night, you can, if you listen closely, hear the con-

tinual murmuring of those little drops of water. (Rather ghostly, don't you think?) In ones and twos the boys in blue come and fondly gaze into the pool, gazing silently and wondering inwardly and wishing outwardly for the good old days, back in '41. In ones and twos they return to their rooms, light and airy and spotless. The warmth of the radiator takes the chill from the freshness and they sit in their easy chairs and ponder. Their faces are toward us, as we walk in the door, and light up with a radiance, too expectantly. We will leave them; they look so tranquil, so contented, so old! Along the narrow hall we ankle—briskly (72 to the minute) resting here and there for a fleeting moment, down past the mess and the canteen, to the orderly room.

Once there, we can rest, if the chairs are not in the sergeants' mess. There's a lot of warming friendliness in that room; you can feel it as you walk in the door. They said it was overcrowded; but it would be a shame to break up the serenity and warmth those cronies hold for each other. Over in the corner, talking in muffled tones as though to preserve the tranquillity, wrinkled and bald, Travers and Watson in their rocking chairs. I hear they are supposed to go to I.T.S. some day. And poor old Witcher, his beard tangled in the keys of that old typewriter, sympathizing with Houselander, who hasn't got his posting overseas yet. Crochety old Mahoney says he's going to re-muster if he don't hear something pretty soon; Robart, still brooding over the censoring of his "Wings Parade," rather childish in his dotage, but still happy in the service, but not this war. I heard that Cornish had been relieved of his great responsibility; it had grown too much for his strength. Poor chap, gone are the days when he could swear with the best of them and dance like the worst of them.

Through the door hobbles an old, old man. Yes, the Adjutant! His steel grey mustache now a snowy white. That goatee sure looks like many years of careful cultivation and stroking when he was talking on the phone. "Fellows," he says, in a shaky but still authoritative voice, "The war is over; you can all go home. You did a nice job and I'm proud of you." His voice shook with emotion; he continued: "Travers and Watson, for forty-four years I hoped every day I could tell you to pack your bags and go to I.T.S. Mahoney, you'd have made a mighty fine discip. Gee whiz! fellows, I'm awful sorry." And he turned and limped from the room. Well! so that's that. Tears filled the eye of those faithful souls who had kept their vigil for years and years. Not a dry eye was in sight—freedom staring them in the face—and they wept bitterly. C'est la guerre.

**Wanted**  
 Two pairs of walking shoes. Must be sturdy and strong, and able to take about 4 miles of pavement pounding at least once a day. Apply to AC1 Mahoney and AC2 Watson.

**Births**  
 To Lady and her friends—five pups, born October 26. Mother and family doing fine—Mascot and Mascotees.

**Obituaries**  
 Missing, presumed dead: Hot Showers, or even cold ones. Killed in action: A school of whitefish were run over the other day by a taxing aircraft. It is humbly suggested that the S.P.C.A. look into the matter as it seems hardly fair to drive the water fowl and the fish from their natural habitat.

**Editorial**  
 Twice in three weeks, No. 2 Squadron attended a new kind of parade. On both occasions a shadow was cast on the name and honor of each and every one of us. We do not intend to go into details explaining the circumstances, leading to the calling of these parades—we all know what they were. Nor can we state the actual results derived from them. But we can point out that throughout the Squadron there is a strong feeling of resentment arising against those who are LOW enough and WEAK enough, yet THINK they are smart enough, to make these "Nuisance Parades" part of our daily or weekly routine.

On Tuesday we had 115 officers, N.C.O.'s and men on this station. By Thursday, only 48 hours later, we had only 114. One had fallen by the wayside. Our code of living was too high, temptation too strong, and his moral strength too weak. Now we have 114 men who are going to help the straggler; 228 eyes and ears to watch and listen for the first sign of a breakdown. Those men, those eyes, and those ears, can either help or hurt, and scars remain for a long, long time.

Bear in mind one thing—with odds of 114 to 1 against it, the "CRIME" horse won't pay off but once in a lifetime—and it's paid once! It will not pay off again. Don't forget that 114 pairs of eyes and ears are at the track. Take a tip and lay off.

Also in fairness to our Officer Commanding, a little co-operation on the points set out in his talk the other noon would be in order.

**To the Aussies**  
 We take this opportunity to extend our best wishes to the Australian boys of Course No. 36, who received their wings on Saturday, November 8. May we say on behalf of the entire Squadron, "We've enjoyed working with you and we're all sorry to see you go." To an all 'round group of stout fellas—congratulations—good luck—and a speedy and safe return to your homeland. And don't ever forget, we're watching the Decoration List.  
 To our fellow Canadians about to graduate—the best of everything and lots of luck. Carry on, Canada!