

# WAMASC Newsletter



March 2020

## 1919 England to Australia Flight



Capt. Ross (left) and Lieut. Keith (right) SMITH in 1921

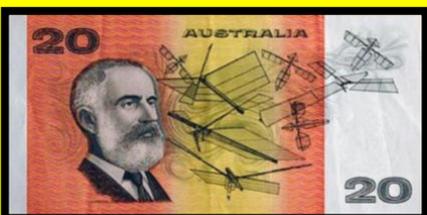
## LiPo Battery Safety



## Recommendation's



## Australian Connection



should any individual have anything at all they would like to contribute, share or add to this newsletter, please feel free to contact the [editor](#) through the [Club Secretary](#) via ✉ [secretary@wamasc.com.au](mailto:secretary@wamasc.com.au) – enjoy

## 1919 England to Australia Flight

In relation to Australian Aviation; should one mention the name **SMITH**, one immediately conjures thoughts of, and towards, **Sir Charles Kingsford SMITH MC, AFC**. He, however, is not the only 'SMITH' worthy of accolades in aviation. 'Smithy' as he was often referred to was an aviator of note who came into prominence for performing the first trans-Pacific flight from the United States to Australia in 1928. That said, not



Charles KINGSFORD SMITH

many have ever heard the names of **Ross SMITH** and his brother **Keith SMITH**, who, unfortunately share the same surname. That common surname has been used by many when seeking anonymity; and it has done exactly that to Ross and Keith, sharing said surname has relegated these two Australian aviators into the dark shadowy, obscure, depths of history – an absolute travesty as they are really the 'Columbus' of Aviation'.

The **SMITH** brothers were both born in Adelaide in the suburb of Semaphore. They were sons of Scottish-born Andrew Bell SMITH and his wife Jessie, née MacPherson who was born in Western Australia. Both Keith and Ross were educated at Queen's School, Adelaide, and for two years at Warriston School, Moffat in Scotland.

On returning to Australia, Ross joined the **Australian Mounted Cadets** and was selected in 1910 to tour Britain and the United States of America as a **South Australian representative**. He then joined the 10<sup>th</sup> Australian Regiment, the **Adelaide Rifles**. Before the outbreak of WWI in 1914.

Ross was employed as a warehouseman in Adelaide for G P Harris Scarfe & Co. In August 1914 he enlisted as a private in the 3<sup>rd</sup> Light Horse Regiment, **Australian Imperial Force**, and on the 01<sup>st</sup> of October was promoted Sergeant. He embarked for Egypt on the 22<sup>nd</sup> of October and landed on Gallipoli on the 13<sup>th</sup> of May 1915. On the 11<sup>th</sup> of August he attained the rank of Regimental Sergeant Major and was commissioned



Capt. Ross (left) and Lieut. Keith (right) SMITH in 1921

Second Lieutenant on the 05<sup>th</sup> of September. Invalided to England in October, he was promoted First Lieutenant on the 01<sup>st</sup> of March 1916 and three weeks later embarked for Egypt to re-join his old regiment. With the 1<sup>st</sup> Light Horse Brigade, 1<sup>st</sup> Machine-Gun Squadron, his principal action occurred during the battle of **Romani** on 04<sup>th</sup> August 1916. In July 1917 he responded to a call for volunteers to join the **Australian Flying Corps**, the transfer taking effect on the 04<sup>th</sup> of August.

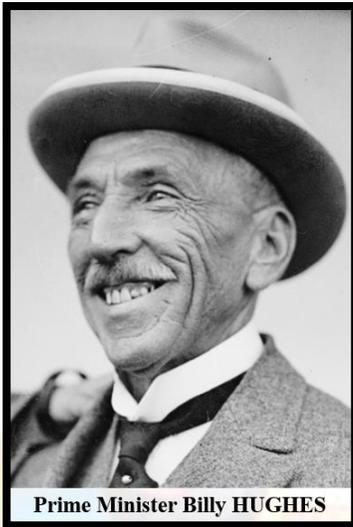
Keith's early career differed somewhat, yet both were to enter aviation within weeks of each other. Employed by Elder Smith & Co. in Adelaide on the outbreak of war, Keith was rejected for service with the AIF on medical grounds. He underwent medical treatment and paid his own passage to England to enlist in the **Royal Flying Corps**. Accepted in July 1917 into the **Officer Cadet Wing**, he was posted in November to No. 58 Squadron, a newly formed bomber unit which left for France in January 1918. Keith, however, was not to see active service.

On the 24<sup>th</sup> February 1918 he was posted to No. 75 Squadron, a home-defence formation, as a gunnery instructor and on the 01<sup>st</sup> of April he was promoted Lieutenant spending the rest of the war in Britain with training establishments. He was placed on the unemployed list, RAF, on the 05<sup>th</sup> of November 1919.

In contrast, Ross' air war was most active. Qualifying as an observer in December 1916, and later as a pilot, he served mainly with No.1 Squadron, **Australian Flying Corps** (No. 67 Squadron RFC.), a general-purpose squadron flying a variety of aircraft in defence of the Suez Canal zone. In January 1918 it was re-equipped with the **Bristol Fighter** and designated a fighter squadron. As such the squadron was an important element of General (Lord) Allenby's 1918 offensive and took part in the overwhelming air attacks on the Turkish armies in the Wady Fara. By the end of the war Ross had twice been decorated with the Military Cross and three times with the Distinguished Flying Cross. Later he was to add the Air Force Cross for non-operational flying. The first Military Cross was awarded while Ross, still an observer, landed in the face of the enemy to rescue a fellow officer who had been brought down. Bombing and photography and air to air combats brought the other operational awards.

By the end of the war Ross had acquired considerable experience flying the twin-engined **Handley Page 0/400 Bomber** which had been attached to the Squadron. He had flown it not only on bombing operations in Palestine but also on long photographic flights. He was consequently selected to co-pilot the aircraft in a pioneer flight from **Cairo to Calcutta**, leaving Cairo on the 29<sup>th</sup> of November 1918 and arriving in Calcutta on the 10<sup>th</sup> of December. A tentative attempt was made at this time to survey by sea an aerial route through to Australia – this was abandoned at Timor. Nevertheless, the experience gained was to be of great benefit in his unknown future.

That future would come in the form of a historical record-breaking flight that set many precedences' from **London to Darwin**. It is quite hard to quantify that as we have now just crossed into the 2020's that flight took place in 1919. 2019 was officially the 100<sup>th</sup> Anniversary of said flight yet hardly a murmur was raised. 'Smithy' performed his trans-Pacific flight from the United States to Australia in 1928 – some, nine years later. The distance from the United States to Australia is 9,429 miles; by contrast the distance from London to Darwin is 9,420 miles with many a mountain to circumnavigate in an open-air cockpit hence the route was actually so much longer. The actual flight distance was estimated as 11,123 miles amassing a total flying time of 135 hours 55 minutes equating to 81.9 mph or 131.8 km/h. So how did all this come about?



Prime Minister Billy HUGHES

In 1919 the Australian Prime Minister **Billy HUGHES**, sensing the importance aviation may one day have, put up a challenge, aimed squarely at the Wiley Australia pilot service men waiting to return home from the “Great War”. So, in 1919, just two months after the end of WWI, **the Australian government offered a prize of £A10,000 for the first Australians in a British aircraft to fly from Great Britain to Australia.**

Six aircraft entered the great race with Ross SMITH (pilot), his brother Keith SMITH (co-pilot), and mechanics James BENNETT and Wally SHIERS entering a converted and heavily modified **Vickers Vimy Bomber** registered **G-EAOU** (the registration being whimsically said to stand for "**God 'elp all of us**") . Due to shipping and other modes of transportation the proviso to complete the journey within thirty days was set for the England to Australia trek. The prize of ten thousand

Australian Pound equates to just under a Million Australian Dollars by today’s standards. The flight began from Hounslow, England, on 12<sup>th</sup> of November 1919 – take-off at 08.30am, just two months post cessation of WWI.

Flying conditions were extremely poor and most hazardous until they reached Basra on the 22<sup>nd</sup> of November. From Basra to Delhi, a distance of 1600 miles (2575 km), they spent 25½ hours in the air out of 54. A poor landing-area at Singora and torrential rain almost brought disaster on the 03<sup>rd</sup> of December. Disaster almost came again at Surabaya where the aircraft was bogged and had to take off from an improvised airstrip made of bamboo mats. By the 09<sup>th</sup> of December, however, they were at Timor, only 350 miles (563 km) from Darwin. The crossing was made the next day – and at 3.50pm on the 10<sup>th</sup> of December they landed in Darwin. The distance covered in this epic flight was 11,340 miles (18,250 km). It took just under 28 days with an actual flying time of 135 hours at an average speed of 85 miles/Hr. (137 km/Hr). Both Ross and Keith were immediately knighted; Sergeants W H SHIERS and J M BENNETT, the mechanics, were commissioned and awarded Bars to their Air Force Medals – the £A10,000 prize money was divided into four equal shares.

The next proposal, to fly round the world in a **Vickers Viking amphibian**, ended in disaster. Both brothers travelled to England to prepare for the trip and on the 13<sup>th</sup> of April 1922, while Ross and his long-serving crew member BENNETT were test-flying the aircraft at Weybridge near London, it spun into the ground from 1000 feet (305m), killing both.

Keith, who arrived late for the test flight witnessed the accident. Ross had not flown at all for many months and had never flown this type of aircraft. The investigating committee concluded that the accident had been the result of pilot error. The flight was abandoned. The bodies of Sir Ross SMITH and Lieutenant BENNETT were brought home to Australia and after a state funeral SMITH was buried in Adelaide on the 15<sup>th</sup> of June.

Sir Keith SMITH was appointed Australian agent for **Vickers** and retained the connection with this British company until his death. Between the wars, however, Vickers took little interest in the small Australian market and despite Smith's efforts, there was no sale of aircraft until the arrival of the **Viscount** in 1954. One promising



venture strongly supported by SMITH in the early 1920s was to employ Vickers-built airships on Imperial air routes. A British airship had successfully crossed the Atlantic in July 1919, but projects failed to materialize. The British government changed and so did policy while the airship itself which had crossed the Atlantic, the **R34**, was destroyed in a sudden and violent storm.

Keith remained, however, possibly the leading Australian spokesman on aviation matters and travelled extensively on Vickers' behalf. He held firmly to the view that Imperial co-operation was vital in aviation and looked for complete standardization of British and Australian equipment. Superior American aircraft and British indifference were to defeat this aspiration. He was to become, however, vice-president of **British Commonwealth Pacific Airlines**, a Director of **QANTAS** (Queensland and Northern Territory Aerial Services Ltd) and **Tasman Airways** and by the end of his career was in control of the many Australian-based Vickers companies. During WWII he was vice-chairman of the Royal Australian Air Force Recruiting Drive Committee and strongly supported the idea of an Empire Air Force. In 1924 Keith had married Anita Crawford of Adelaide who survived him when he died of cancer in Sydney on 19<sup>th</sup> of December 1955. He had no children. He left an estate valued in two States at £A33,723. Included in his will was a bequest of £A100 to W. H. SHIERS, the sole remaining crew member of the England-Australia flight. The Vickers Vimy flown on that occasion is displayed at Adelaide airport to this day but often goes unseen with many just passing it by without thought. Sir Keith SMITH was buried near his brother, father and mother in the North Road Anglican cemetery, Adelaide.



That converted and heavily modified **Vickers Vimy Bomber** (adjacent, left) took Keith and Ross into the history books. Their flight was an extraordinary achievement.

It was not only the first flight to connect the countries – but they also brought a bag of mail along with them.

That mail became the first airmail when it arrived into Darwin – which coincidentally is Australia's original International Airport! The flight paved the way for not only the future of popular passenger travel, but the much faster mail service by air (in essence it was as important then as the introduction of email and the internet nearly a century later).



Preserved original 'airmail' letters from the first flight from England to Australia

## LiPo Battery Safety

There has been much e-mail, discussion and banter with respect to LiPo Batteries at WAMASC. This article is a revisit and rehash of a previous article that appeared in this Newsletter some years ago. It is not done to preach to the converted; but aimed at those who are not aware – should one incident be prevented; we have had a win. The dangers associated re-charging (charging) any type of battery can be

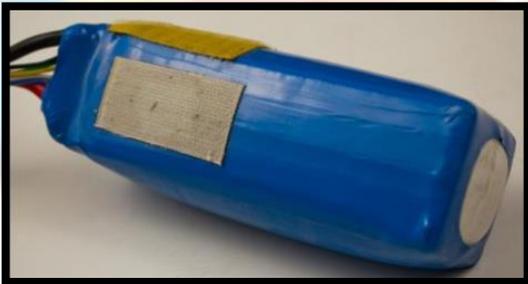


severe. In particular the use of modern **Lithium Polymer** or **Lithium Ion** type batteries has been highlighted on numerous occasions often with disastrous results. I'm quite sure many of us have heard someone's hard luck story or have had their own personal first-hand experience with respect to Lithium Polymer batteries.

Indeed, there are many who have fallen foul and suffered the devastating consequences brought on by incorrect **handling**, **storage** and **charging** of said – the worst-case scenario being a house or vehicular fire (property loss) that can lead to the loss of life.

LiPo batteries have become extremely popular and are now considered the norm for powering the control and power systems in our models used in the sport of aeromodelling. The accessibility to instant power output often negates and outweighs the safety aspect and requirements. The fact is LiPo batteries need to be treated with respect and differently to other battery types due to their chemical composition. That chemical composition provides a very high energy density compared to the alternate NiCad, NiMH, Pb, or other type batteries.

Some very clever fellow called Isaac NEWTON stated in his 'Third Law' that "**every force has an equal and opposite reaction**". How prophetically true that is; unfortunately, a LiPo Battery with its high and instant energy output brings forth a trade-off creating increased risk in their use – that trade-off is usually in the form of **heat**.



All will have seen puffy battery packs and watched in awe as an unattended LiPo suddenly goes into thermal runaway simply igniting into spontaneous combustion (I've had it happen in my boot while travelling home from the field thirty minutes into my journey).

The principal risk of **fire** which can result from improper **charging**, **crash damage**, or **shorting** of the batteries dictates that one should be extremely safety conscious. The state and condition of a battery requires close monitored and correct handling protocol adhered too at all times. All manufacturers and vendors of these batteries reiterate and warn their customers of these mentioned dangers recommending extreme caution in their use.

In spite of this, many fires have occurred as a result of improper use or handling of LiPo batteries which have resulted in personal injury, loss of models, vehicles and property. A lithium battery fire is very hot (autoignition temperature of pure Lithium is 355°F but raises to above 1000°F in a nanosecond post combustion).

It is an excellent initiator for ancillary fires.

Fire occurs due to contact between Lithium and oxygen in the air. It does not need any other source of ignition, or fuel to start, and burns almost explosively. These batteries must be used in a manner that precludes ancillary fire.



The following is recommended when using LiPo Batteries:

- Store in a fireproof container; never in your model (do not charge in your model).
- Charge in a protected area devoid of combustibles – ensure area is ventilated.
- Always stand watch over the charging process - never leave the charging process unattended.
- In the event of damage, from crashes etc., carefully remove to a safe place for at least half an hour and observe – physically damaged cells may cause a pack to erupt into flame (thermal runaway).
- Once given sufficient time to ensure safety, a damaged battery should be discarded in accordance with the instructions which came with the battery.
- Never attempt to charge a cell showing signs of physical damage, regardless of how slight.
- Always use chargers designed for the specific purpose in the correct manner, preferably having a fixed setting for your particular pack (fires often occur using selectable/adjustable chargers improperly set).
- Never attempt to charge Lithium cells with a charger which is not specifically designed for charging Lithium cells.
- Never use chargers designed for Nickel Cadmium batteries.
- Use charging systems that monitor and control the charge state of each cell in the pack – normally via the use of a **balancing board** (this is called balancing).
- An unbalanced cell can lead to disaster if it is permitted to overcharge.
- Should a battery show any sign of swelling, discontinue the charging process and remove to a safe place as it is a good indication that it could erupt into flames.
- Most importantly – never plug in a battery and leave it unattended overnight - serious fires have resulted from this practice.
- Do not attempt to make your own battery packs from individual cells.
- The safest disposal method for a LiPo Battery is via the use of a saline battery disposal tank submersing the battery completely in and under the solution.

## Recommendation's (Failsafe)

Mention the term **FAILSAFE** settings to some and you may receive a bewildered glance in return – many are blissfully unaware of its existence – what exactly it is – or means. The fact that all modern transmitters and/or receivers and satellites have the functionality to store failsafe positioning could be a clue. If you have been around long enough you will have witnessed what happens when the operator of an aircraft shuts down his/her transmitter



prior to the aircraft when failsafe(s) have not been set. It's the precursor to a lot of grief. Most turn off the model and then their transmitter; thus, circumnavigating problematic situations. But, turn off a transmitter whilst an aircraft is still without **failsafe(s) set** and it a disaster waiting to happen.

The look of embarrassment and horror on a person's face as an aircraft engine suddenly erupts into life; its engine or motor at full power as it careers toward others in attendance can be quite entertaining – not so entertaining if or when an injury occurs. I have witnessed an electric powered aircraft bite the hand that feeds it when the operator turned his transmitter off and it suddenly sparked into life. The simple problem was

his model was still 'on' and 'armed'. His throttle servo now reversed, to full scale deflection due to his transmitter being switched 'off' (the aircraft no longer receiving a signal to hold that servo closed or in the idle position).

That's not the greatest scenario for an electric model to be in and although a little gruesome the accompanying photograph tells the tale. The aircraft actually climbed up his arm and attacked his face. It was a two-blade propeller and one could even forensically ascertain its pitch from the distance between cut marks should you desire. The sad point is that all of this could have been negated during **binding** and setting failsafe parameters. With regard to safety, prevention is definitely better than the cure – especially when dealing with **electric models**. **Good safety procedure and protocol should never be lacking**. The potential danger due to the instant power availability when an electrical system is armed is **extreme!** Some, if not all electric motors, have the



the capability of causing very serious injury and in extreme cases even death from major lacerations (more so if an individual is using some form of blood thinning agent and can bleed out quickly).

**Prior to arming your system** - *please ensure that the aircraft is restrained and stay well clear of the propeller arc!* This safety issue is now extremely prevalent due to people not setting failsafe option(s) when **binding radio transmitter to an aircraft receiver** and should be adhered to at all times. The best-case scenario is to set all Servos at their mechanical neutral positions for flight control surfaces that have opposing deflection movement such as ailerons, rudder and elevator. This simply means that the servo arm be centralized on the servo allowing it free 90° movement in alternate direction with the flight control surface set in the neutral position when the servo arm is centralized. The trim adjustment on your transmitter should also be set at zero (minor incremental adjustments can be made during flight with mechanical adjustment being carried out when happy with aircraft behavior).

Adjustments can be made mechanically by adjusting (lengthening or shortening) travel linkage arms to ensure the correct length of travel and position is adhered to.

Throttle, Flaps, Undercarriage and Speed-Brake servos require the full 180° length of travel and should always be bound to the correct setting (closed or idle for throttle etc.) where it will hold without transmitter assistance.

If set correctly, loss of 'bind', will cause the aircraft to lower its MLG (Main Landing Gear) undercarriage (if fitted), reduce or cut power and set flight control surfaces at the optimum glide position(s) for a hopeful and safe return to terra firma.

In the event of loss of radio contact (signal loss or degradation (bind)) with an aircraft various functions on board the aircraft can be set to revert to desired settings - these should be set as follows:

- Internal combustion engines such as two or four stroke types should have the throttle set to idle. This immediately reduces the speed of the aircraft and can reduce damage, **cut-off is not** recommended as more often than not, radio contact can become restored and a dead stick or engine off situation doesn't follow.

Jet turbines however should have the throttle set to engine cut-off in the event that the jet unfortunately meets the ground as a fire may ensue!

- Elevator should be set approximately 2-4° up from normal flight - if you are fortunate enough to be in straight and level flight configuration upon losing connection (bind) - the aircraft will enter a gentle climb thus increasing the time available for radio contact to be restored.
- Aileron and rudder should be left in the neutral position as the primary objective in a loss of radio contact situation is to:
  1. Reduce power and thus reduce speed
  2. Begin a gentle climb, and
  3. Prevent the aircraft from rolling/turning excessively all to maximize the quantity of time available for radio contact to re-establish if possible.



This may not always save the aircraft, but it is a far safer option than not using the option when it is available.

**FAILSAFE** functionality is a **mandatory** requirement that is laid down in the **MAAA's Manual of Procedures** – please refer to **MOP 056, Safe Flying Code**, Page 2, **Radio Control**. For your convenience a hyperlink is provided below:

<https://www.maaa.asn.au/images/pdfs/mops/MOP056-Policy-SAFE-FLYING-CODE.pdf>

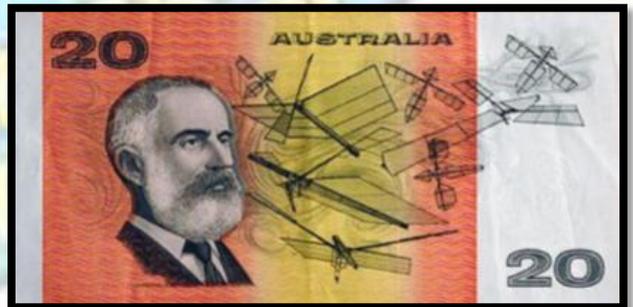
## An Australian Connection

Due to its vast expanse, Australia is a country whose citizens have always had an interest in aircraft. An interest obviously born of the requirement to traverse such vast distances in a timely manner thus connecting all and sundry.

What opened up the aeronautical era of flight was the box-kite design which was used by **Orville and Wilbur WRIGHT** on their 'Wright Flyer'.

Not many know that that design was a product of the inventive genius of an Australian, **Laurence HARGRAVE**. Laurence had used his box-kite design to lift **himself** into the air some nine (9) years earlier.

To achieve this extreme feat of 'lift' he used and flew a number of box kites joined together thus amplifying lift capability. That very same design reappeared in Australian skies in 1909 when George TAYLOR made the country's first ever flight in a glider, and then again in 1910 when a **Bristol Box Kite aeroplane** was purchased by **Billy HART** – Australia's first licensed pilot. Because Australia is a land of such vast uninhabitable areas, it is not surprising that its people quickly embraced the concept of air travel as soon as reliable aircraft became available. The world's first airline commenced operational service in the USA in December 1913 and Australia's first airline, **West Australian Airways**, began operating just **eight** years later. Within another year, the world's second oldest airline, **QANTAS** (Queensland and Northern Territory Aerial Services Ltd), began services in Queensland. The \$A20.00 Note featured HARGRAVE on the reverse from 1966 to 1994.





# SAFE FLYING

‘To do a Great right – is to do a Little wrong.’