



## **TNMoC Valve Workshop – Day 1 (5<sup>th</sup> Sept 2020) [£54.49]**

*\* Please Note: This day is limited to 20 participants because of room size.*

0900 – Registration and Coffee

0915 – Welcome, Timetable, Location of Facilities, Fire Precautions etc.

0930 – Introduction to Thermionic Valves (Steve Kay)

- Valve history
- Basic Valve theory, types of valves

1010 - Short break

1020 – Introduction to Thermionic Valves continued (Steve Kay)

- Valve coding systems
- Health and Safety – Radioactive valves, poisonous materials, high voltages.
- Simple multimeter valve tests
- Introduction to valve testing and matching
- Other technologies contemporary with valves: relays, CRTs, Dekatrons etc.

1100 - Coffee

1115 – Valve circuits in Audio (Charles Coultas)

- Power Supplies
- Audio amplifiers

1145 – Valve circuits in Radio (John Pether)

1230 – Lunch

1300 – Visits to EDSAC, WITCH and HEC-1 valve computers

1345 – Visit to Tunny and Colossus

1430 - Valve circuits in Colossus (Phil Hayes)

1515 – Tea

1530 - Valve circuits in EDSAC (Nigel Bennee)

1615 – Wind up and Questions and Agenda for Day 2. (Plus Recruitment of Volunteers/Members)

1700 - Finish



## TNMoC Valve Workshop – Day 2 (6<sup>th</sup> Sep 2020) [£108.39]

*\* Please Note: This day is limited to 12 participants because of limitations of working space and available toolkits.*

1000 – Reminder on Health and Safety with additional information on soldering irons etc.

1015 – Description of project kits and decision on which project will be done by each participant:

- Astable Multivibrator (price of kit included in cost of the day)
- Two valve AM radio\*\* (price of kit included in cost of the day)
- “Valvesound” guitar pedal (£30 extra)
- Ring Modulator (“Dalek” voice changer) (£40 extra)
- Stereo headphone amplifier\*\* (£50 extra)

1045 – Distributing kits

1100 – Construction

1230 - Lunch

1300 – Construction

1500 – Testing, debugging, demonstrating

1630 – Wind up, questions. (Plus Recruitment of Volunteers/Members).

1700 Finish

\*\* The Two-valve AM radio is powered by a small 12V lead-acid battery. You will need to buy your own trickle charger for the lead-acid battery (available for around £15 online).

e.g. <https://cpc.farnell.com/ansmann/bca120-350/charger-lead-acid-12v-350mah/dp/BT06035?st=12V%20battery%20charger>

There is also a no-cost option for the headphone amplifier of the same type of lead acid battery in place of the “wall-wart” type mains power supply. This is a low-noise alternative.

\*\*\* Additional kits may be purchased to take away at a special discount of 20% off the shop price.



## **About the presenters.**

**Steve Kay** BA, PGDCCI, MIEEE worked for OSRAM making electric lamps in the 1970s, but then moved into Computing, specializing in Data Communications and eventually Network Security products as a Principal Test Engineer with HP. My early interest in valves mainly stems from playing bass guitar in pop groups in the 1960s and Country and Western groups in the 1970s. I have a 50W valve amplifier at home which I dust off from time to time. I am currently the Chairman of the Volunteer Supporters' Association at TNMoC and a TNMoC Trustee..

**Charles Coultas** Played in a school band (lead guitar), Cliff and the Shadows were our inspiration. Used valve amps - EL34 GZ34 ECC83. Learned all about valves at college, there wasn't really anything else in those days. Rediscovered valves when I met Tony Sale at Colossus rebuild. A member of the Heath Robinson rebuild team.

**John Pether** joined the then GPO in 1969 as an apprentice. Served 36 years before taking early retirement. During that time I was on internal construction - installing telephone exchange and repeater equipment. Circuit provision which involved providing trunks and junctions between exchanges and the provision of private data circuits. Main interests are: Amateur radio - licensed since 1969 - and model engineering - built and run a 5" gauge live steam locomotive. Member of the Colossus rebuild team right from the start and currently working on Heath Robinson.

**Phil Hayes** Studied electronics at Brighton in the early 70's, then worked at several large companies and organisations until I moved into data communications in the early 90's. I finished my working career as a Network Security Architect for one of the major clearing banks in the city. My interest in thermionic valves came about when I was involved on the construction of a 1 Megawatt Medium Wave transmitter for the Foreign and Commonwealth Office in the mid 80's. As a volunteer I joined the Colossus Rebuild Project in 2000, and then in 2011, I was approached by the National Museum of Computing, to take on the full time role of Chief Colossus Engineer.

**Nigel Bennée** PhD FBCS MInstP Teenage years spent playing with valves. After gaining a PhD in Nuclear Physics had a brief spell working for Ferranti at Bracknell then 11 years for SHAPE Technical Centre in The Hague. On return to England together with his wife ran Lucidata Data Communications Consultancy until a few years ago when retirement and the lure of the EDSAC Replica project has kept him busy exercising old and almost forgotten skills.



## **FAQs**

**Q.** Where do I book myself on the Valve Workshop?

**A.** Day 1: <https://www.eventbrite.co.uk/e/the-national-museum-of-computing-valve-workshop-2020-tickets-96376832701>

**A.** Day 2: <https://www.eventbrite.co.uk/e/the-national-museum-of-computing-valve-workshop-2020-day-2-tickets-96376752461>

**Q.** Do I need to bring anything with me?

**A.** On the first day you will be provided with pen and paper and printed lecture notes for you to annotate. On the second (practical) day all tools and test equipment will be provided, including amplifier, microphone, music source, headphones etc. for testing operation of the completed kits. A buffet lunch, tea and coffee will be provided on both days.

**Q.** How do I get to TNMoC?

**A.** There is information on the TNMoC website (<http://www.tnmoc.org/visit/getting-here>).