

ELECTRONICS

John Miller-Kirkpatrick reminisces about Electronics Tomorrow, and puts his crystal MPU on line

It all started when the phone rang and ETI gave me the news about this publication you are reading. "Thought you might like to write a couple of pages for it", said the voice, "sort of look through the back issues and do a review or something?" This is the sort of opportunity no author can afford to miss, being asked to write a two page review of your own work.

As a regular feature article 'Electronics Tomorrow' has been quite an innovator of new ideas, some of which have since become products, others which may still be a little difficult to see as your next Christmas present. Some of the ideas rubbed off onto ETI itself — one example being the first of the now regular special offers in ETI Aug 73. That was for a pair of LED lamps, one green and one red at £1.10. It may not sound like much of an offer at today's prices but it was the first of a range of special offers which has subsequently resulted in some special issues with 20 or more offers per issue.

The policy statement made in that first Electronics Tomorrow still stands, "It is intended to be more than a product review in as much as we hope to give short constructional examples of some of the products, this approach gives a better insight to the capabilities of the product than one gets with just a data sheet." Since then we have reviewed many new products and put forward some rather mind bending applications and ideas while hopefully making the article amusing and educational.

In 1974 some of the subjects were —

- January: The 556 dual timer, then a very new device, now commonplace.
- February: The MM5371 alarm clock chip and new 0.6" LED display.
- March: CT6002 liquid crystal drive CMOS clock chip, the first of the digital watch chips.
- April: A battery charger using a 555 and the new LM3900 quad Amp.
- July: How to use a calculator as an MPU, now its how to use a calculator *with* an MPU!
- October: What to do during those long winter nights.
- November: Variable speech control and an upside-down calculator problem.

The Inebriated Reporter Saga

We started 1975 with a futuristic horror story about super-automation with computers which were capable of building and controlling themselves. A bit far fetched perhaps, but not impossible. March 75 brought digital FM tuners, done the hard way — with TTL. This was followed by complex counter chips, 'Time on TV' display chips, a cassette recording system, a few stopwatch

chips, and a self controlling hair curler. My favourite article during 1975 must be the October 'Tank Fight', not so much from the obvious literary talent displayed but more from the joy of sinking several pints whilst collecting data for the article — my thanks to the landlord for ignoring the hysterical laughter coming from the corner with the TV tank game.

The new year brought forth the 'Black Watch kit', an add-on calculator programmer, the first low cost clock module and the start of two sagas. The first saga was the seven segment to BCD conversion problem for which I received and am still receiving lots of clever solutions, one obvious solution was to input data into an MPU as seven segment data and let the MPU do the conversion. The second saga started in May 1976 with the idea of including an MPU in a Teletext system (or vice-versa), I understand that Texas Instruments now have a version of TIFAX for just that application!

A similar saga also started about that time, the problem of getting your MPU to use a calculator chip, the latest device is the MM57109 — a calculator chip specifically designed to do the job.

More and More and More

It is a little obvious that 1976 was the year that I became very interested in microprocessors with the year ending up with more teletext plus MPU plus cassettes plus calculators plus low cost direct-access devices. This must have started some brains ticking because ever since then I have been receiving letters with comments, ideas and tales of resultant systems.

It is my experience from letters like these and from past experience that there was a lot of interest in calculators at £80 in 1974, in 1975 it was in £100+ digital watches, 1976 saw £200 VDU systems and teletext interest and 1977 has seen a lot of interest in £500 MPU systems. In each of the first three examples the products became almost household items with corresponding price drops to give the £5 calculator, £20 watch and £150 Teletext decoder. This should mean that 1978 will bring us the home computer for games, household accounts, diary, etc for about £200. Already several manufacturers are producing MPU systems for business use at £3,000 odd with a very small simple version at about £1,000, with an MPU kit on sale at under £50 in November 1977 what will prices be like in 1978?

Having started a forecast for 1978 in the amateur and consumer electronics market perhaps I should continue in the same vein. Having had several lucky guesses committed to print in Electronics Tomorrow I



"So the little old lady, who used it once a week to go to Church, built the transistor ignition then?"

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feel that a few more suggestions might also work out in the same way.

First of all obviously, microcomputers. By Christmas 78 you should be able to buy a unit consisting of a typewriter keyboard, MPU plus memory, interface to TV and cassette recorder for under £200. It will talk to you in BASIC, one of the simplest possible programming languages and will allow you to play very complex games far into the night — goodbye 'Monopoly', hello 'Star Trek'.

Of course this is not the only form in which you can use MPUs for fun, already there are several MPU based board games for sale at Christmas 77, the first of these use a calculator style MPU to control games similar to 'Battleships', 'Campaign' and other 'strategy' rather than luck games. This type of unit will also see a new industry spring up in the form of a 'Game of the Month Club', supplying new programs for old board games. With all of these board and TV games around you are going to have to start talking to your neighbours again, if TV was the death of the art of conversation perhaps MPUs can cause the rebirth.

The use of MPU chips in games applications leads on to their use in teaching, training and overcoming disabilities. The MPU can cover the same training ground repetitively at any time of day or night and can be programmed to lead a student at the correct rate and in the right direction. If it doesn't sound too harsh, MPUs could be used as a substitute for 'electric shock' training or correction techniques. First you catches your rat, then you teach it BASIC insert, and then let it solve mazes the easy way!

The new style of MPU controlled cooker will be able to cook a complete Sunday meal, you just tell it the weight of your Sunday joint and vegetables, which cooking units they are on or in and what time you want to eat. It calculates the cooking time of each unit with any temperature changes necessary and works out what time to start each unit. The super de-luxe version also keeps a record of your favourite recipes and any changes you make to them. When this type of computer becomes commonplace (198?) it might also order your groceries from the supermarket computer thus allowing advance programming of a week's meals based on diet, seasonal availability and personal preferences. With the advent of little vacuum cleaners programmed to clean rooms whilst you are out, MPU based tomato watering systems and computer controlled dish and clothes washers you are going to need the MPU games to have something to do other than eat!

Shops for Everything

Electronic products are now finding a place in most homes, cars, offices and factories, within the next couple of years the consumer market will be flooded with more electronic gadgets, some useful and others useless. Many more people are now becoming interested in the various fringes of electronics as you do not have to have a knowledge of radio receivers to use TTL logic or MPUs or vice-versa. This decentralisation of electronics as a hobby is confirmed by the growth of specialist suppliers who tend to only stock components within their own specialisation. With the high rate of new technology on the whole electronics front this approach allows the supplier to hold large stocks of the specials without committing money and effort into another field of electronics. To the constructor it means that the supplier will probably be able to give a better and more detailed service than before. Your local electronics component shop will continue to supply basic standard components, kits and accessories for most constructional projects whereas the specialist supplier will stock components for the larger more complex projects.

If you are not a regular reader of ETI I hope that this article has given you some idea of what you are missing in just a couple of pages each month, just think what you are missing in the other 80 or so pages of ETI each month.

Electronics Tomorrow is put together each month with help from lots of people, I would like to take this opportunity of passing on my thanks for support. To my wife for patience and coffee, to manufacturers like National and GIM for new data and products, to Halvor and Co for editing and publishing, to readers and personal friends for ideas and inspiration, and to Bywood for the time. □

