Pipers Gathering is probably unique in North America in bringing these different pipes together in one place. Small wonder then that the Pipers' Gathering and the Van Iackman Memorial Fund are complementary to one another.

Tuning, a Well-tempered Response.

'Equal Temperament gets itsJust deserts - no Mean achievement'

Jon Sway/7e

In the Autumn edition of Chanter, there were two references to tuning whichI thought deserve comment. First, on Page 9, Ian Clabbum talks about cabrette tuning. He speaks of asking Ivan Karvaix why the cabrette has an ‘untempered scale', and that Ivan mentioned that younger players were adopting 'the more tempered scale'. I think we know what Ian means (he said, patronisineg — sorry Ian), but the way he says it gives me a bad feeling, It's just that as someone who spends a large part of his life involved with the business of tuning, I‘ve become sensitive to the way words to do with tuning are used.

In the above paragraph, unlempered is used to mean wild or harsh, while the more tempered scale is used to imply a scale which is easier on the ear. I think this is the wrong way round. According to (eg) the Oxford Dictionary of Music, an untempered scale is a scale tuned according to Just Intonation — a scale in which every step is harmonically related to the tonic, and in which, for a bagpipe, every note is consonant with the drone. On the other hand, a tempered scale or a temperament is one in which notes have been adjusted (tempered) away from Just Intonation for a particular reason. In the case of equal temperament, the adjustment results in all the steps of the scale being the same size. So temperament is a system or process, not a quality. 1.5. Bach‘s 48 Preludes and Fugues, ‘The Well-tempered Clavier', (set in all twelve major and minor keys) was called that because it demonstrated the utility of equal temperament, not because it was a nice polite keyboard. More on equal temperament below.

That doesn't answer Ian's question about the cabrette scale. But I suspect that the answer may lie somehow like this: the modern cabrette came from the rural cabrette/musette of the Auvergne. That was a milieu in which the instrument was played on its own, perhaps by a shepherd. Those days are not so far away. The traveller and writer Patrick Leigh Fermor speaks of staying in a farmhouse in Greece where a shepherd arrived from up the mountain having spent several days or weeks with his flock and his bagpipes. Laurence Picken in

Introduction

A few years ago, when microprocessors were first introduced, computer enthusiasts and electrical engineers were one and the same. Those of us who lived only to solder kluge after kluge basked in our glory. Now, however, the prices of completely assembled and packaged systems have plummeted. Today anyone with an interest, almost regardless of technical capabilities, can own and operate a computer, Buying a computer is now similar to purchasing a television set and the rartks or computer enthusiasts have swelled accordingly.

With any popular movement, the available literature reflects the concems of a ma. iority of the followers. And, consistent with the popularization or computer science, the technkal emphasis on computer bookshelves has shined away from hardware design. Other than inlroductory tles called, say, How Logic Gates Work, most computer books either treat microcomputer hardware simplistically or attempt to be "catch-all" cookbooks, sometimes omitting tasty ingredients. Often, the only alternatives are engineering texts and trade journals, tedious reading at best.

For a number or years, I have been writing a column tor BYTE magazine, and readrr response has shown that there still wrists a great deal of interest in hardware design and
do ourseif proiects. At the same time, We been patntully aware of the lack of materials for such people. Most queries come from technical or high school students who have read all the descriptions and studied the block diagrams, but who crave prac —
tical answers and system examples. Unfortunately, there are very few books I can suggest.

Build Your Own zoo Computer is a book written tor technically minded individuals who are interested in knowing what is inside a microcomputer, it is for persons who, already possessing a basic understanding of electronics, want to build rather than purchase a compuler. it is not an introductory electronics handbook that starts by describing logic gates nor on the other hand is it a text written only for engineering students. While serving to educate the curious, the objective of this book is to presenta practical, step-by—step analysts of digital computer architecture, and the construction details of a complete and functional microcomputer.

The computer to be constructed is called a zoo Applications Processor—ZAP com. puter for short. it is based on the industry standard zilog Zso microprocessor chip. This chip was chosen on the basis of its availability and low cost, as were the other components for ZAP. To further help the homebrew enthusiast, and for those atpertmenters who prefer to start a book at the back, ihave listed in Appendix A a company that supplies parts and programmed EPROM: (erasable-programmable rtad-unly

memory).

1 have structured the book as a logical sequence of construction milestones interspersed by practical discussions on the theory or operation. My purpose is twofold: to help a potential builder gain confidence, and to make the material more palatable through concrete examples.

Though this is basically a construction manual, considerable effort is given to the "why's" and "how's" oi computer design. The reader is exposed to various sublects, including: the internal architectures at selected microprocessors, memory mapping, input/output interfacing, power supplies, peripheral communication, and programming. All discussions try to make the reader aware of each individual component's ettcct on the total system. Even though] have documented the specific details of the ZAP computer, it is my intention (and the premise ol the book) that the reader will be able to configure a custom computer. ZAP is an experimental tool that can be expanded to meet a variety of applications.

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est sOuvent, comme Phjdias l’avait sculptée',rfajsa’nt couple avec
" 32' De régle dams-Part plastique, l’association Hermés'-Hestia

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