

| | |
|---|-----|
| Introduction | 1 |
| Chapter I. LETTERS, ALPHABETS, WORDS | 5 |
| § 1. Letters | 5 |
| § 2. Alphabets | 6 |
| § 3. Words | 11 |
| § 4. Entries | 27 |
| § 5. Links and chains | 38 |
| § 6. Translations | 45 |
| Chapter II. THE NOTION OF ALGORITHM | 57 |
| § 1. Algorithms in alphabets | 57 |
| § 2. Examples of algorithms | 60 |
| § 3. Normal algorithms | 63 |
| § 4. Examples of normal algorithms | 70 |
| § 5. The principle of normalization | 108 |
| Chapter III. CONSTRUCTION OF NORMAL ALGORITHMS | 111 |
| § 1. Extension of an algorithm | 111 |
| § 2. Closure of an algorithm | 119 |
| § 3. Composition of algorithms | 121 |
| § 4. Combination of algorithms | 143 |
| § 5. Branching of algorithms | 148 |
| § 6. Iteration of an algorithm | 156 |
| § 7. Translation of an algorithm | 172 |
| § 8. Some algorithms connected with matrices. | 178 |
| Chapter IV. THE UNIVERSAL ALGORITHM | 192 |
| § 1. Representation of a normal algorithm | 192 |
| § 2. Theorem on the universal algorithm | 194 |
| § 3. Record of a normal algorithm | 219 |
| § 4. Variant of the theorem on the universal algorithm | 221 |
| Chapter V. FUNDAMENTAL THEOREMS ON THE IMPOSSIBILITY OF ALGORITHMS | 223 |
| § 1. Selfapplicable and nonselfapplicable algorithms | 225 |
| § 2. The problem of recognizing applicability | 229 |
| § 3. The problem of recognizing annihilation | 232 |
| § 4. The problem of recognizing completeness. | 234 |
| Chapter VI. THE UNSOLVABILITY OF SOME MASS PROBLEMS | 237 |
| § 1. Associative calculi | 237 |
| § 2. Construction of an associative calculus with an unsolvable problem of equivalence | 244 |
| § 3. The problem of equivalence to the empty word | 262 |
| § 4. Post calculi | 277 |
| § 5. The calculus \mathfrak{G}_2 | 294 |
| § 6. The associative calculus \mathfrak{G}_1 | 301 |
| § 7. The associative calculus \mathfrak{G}_2 | 352 |
| § 8. The normal Post calculi \mathfrak{G}_2 and \mathfrak{G}_1 | 357 |
| § 9. Post's combinatorial problem | 359 |
| § 10. The problem of representability of matrices | 376 |
| § 11. Problems of recognition of properties of associative calculi | 392 |
| Conclusion | 440 |
| Bibliography. | 442 |